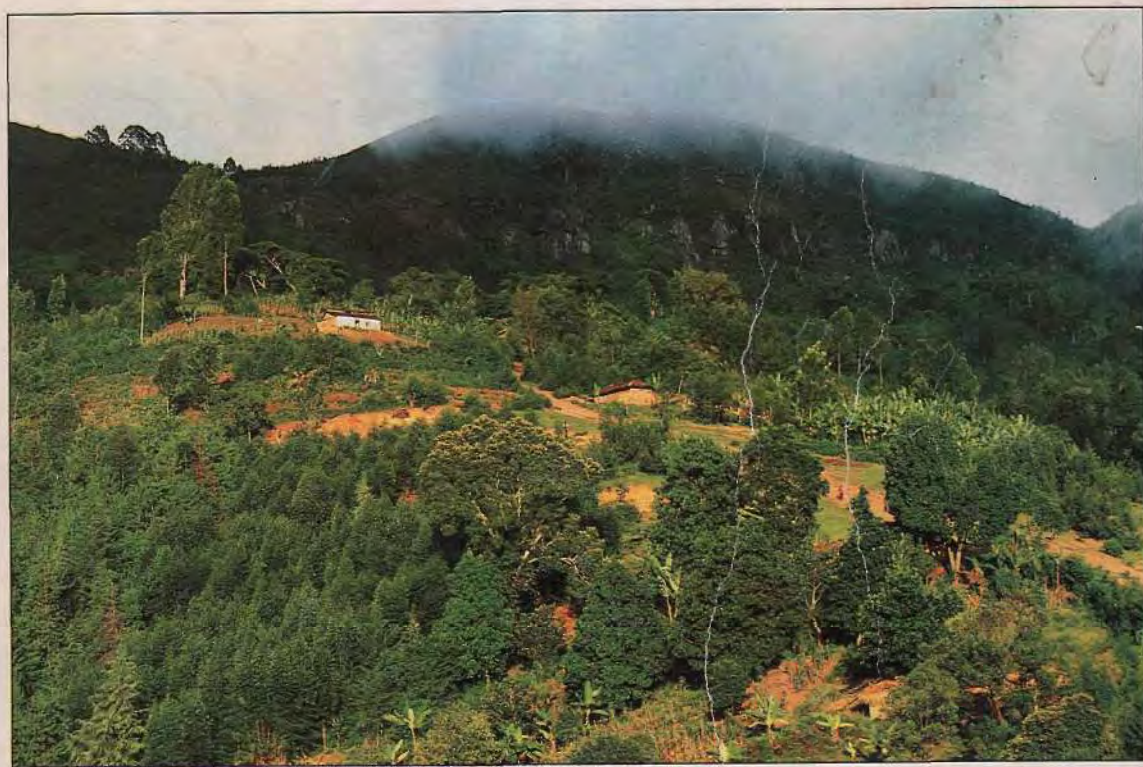


USEFUL TREES AND SHRUBS FOR TANZANIA

**Identification, Propagation and Management
for Agricultural and Pastoral Communities**



**L P Mbuya, H P Msanga, C K Ruffo,
Ann Birnie and Bo Tengnäs**

Regional Soil Conservation Unit/SIDA

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Bo Tengnas

REGIONAL SOIL CONSERVATION UNIT (RSCU)
SWEDISH INTERNATIONAL DEVELOPMENT AUTHORITY
1994

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Front cover photo:

Uluguru Mountains and a village, Tanzania

Photo: Charlotte Thege

Published by the Regional Soil Conservation Unit (RSCU)

Swedish International Development Authority (SIDA)

Embassy of Sweden

P.O. Box 30600, Nairobi, Kenya

Printed by English Press, P.O. Box 30127, Nairobi, Kenya

Editor of RSCU series of publications: Paul Rimmerfors/RSCU

Cataloguing-in-Publication Data

Useful Trees and Shrubs for Tanzania. Identification, Propagation and Management for Agricultural and Pastoral Communities/ By L.P. Mbuya, H.P. Msanga, C.K. Ruffo, A. Birnie and B. Tengnas-Dar es Salaam and Nairobi: Regional Soil Conservation Unit (RSCU), Swedish International Development Authority (SIDA), 1994.

(Regional Soil Conservation Unit, RSCU. Technical Handbooks Series; 6) Bibliography:p)

ISBN 9966-896-16-3

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The Technical Handbook Series of the Regional Soil Conservation Unit:

1. *Curriculum for In-service Training in Agroforestry and Related Subjects in Kenya*
Edited by Stachys N. Muturi, 1992
ISBN 9966-896-03-1
2. *Agroforestry Manual for Extension Workers with Emphasis on Small Scale Farmers in Eastern Province, Zambia*
By Samuel Simute, 1992
ISBN 9966-896-07-4
3. *Guidelines on Agroforestry Extension Planning in Kenya*
By Bo Tengnas, 1993
ISBN 9966-896-11-2
4. *Agroforestry Manual for Extension Workers in Southern Province, Zambia*
By Jericho Mulofwa with Samuel Simute and Bo Tengnas, 1994
ISBN 9966-896-14-17
5. *Useful Trees and Shrubs for Ethiopia: Identification, Propagation and Management for Agricultural and Pastoral Communities*
By Azene Bekele-Tessema with Ann Birnie and Bo Tengnas, 1993
ISBN 9966-896-15-5

Publisher's Preface

In 1991 the Regional Soil Conservation Unit (RSCU) initiated a series of technical handbooks on useful trees and shrubs in eastern Africa. The aim of the series is to provide information for subject-matter specialists, extension workers and farmers on the trees and shrubs that have a production and conservation potential for small farmers in the region.

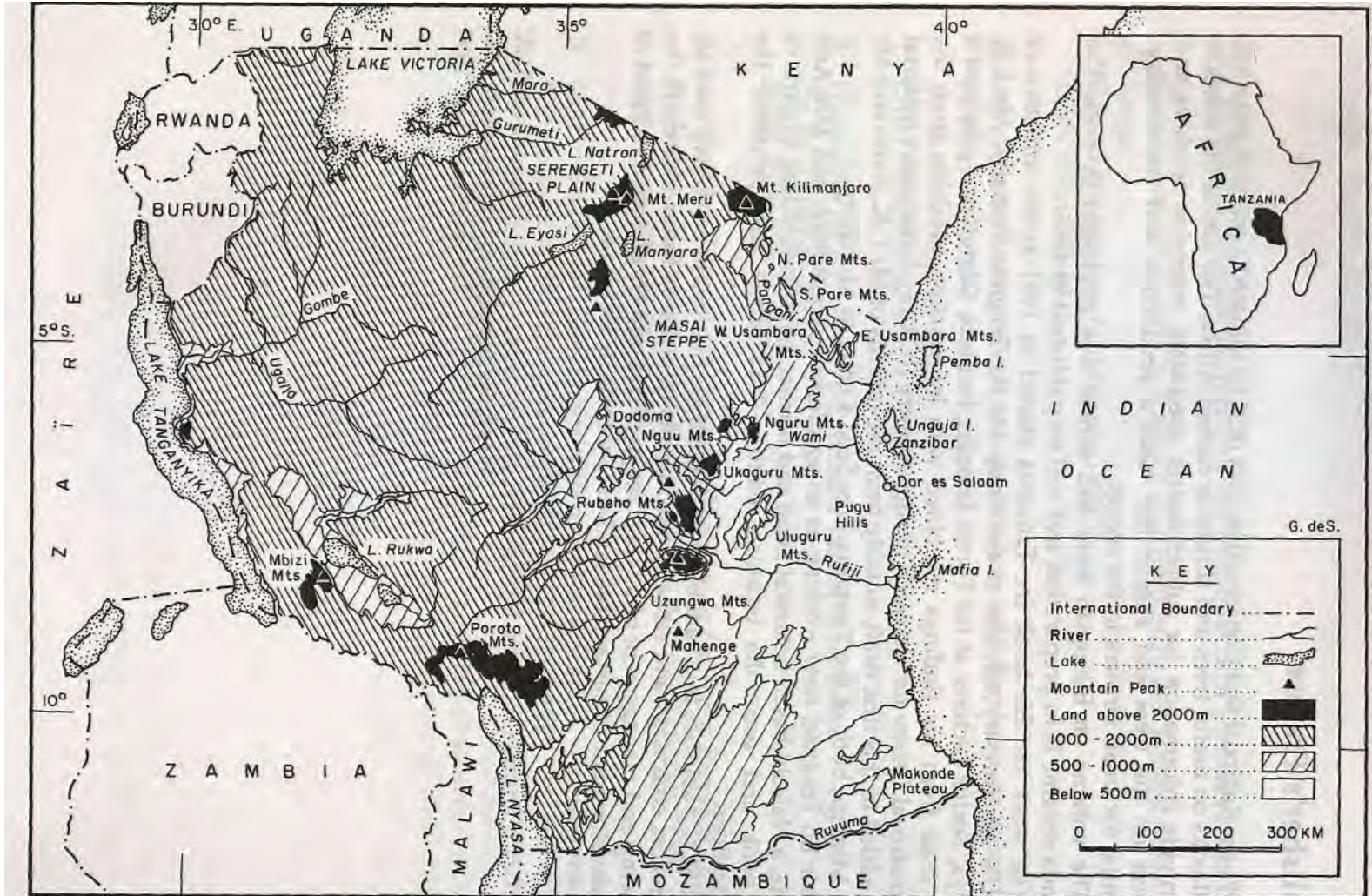
The volume on Ethiopian trees and shrubs was published in 1993. The Uganda volume is in preparation and will be published in 1995.

The work on this book for Tanzania started in 1991 at the initiative of RSCU's agroforestry advisor at the time, Mr Bo Tengnas. Initially, Mr L.P. Mbuya, Senior Lecturer at the Forest Training Institute, Olmotonyi, prepared a first draft from his findings combined with information available from the International Centre for Research in Agroforestry (ICRAF). Later, more material was added to this first draft, notably from the records of Mr C.K. Ruffo and Mr H.P. Msanga, both of the Tanzania Tree Seed Centre at Morogoro.

Mr Bo Tengnas, now working as an agroforestry consultant, and Mrs Ann Birnie, a Nairobi-based botanical artist and teacher, have contributed to parts of the book and done the technical editing. Mrs Birnie also prepared the illustrations.

RSCU publishes this handbook with the hope that it will be widely used by extension, education and research institutions in order to foster interest in the growing and management of a wider range of tree and shrub species as part of the development of sustainable land-use systems in Tanzania.

Dr Michael Stahl
Head, Regional Soil Conservation Unit
Nairobi, June 1994



Map 1. The main physical features of Tanzania

Acknowledgements

The initial material for this book was gathered by Mr L.P. Mbuya of the Forest Training Institute, Olmotonyi, during a period of extensive travel in Tanzania. Discussions were held with people knowledgeable on trees and shrubs, among whom were many farmers and pastoralists. In fact, most of the information in this book derives from rural people in Kenya and Tanzania who have enthusiastically shared their knowledge with us.

Special thanks go to the Principal of the Forest Training Institute, Mr E.N. Ntumbo, and the then Director of Forestry, Mr E.M. Mnzawa, for allowing Mr Mbuya to be released for a period of four months to devote his time to the data collection.

The book is also partly based on *A Selection of Useful Trees and Shrubs for Kenya: Notes on Their Identification, Propagation and Management for Use by Farming and Pastoral Communities*. Several people contributed to the production of that book and we acknowledge their contributions to this volume.

Researchers at the Silvicultural Research Centre at Lushoto also reviewed the first draft and made important corrections and additions. Thanks are due particularly to Mr S.T. Mwihomeke (Agroforestry), assisted by Messrs C.K. Mabula (Botany and Herbarium) and I.M. Shehaghilo (Seeds and Nursery).

Information on tree-seed characteristics was obtained mainly from the National Tree Seed Centre at Morogoro, but additional information was obtained from the Forestry Tree Seed Centre at Muguga, near Nairobi, and from the *Tree Seed Handbook of Kenya* edited by J. Albrecht.

Illustrations

The majority of the plant illustrations are original drawings by Ann Birnie, primarily from *Trees of Kenya* by T. Noad and A. Birnie. Other drawings were made specially for this book, both from fresh material and from dried specimens in the East African Herbarium, Nairobi. A few drawings have been taken from *Plants in Zanzibar and Pemba* by R.O. Williams and *Kenya Trees and Shrubs* by I.R. Dale and P.J. Greenway. We also acknowledge with thanks the Royal Botanical Gardens, Kew, for permission to use some illustrations that appear in the published family volumes of the *Flora of Tropical East Africa*. A few further illustrations have been taken from the following sources:

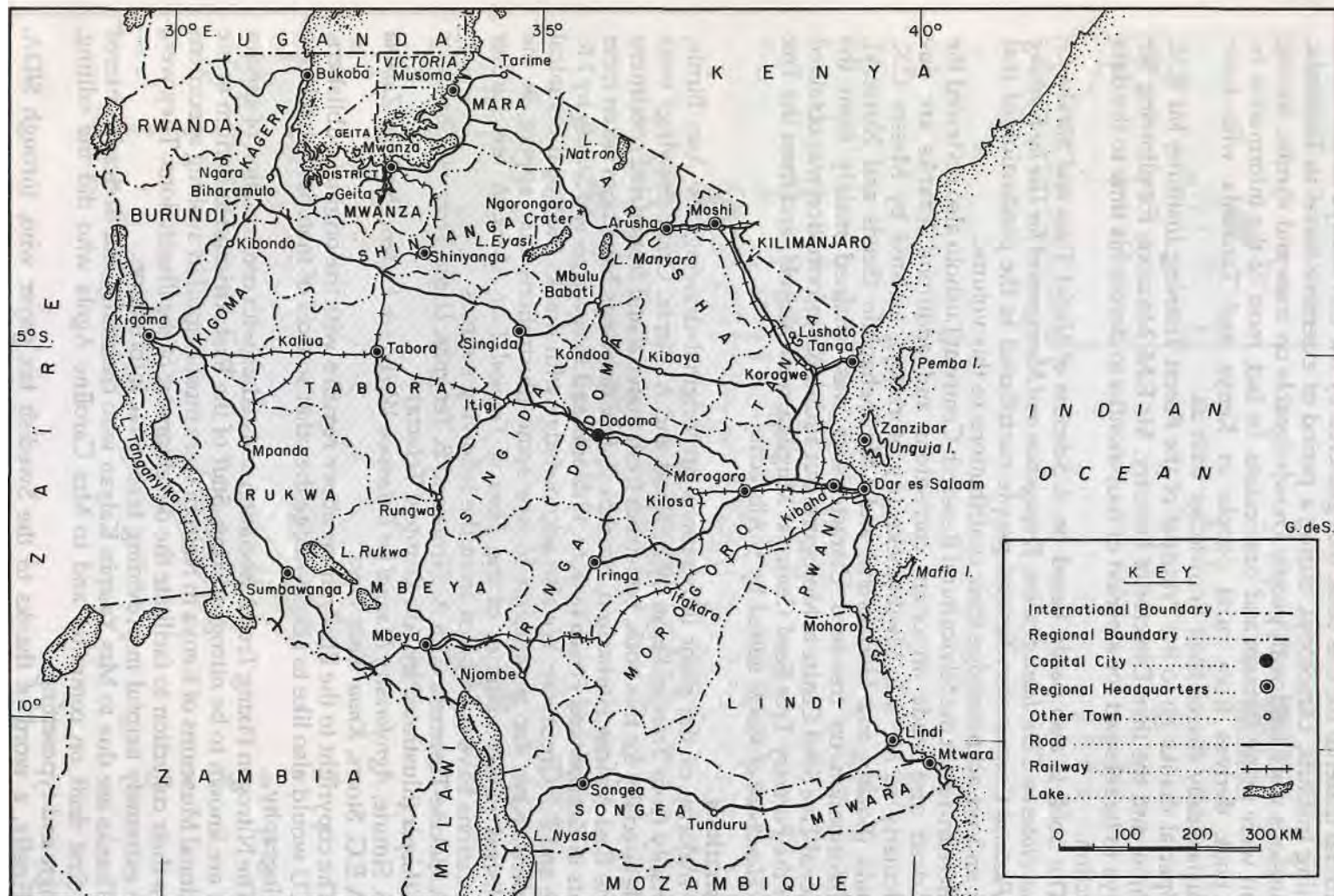
- A. Bekele-Tesemma with A. Birnie and B. Tengnas, *Useful Trees and Shrubs for Ethiopia* (illustrated by Ato Damtew Teferra)
- S. Simute, *Agroforestry Manual for Extension Workers in Eastern Province, Zambia*
- A.E.G. Storrs, *Know Your Trees*.

The copyright to the illustrations above remains with the original publishers. RSCU would also like to acknowledge the other sources of material listed in the bibliography.

The Nitrogen Fixing Tree Association assisted us with confirmation of species that are known to be nitrogen fixing. Staff of the East African Herbarium at the National Museums of Kenya in Nairobi were most helpful in availing specimens from their collection to facilitate the development of the illustrations. They were also extremely helpful in providing taxonomic information.

Thanks are due to Mrs Yasmin Kalyan who cheerfully and tirelessly entered the first draft on computer and to Mrs Caroline Agola who did the editing, design and typesetting.

Finally, a word of thanks to the Swedish tax payer who, through SIDA, provided the funds necessary for the production of this handbook.



Map 2. The administrative regions and main towns of Tanzania

Introduction

Tanzania has a very rich tree flora. To a large extent this richness is a result of very varied physical and climatic conditions. In some areas at higher altitudes the rainfall is reliable, temperatures are low and the vegetation is lush, whereas lowland areas are generally hot and arid. Along the coast and in the basins near the big lakes the climate is both hot and humid. This wide range of ecological conditions provides the environment for very many species of plants and animals.

Among the people of Tanzania, traditions also vary significantly from one part of the country to another. There are a large number of ethnic groups, all with their own languages. Land-use practices also differ a great deal, not only because of different ecological conditions but also due to socio-cultural differences.

In the late 1970s the age-old practices of agroforestry and community forestry began to be given due attention in development efforts worldwide. During those years, and up to the mid-1980s, most efforts were concentrated on trying to alleviate the fuelwood problem by intensified tree planting. In Tanzania, there was emphasis on planting community woodlots, mostly of *Eucalyptus* species.

Gradually, however, officers in development projects as well as researchers came to realize that the priorities of farm families are often different from the ones the project designers anticipate. It is now felt that development agenda should be worked out with the rural people concerned if projects are to lead to sustainable results. Methods such as D&D (diagnosis and design) and RRA (rapid rural appraisal) were developed by ICRAF, and later PRA (participatory rural appraisal) was promoted by the International Institute for Environment and Development. All these methods are based on development workers' awareness that the local people always have a wealth of knowledge that needs to be the focal point of efforts to improve agroforestry or tree growing in general.

All too often development workers, whether foreign or national, do not communicate effectively with local people on issues related to trees. There is often a language barrier if the two groups do not have a common set of names for the trees and shrubs that they deal with. In Tanzania, even if Swahili or English are well understood by many people, there are obvious limitations to communicating in these languages when discussing the details of a land-use system. Recognition of this communication gap between extensionists and farmers, the need to regard local farmers' experience as a focal point in any efforts to improve land use, and the importance of utilizing and preserving tree biodiversity in Tanzania were the underlying concepts for this book.

Up-to-date literature on trees was available to few people in Tanzania during the colonial period, and later books tended to cover a limited number of

species. So it was felt that a more comprehensive handbook would be useful for a large number of people such as extensionists, teachers, students and land-use managers of various kinds. An effort has been made to avoid technical language so as to make the book accessible to as wide a range of readers as possible.

The handbook is divided into three main parts:

- A list of vernacular and English names (where available) of the trees and shrubs covered
- A main section that describes the species and gives their vernacular names, ecology, uses and methods of management and propagation
- A summary table of the species and their uses.

Selection of the species to be included

Determining which of all the tree and shrub species found in Tanzania should be included and which omitted was a difficult task. During extensive field visits and consultations with local people certain species emerged as being important to many groups of people. During the selection process both indigenous and exotic species were considered, and it was also decided to include *Agave sisalana* and bamboos because, although they are not trees or shrubs by the strictest definition, they are woody perennials that have important uses in many areas.

Undoubtedly not all the species that could be covered in a handbook such as this have been included. Some species may be very important locally but not well known in other parts of Tanzania. Hence the final selection of species was a compromise. One of the objectives of this book is to stimulate an interest in trees, and if this objective has been met we hope that interested readers will use the feedback form at the end of the book to suggest additional species for inclusion in a future revised edition or provide additional information on species already included.

Vernacular names

The average farmer in Tanzania seldom uses the English or Latin names for the trees and shrubs that he is familiar with, and even though Swahili is now widely spoken, local languages are still the most commonly used and will continue to be for a long time. Old people often have much more knowledge about the trees and shrubs of their areas than the younger generation. It is therefore important that researchers, development workers and extensionists wishing to elicit information about local plants use the local vernacular names that will be familiar to the older people in the community. When this handbook was developed, therefore, it was decided to include as many vernacular names as possible. But there are areas of Tanzania that, in this respect, have been poorly covered so far and where further research needs to be carried out. This applies to the Ha, Ngoni, Yao and Makonde languages, for example.

Ecology

Under this heading a brief description of the origin and present distribution of the species is given, followed by an indication of where it grows in Tanzania, together with the altitudinal range, preferred climatic and soil conditions, etc.

Uses

Trees and shrubs provide a wide range of benefits to man, both in terms of products such as timber or medicine and services such as shade or soil improvement. Such information has been summarized for each species under this heading. It must be stressed, however, that these are *reported* uses, i.e. what the local people say they use these plants for and it has not been possible to verify the accuracy of all such reports. In addition, the known uses of a particular species may vary from one country to another or even from one community to another and therefore it is always necessary to verify these uses with the local people.

It must also be understood that the species cannot be grown for all of the uses simultaneously. On the contrary, management of a species often aims at optimizing or maximizing a specific product or service.

Description

For each species there is a general description followed by a detailed description of habit, bark, leaves, flowers and fruit. As far as possible, technical botanical terms have been kept to a minimum. The features in bold type indicate the special points to look for when identifying a species. It may not always be possible to identify a species from the descriptive text alone, but it is anticipated that, together with the illustrations and the vernacular names, the descriptions will prove a practical guide to species identification in the field.

Propagation

Wherever information on suitable methods of propagation is available it is given under this heading. "Seedlings" indicates that a relevant propagation method is raising seedlings in a nursery, either on farm or in a central or group nursery. "Wildings" indicates that it is known that farmers propagate a certain species by collecting wildings and transplanting them at the desired site. Other species may be propagated by direct sowing of seeds at the desired site, and vegetative propagation by cuttings is recommended for others. Coppicing is a management practice rather than a method of propagation, hence coppicing ability is indicated under "management".

Seed information

When relevant, information on number of seeds per kilogram, whether seeds can be stored or not, and suitable pre-sowing treatment is given. Normally, storage of seeds is to be avoided. The storage periods indicated are deliberately imprecise because there is no fixed period during which seeds can be stored without harm and after which they all lose viability. Loss of viability is a gradual

process, and its speed depends on many factors, mainly the storage conditions. Hence, only approximate indications of acceptable storage periods can be given.

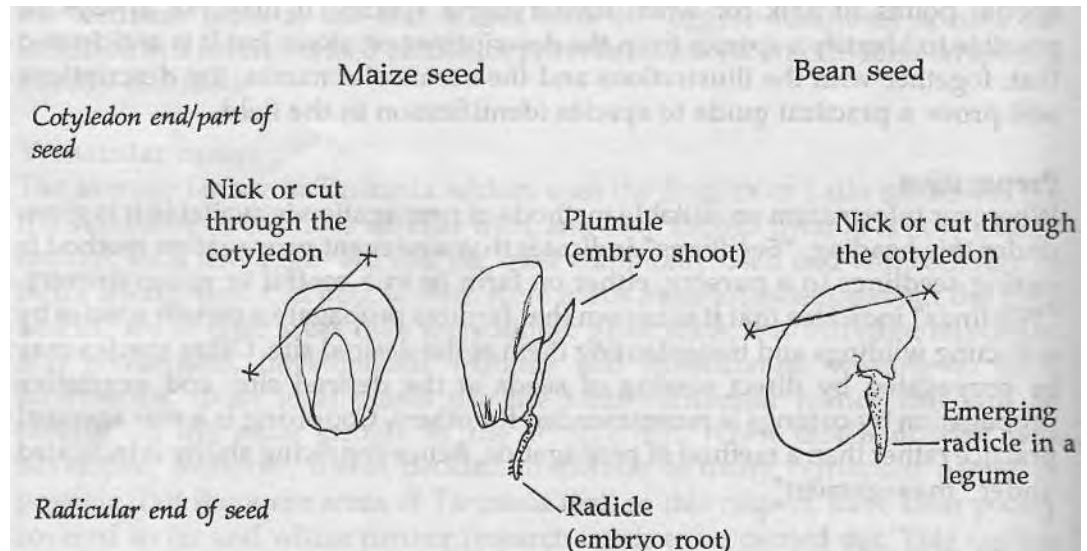
If seeds are to be stored for some time it is always best to keep them in a cool, dry and insect-free place.

Seed pre-treatment to render viable but dormant seeds fit for germination can be carried out in a number of ways. The methods mentioned in this book are the simple ones that can be applied under field conditions without the use of sophisticated equipment or chemicals.

Seed treatment is not needed for all species. For many, however, treatment may enhance both the rate and the speed of germination. The most common methods are soaking in hot or cold water, nicking, and de-winging. In addition, floatation can be mentioned as a simple way of separating bad (empty and thus light and floating) from good (heavy and sinking) seed.

Soaking in water is recommended for many species and, where these are known, details of temperature and time are indicated.

Nicking can be done by removing small pieces of the seed coat at the distal (cotyledon) end of each seed using a sharp tool such as a knife or nail clipper. Removal of the hard coat next to the storage tissue of the seed speeds up the absorption of water and hence the growth of the embryo. Nicking is time consuming if it is to be done to a large number of seeds, and soaking is often a more convenient alternative. Furthermore, nicking must be done with care in order to avoid damaging the vital part of the seed, i.e. the embryo itself.



The cotyledon and radicular ends of a seed and how to nick the seed

Winged seeds should normally be de-winged before sowing (e.g. *Combretum*, *Terminalia*, *Tipuana tipu*).

In some species germination is enhanced if the hard seed coat is cracked. This is a delicate operation as it is easy to damage the embryo within the seed.

As a general rule, fruits with a fleshy pulp surrounding the seeds will germinate better if the pulp is removed and the seed cleaned before sowing. Seeds of this kind often cannot be stored and should be sown soon after collection and cleaning.

Management

Different management techniques allow tree growers to maximize the production (both products and service functions) from trees and shrubs. Management may also be applied in order to reduce negative side effects from the presence of trees or shrubs, e.g. shading effects on adjacent crops.

The most common management practices are coppicing, lopping, and pollarding. Whenever a certain management technique is known to be feasible for a certain species this is indicated. Under this heading information on growth rate is also given.

Remarks

Any other useful or interesting information that is not relevant for inclusion under the other headings is given under "remarks". Information on medicinal uses of the plants is given here. It is wise to check dosages, methods of administration, etc., with locally knowledgeable people before putting these reported uses into practice.

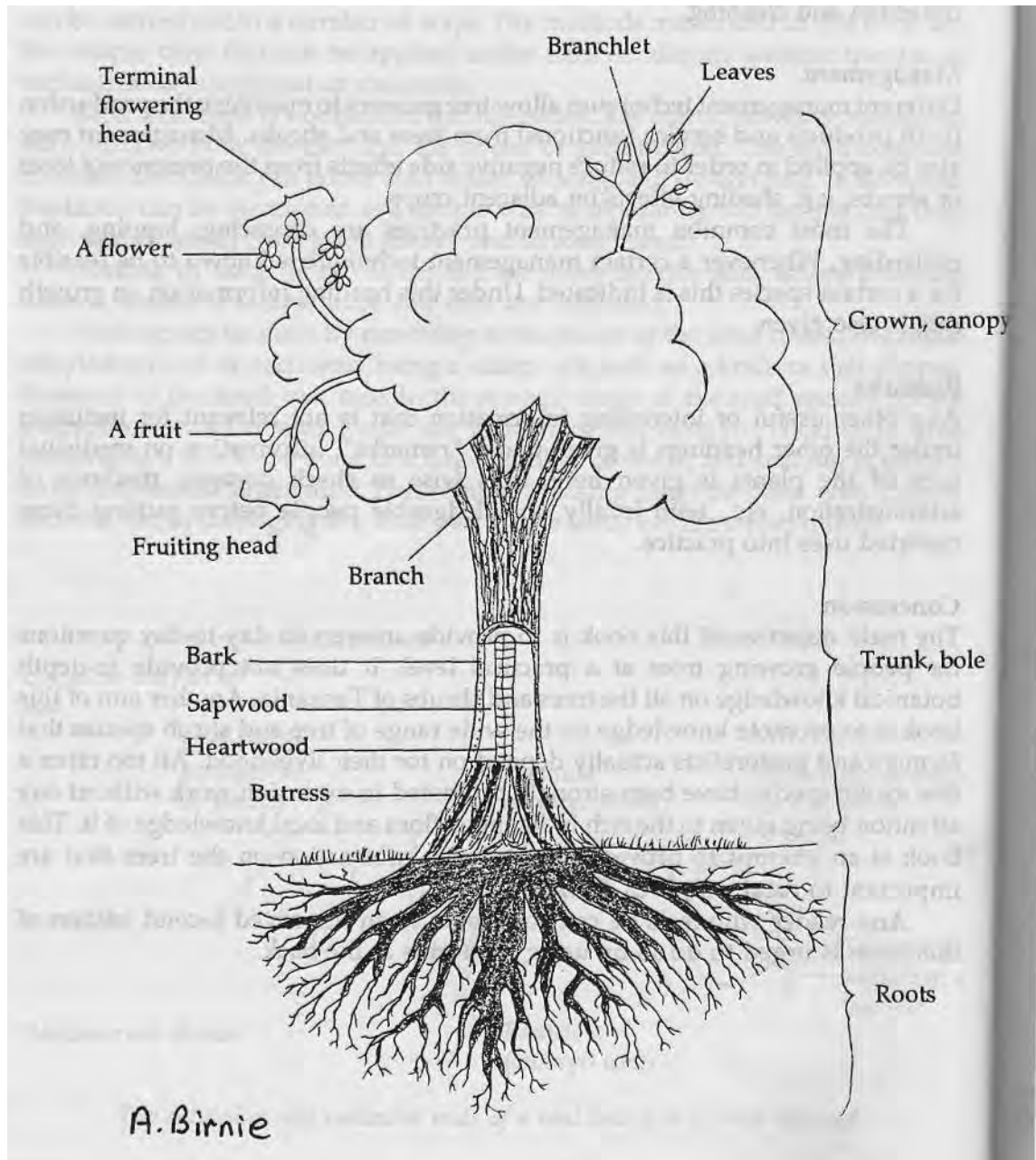
Conclusion

The main objective of this book is to provide answers to day-to-day questions for people growing trees at a practical level. It does not provide in-depth botanical knowledge on all the trees and shrubs of Tanzania. Another aim of this book is to promote knowledge on the wide range of tree and shrub species that farmers and pastoralists actually depend on for their livelihood. All too often a few exotic species have been strongly promoted in extension work without any attention being given to the rich indigenous flora and local knowledge of it. This book is an attempt to provide the essential information on the trees that are important to rural people in Tanzania.

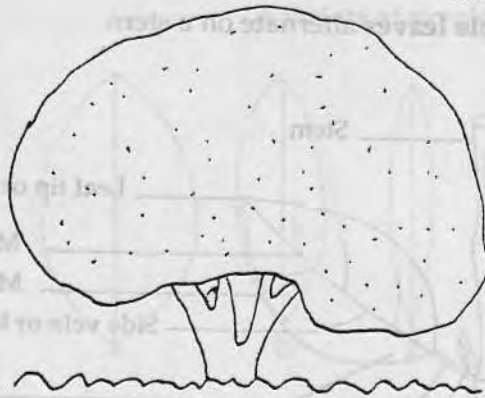
Any reader who feels he can contribute to an improved second edition of this book is urged to do so by using the forms at the back.

ILLUSTRATED GLOSSARY OF SOME BOTANICAL TERMS

The parts of a typical tree



Tree shapes



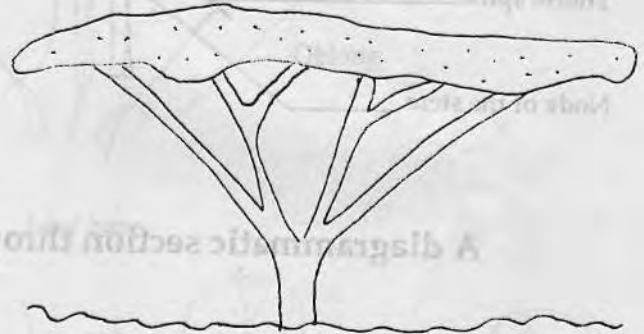
Rounded crown, dense, shady canopy



Narrow open crown, light shade



Conical crown



Flat-topped, spreading crown



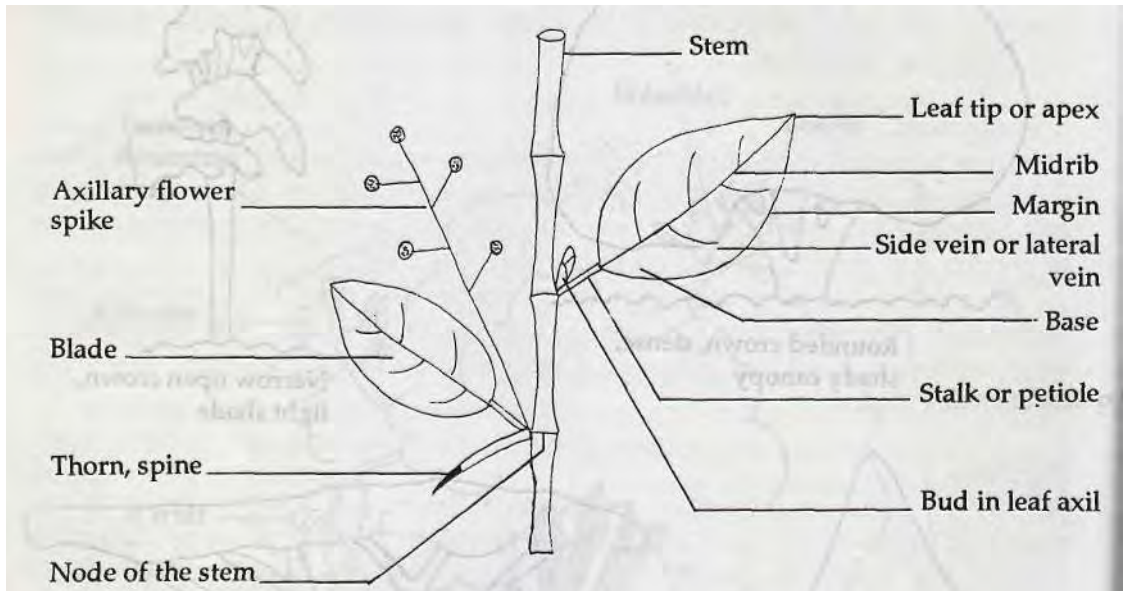
Canopy in layers



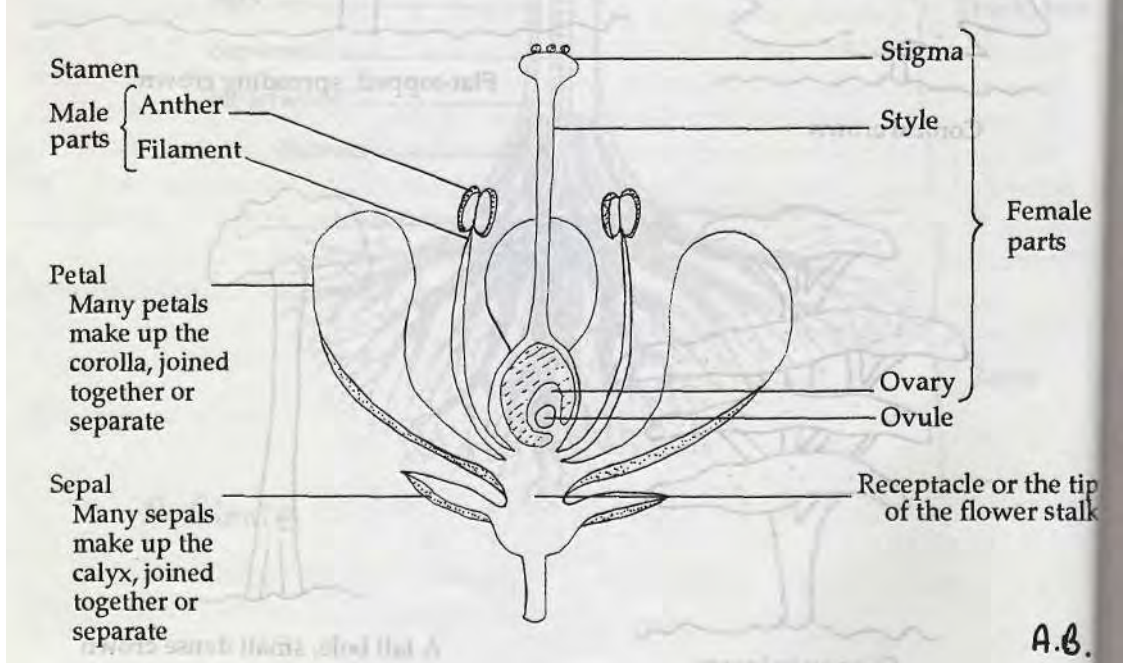
A tall bole, small dense crown

Leaves and stems

Diagram showing two **simple leaves** alternate on a stem

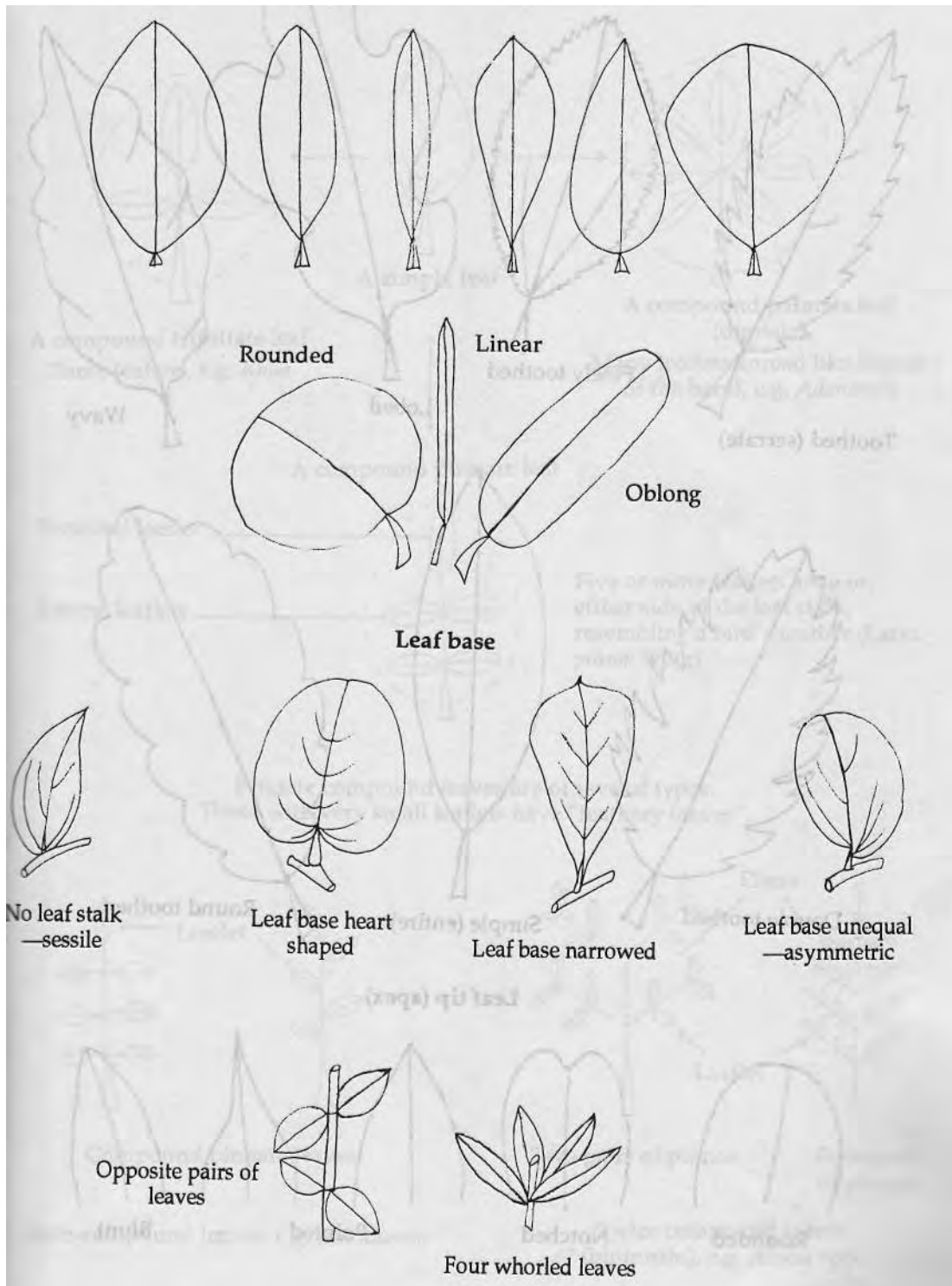


A diagrammatic section through a typical flower

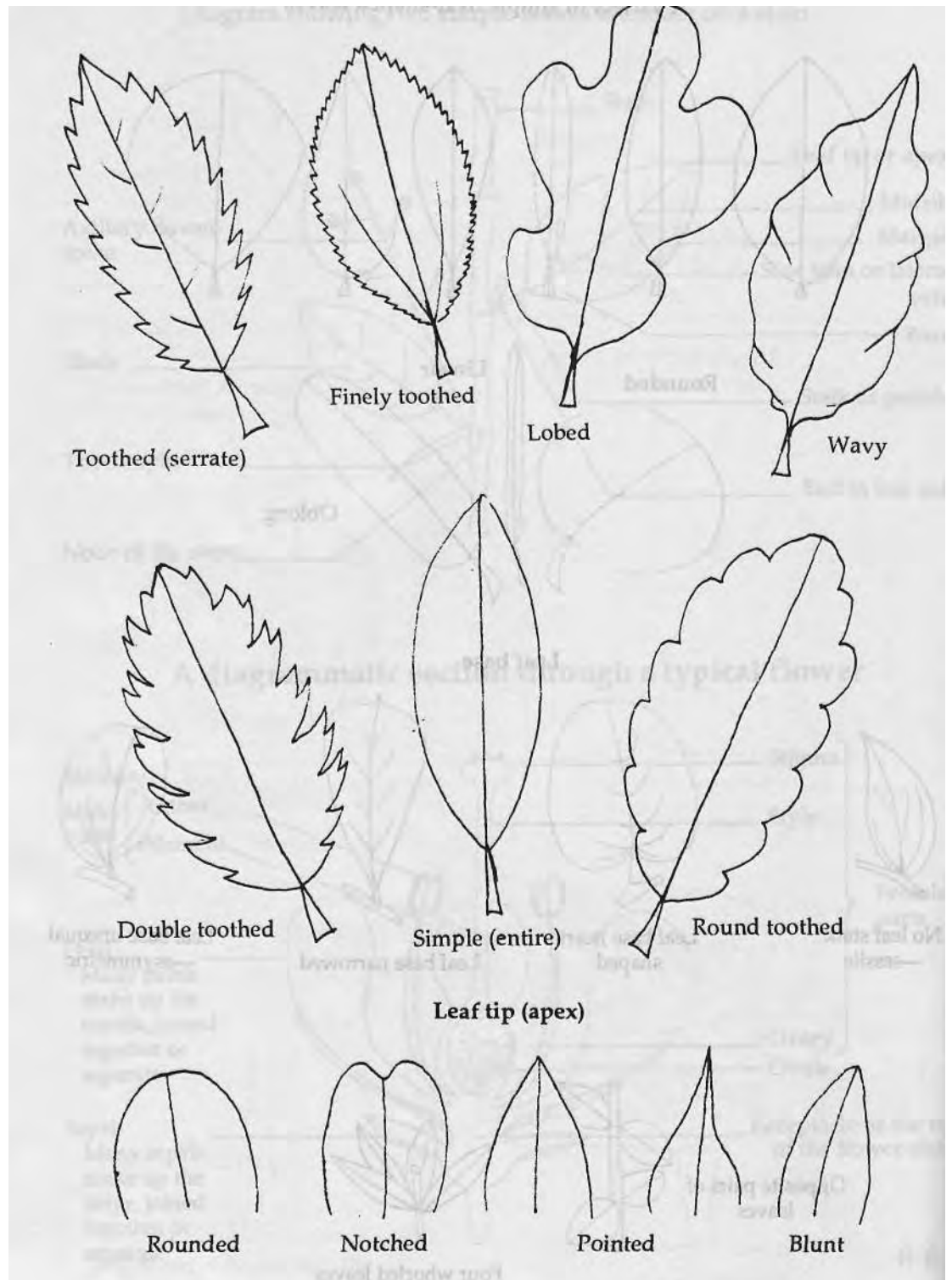


Leaves

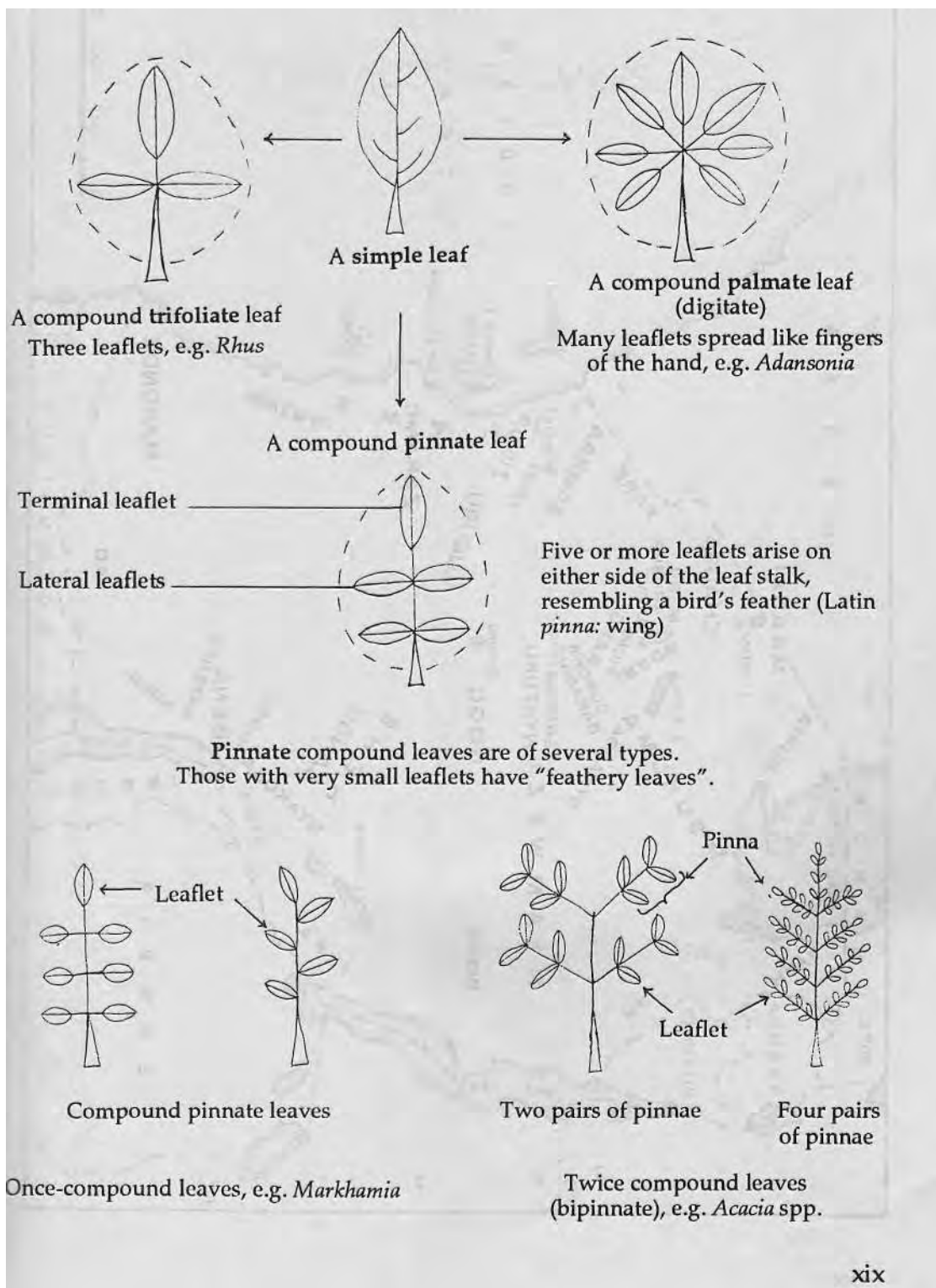
A variety of simple oval-shaped leaves

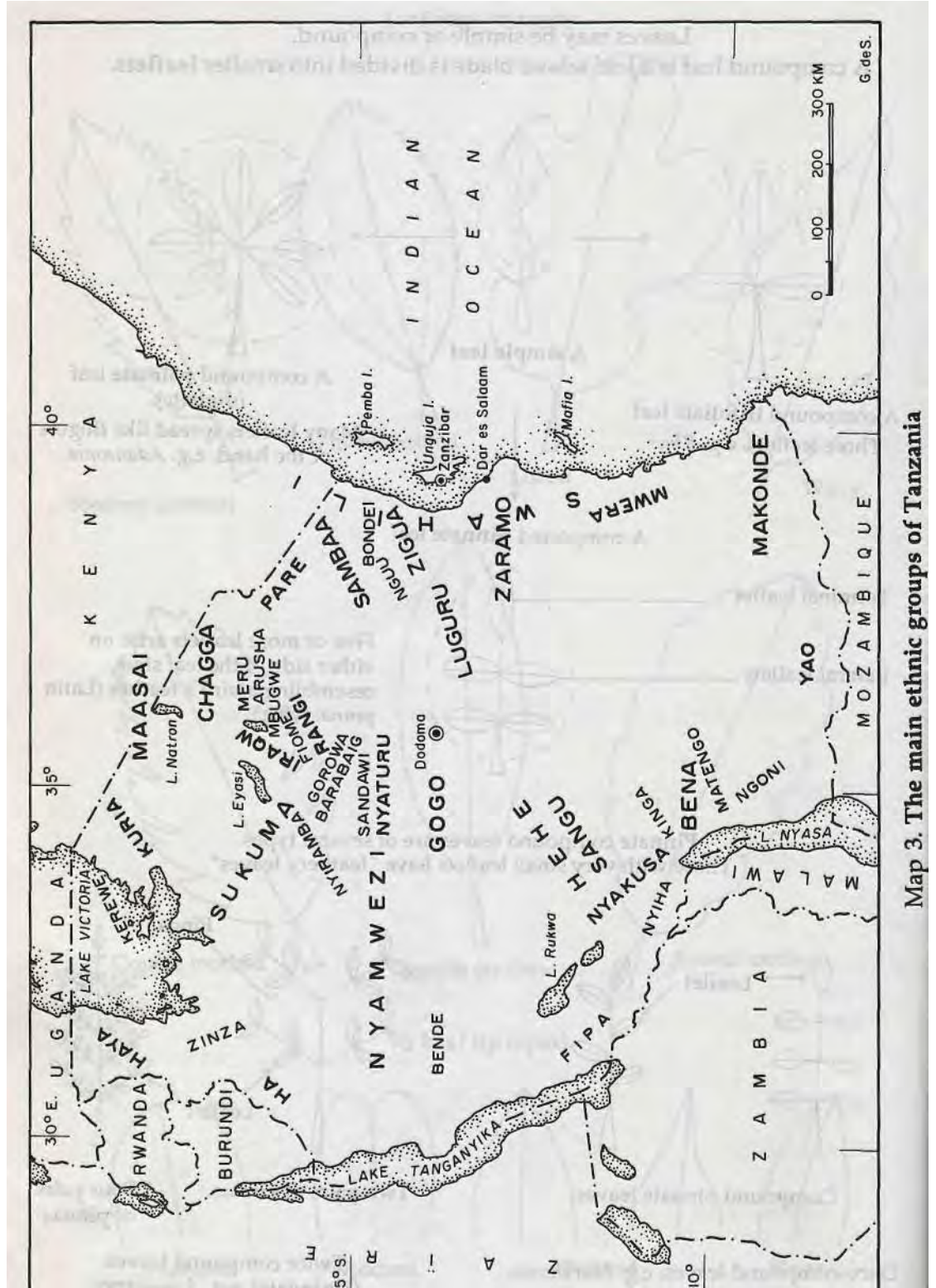


Leaf edge (margin)



Leaves may be simple or compound.
 A compound leaf is a leaf whose blade is divided into smaller **leaflets**.





Map 3. The main ethnic groups of Tanzania

PART I

VERNACULAR NAMES

ARUSHA

Alchani-lengai
 Asangupesi, ol sanguuwezi, sangupes
 Eiti
 Emotoo
 Endawasi
 Endundulu
 Engumi
 Eravande
 Iranguwe
 Lolyondo
 Loyabiyabi, olobiagi, ololyapiyapi
 Melelek, ormelelek
 Mesera
 01 darakwa, ol tarakwa
 Ol garian
 01 getinai
 Ol gujuk, olkonjuku
 Ol kijabe, lengijabe
 01 kiloriti, ol giloriti
 Ol matata
 01 moloi
 Ol mukuma, olmukuna
 Ol orien
 Olarashi
 Oldaoboi
 Oldepesi
 Oldimaroi, oljumaroi
 Olerai
 Olerai
 Olkoinye
 Olkunonoi
 Olmalungai
 Olmang'oi
 Olmaroroi
 Olmashinga
 Olmasi
 Olmisigiyoi
 Olmoirijoi
 Oloilahi
 Olowani
 Olpiripiri, olviriviri
 Olpiroo
 Olsanguwesi
 Oltyaneibor
 Oluisuki
 Orimigomi
 Oseki
 Osilalei
 Osojoo
 Sanzavi

Hagenia abyssinica
 Albizia gummifera
 Acacia mellifera
 Azanza garckeana
 Acacia hockii
 Dichrostachys cinerea
 Vangueria infausta
 Lannea schweinfurthii var. stuhlmannii
 Bersama abyssinica
 Olea capensis subsp. hochstetteri
 Croton macrostachyus
 Acacia lahai
 Adansonia digitata
 Juniperus procera
 Faurea saligna
 Dodonaea angustifolia
 Prunus africana
 Hagenia abyssinica
 Acacia nilotica
 Trema orientalis
 Arundinaria alpina
 Ekebergia capensis
 Olea europaea subsp. africana
 Calodendrum capense
 Kigelia africana
 Acacia tortilis
 Cussonia kirkii
 Acacia xanthophloea
 Acacia tortilis
 Euclea divinorum
 Ozoroa insignis
 Grewia villosa
 Sclerocarya birrea
 Combretum molle
 Caesalpinia decapetala
 Olea capensis subsp. hochstetteri
 Rhus natalensis
 Fagaropsis angolensis
 Ziziphus mucronata
 Erythrina abyssinica
 Podocarpus falcatus
 Phoenix reclinata
 Albizia schimperiana
 Calodendrum capense
 Zanthoxylum chalybeum
 Pappia capensis
 Cordia monoica
 Commiphora africana
 Euclea divinorum
 Acacia tortilis

USEFUL TREES AND SHRUBS FOR TANZANIA

BARABAIG (abbreviation Bara)

Babaxchet
 Barangu
 Besbesjan
 Ganyamda
 Harbanghed
 Hawi
 Honywam
 Itisi
 Laganehel
 Malharimog
 Manenei
 Marambit
 Masakta
 Millan
 Mtongoti
 Mtundarai, mtundurur
 Naamo
 Naganagachan
 Semit
 Wapkan
 Yudek

Vangueria infausta, *V. madagascariensis*
 Vangueria infausta, *V. madagascariensis*
 Bersama abyssinica
 Balanites aegyptiaca.
 Acacia xanthophloea
 Balanites aegyptiaca
 Acacia tortilis, *A. xanthophloea*
 Teclea nobilis
 Podocarpus latifolius, *P. usambarensis*
 Vangueria infausta, *V. madagascariensis*
 Erythrina abyssinica
 Fagaropsis angolensis
 Albizia gummifera
 Phoenix reclinata
 Ekebergia capensis
 Dichrostachys cinerea
 Commiphora africana
 Combretum molle
 Juniperus procera
 Zanthoxylum chalybeum
 Acacia Senegal

BENA

Livulugu
 Mfoono
 Mpingipingi
 Msasati

Croton macrostachyus
 Hagenia abyssinica
 Ximenia americana
 Vitex mombassae

BENDE

Bunkundu
 Kafunampasa
 Kagobole
 Kajibajiba
 Kasemele
 Kasiamongo
 Katindili
 Masaka
 Mbeko
 Mbula
 Mfila
 Mfumbe
 Mkibu
 Mkole
 Mkusu
 Mlama
 Mnsakansaka
 Mntwetwe
 Mpapa
 Msantu
 Msinde
 Msisi, mshishi
 Msubu, musubu

Strychnos innocua
 Dichrostachys cinerea
 Ziziphus mucronata
 Syzygium owariense
 Acacia hockii
 Syzygium owariense
 Dichrostachys cinerea
 Albizia versicolor
 Erythrina abyssinica
 Parinari curatellifolia
 Annona senegalensis
 Piliostigma thonningii
 Cordia africana
 Grewia bicolor
 Uapaca kirkiana
 Combretum molle
 Piliostigma thonningii
 Rauvolfia caffra
 Markhamia obtusifolia
 Ximenia americana
 Diospyros mespiliformis
 Tamarindus indica
 Dombeya rotundifolia

Bende (contd)

Msunga
Mtobo
Mtunduru
Mubundu
Siponda

BONDEI (Bond)

Lasi
Mbegu
Mgobe
Mkande
Mkwazu
Mlegea
Mnangu
Mtondoo
Mtonkwe
Mwiza
Myuyu
Sapu

CHAGGA (Chag)

Ichekechi
Ihanga
Iwuruka
Kidamo
Kinti
Lai, lalei, mbali, mlalai, mlandee
Lama
Man'goi
Manka
Marere, kiwale
Marie, mwaru
Masdi
Mbachanga, mpachama
Mbanyi

Mberegasa
Mboromo
Mborori, yaroro
Mchengo, mechengo
Mchiyo, mshio
Mdrawaka, mtarakwa, nderakwa
Mduka
Meresi
Mfu
Mfuare, mfyahi
Mfuka
Mfuranje
Mfuranje, mfuluanga
Mfurufuru, ifurufuru
Mfurukwe

Hacourtia indica
Azanza garckeana
Pseudolachnostylis maprouneifolia
Entada abyssinica
Commiphora africana

Oxytenanthera abyssinica
Leucaena leucocephala
Vitex doniana
Stereospermum kunthianum
Tamarindus indica
Kigelia africana
Grewia similis
Khaya anthotheca
Annona senegalensis
Bridelia micrantha.
Markhamia obtusifolia
Euphorbia tirucalli

Crotalaria grandibracteata
Hagenia abyssinica
Euclea divinorum
Dalbergia melanoxylon
Dalbergia melanoxylon
Croton megalocarpus
Ximenia americana
Acacia mearnsii
Carissa edulis
Arundinaria alpina
Bridelia micrantha
Syzygium guineense
Cordyla africana
Eucalyptus saligna, E. globulus, E.
camaldulensis
Osyris lanceolata
Albizia gummifera
Polyscias fulva
Trichilia emetica
Olea capensis subsp. hochstetteri
Juniperus procera
Albizia gummifera
Grevillea robusta
Fagaropsis angolensis
Ekebergia capensis
Faurea saligna
Albizia gummifera
Albizia schimperiana
Croton macrostachyus
Myrica salicifolia

USEFUL TREES AND SHRUBS FOR TANZANIA

Chagga (contd)

Mkadi, msindi, mkuare	<i>Diospyros mespiliformis</i>
Mkenye	<i>Euclea divinorum</i>
Mkonde-konde	<i>Prunur africana</i>
Mkongoni	<i>Trichilia emetica</i>
Mkufi	<i>Newtonia buchananii</i>
Mkuu	<i>Ficus thonningii</i>
Mlaagi, mlanga, mwalanga, mwanga	<i>Hagenia abyssinica</i>
Mlamuru	<i>Olea europaea</i> subsp. <i>africana</i>
Mlimang'ombe	<i>Teclea nobilis</i>
Mohoromo	<i>Balanites aegyptiaca</i>
Moisiranga	<i>Albizia gummifera</i>
Monde	<i>Bridelia micrantha</i>
Moosa	<i>Bersama abyssinica</i>
Moya	<i>Tamarindus indica</i>
Mpache	<i>Myrica saicifolia</i>
Mpisili mpisile	<i>Calodendrum capense</i>
Mpoke, mpuko	<i>Terminalia brownii</i>
Mranguwe	<i>Bersama abyssinica</i>
Mrie	<i>Milicia excelsa</i>
Mrimba	<i>Acacia tortilis</i>
Mringaringa	<i>Cordia africana</i>
Mringaringa porini	<i>Dombeya rotundifolia</i>
Mriri	<i>Erythrina abyssinica</i>
Mrisirisi	<i>Annona senegalensis</i>
Mroboki	<i>Ekebergia capensis</i>
Mroma	<i>Cordyla africana</i>
Mruka	<i>Albizia schimperiana</i>
Msambuchi	<i>Flacourtia indica</i>
Msawero	<i>Acacia tortilis</i>
Msenefu	<i>Olea europaea</i> subsp. <i>africana</i>
Mseneo	<i>Prunus africana</i>
Mseri	<i>Ocotea usambarensis</i>
Msesewe	<i>Rauvolfia caffra</i>
Mshinga	<i>Trema orientalis</i>
Msisi	<i>Ekebergia capensis</i>
Mtamioi	<i>Olea europaea</i> subsp. <i>africana</i>
Mtangawizi	<i>Eriobotrya japonica</i>
Mtarakwa	<i>Cupressus lusitanica</i>
Mtokosi, msosi, msoso, mtosi, mtongoso	<i>Podocarpus latifolius</i> , <i>P. usambarensis</i>
Mtomoko	<i>Annona senegalensis</i>
Mtua	<i>Fagaropsis angolensis</i>
Mudi	<i>Faurea saligna</i>
Mudi	<i>Olea capensis</i> subsp. <i>hochstetteri</i>
Mututu	<i>Trichilia emetica</i>
Muuri	<i>Prunus africana</i>
Muwong, mwawong	<i>Ocotea usambarensis</i>
Mvavavi	<i>Podocarpus falcatus</i>
Mwavai	<i>Trichilia emetica</i>
Mwera	<i>Acacia seyal</i>
Mwezi, mwesi	<i>Trema orientalis</i>
Myaki mwajaji	<i>Croton megalocarpus</i>
Nso	<i>Juniperus procera</i>

Chagga (contd)

Shitunda

ENGLISH (Eng)

African blackwood
 African breadfruit tree
 African ebony
 African fan palm
 African mahogany
 African sandalwood
 African star chestnut
 African teak
 African tulip tree
 Algarroba
 Aloe wood
 Apple-ring acacia
 Australian blackwood
 Avocado pear
 Baobab
 Bastard almond
 Bauhinia
 Beachwood
 Bead tree
 Bead tree
 Bean-pod tree
 Beefwood
 Bird plum
 Bitter albizia
 Black mulberry
 Black plum
 Black wattle
 Bloodwood
 Blue-leafed wattle
 Borassus palm
 Bottlebrush tree
 Brazilian rosewood
 Bridelia
 Broad-leaved croton
 Brown olive
 Buffalo thorn
 Burkea
 Cabbage tree
 Calliandra
 Camel's foot
 Camel's foot tree
 Camphor
 Cape chestnut
 Cape mahogany
 Caribbean pine
 Cashew nut
 Cassia.
 Castor-oil plant

Eriobotrya japonica

Dalbergia melanoxylon
Treculia africana
Diospyros mespiliformis
Borassus aethiopum
Khaya nyasica
Osyris lanceolata
Sterculia africana
Pterocarpus angolensis
Spathodea campanulata
Prosopis juliflora
Cordia sebestana
Acacia albida
Acacia melanoxylon
Persea americana
Adansonia digitata
Terminalia catappa
Bauhinia variegata
Faurea saligna
Adenantha pavonina
Melia azedarach
Brachystegia spiciformis
Casuarina cunninghamiana
Berchemia discolor
Albizia amara
Morus nigra
Vitex doniana
Acacia mearnsii
Pterocarpus angolensis
Acacia saligna
Borassus aethiopum
Callistemon citrinus var. *splendens*
Jacaranda mimosifolia
Bridelia micrantha
Croton macrostachyus
Olea europaea subsp. *africana*
Ziziphus mucronata
Burkea africana
Cussonia kirkii
Calliandra calothyrsus
Bauhinia variegata
Piliostigma thonningii
Ocotea usambarensis
Calodendrum capense
Trichilia emetica
Pinus caribaea
Anacardium occidentale
Senna spectabilis
Ricinus communis

USEFUL TREES AND SHRUBS FOR TANZANIA

English (contd)

Cherimola	<i>Annona cherimola</i>
Cherimoya	<i>Annona cherimola</i>
Chinaberry	<i>Melia azedarach</i>
Circassian seed	<i>Adenanthera pavonina</i>
Citron	<i>Citrus medica</i>
Coast wattle	<i>Acacia auriculiformis</i>
Common cypress pine	<i>Callitris robusta</i>
Common poison bush	<i>Acokanthera schimperi</i>
Common wild medlar	<i>Vangueria madagascariensis</i>
Corky bark	<i>Strychnos cocculoides</i>
Cow tamarind	<i>Albizia saman</i>
Crab's eyes	<i>Adenanthera pavonina</i>
Creek oak	<i>Casuarina cunninghamiana</i>
Crooked false medlar	<i>Vangueriopsis lanciflora</i>
Crotalaria	<i>Crotalaria grandibracteata</i>
Croton	<i>Croton megalocarpus</i>
Custard apple	<i>Annona squamosa</i>
Custard apple	<i>Annona cherimola</i>
Cypress	<i>Cupressus lusitanica</i>
Desert date	<i>Balanites aegyptiaca</i>
Diamond-leaved euclea	<i>Euclea divinorum</i>
Doum palm	<i>Hyphaene compressa</i>
Drumstick tree	<i>Moringa oleifera</i>
Duiker berry	<i>Pseudolachnostylis maprouneifolia</i>
Dull-leaved strychnos	<i>Strychnos innocua</i>
Dwarf poinciana	<i>Caesalpinia pulcherrima</i>
East African afrormosia	<i>Pericopsis angolensis</i>
East African camphor wood	<i>Ocotea usambarensis</i>
East African cordia	<i>Cordia africana</i>
East African greenheart	<i>Warburgia ugandensis</i>
East African olive	<i>Olea capensis</i> subsp. <i>hochstetteri</i>
East African pencil cedar	<i>Juniperus procera</i>
East African sandalwood	<i>Brachylaena huillensis</i>
East African yellow wood	<i>Podocarpus falcatus</i>
Egyptian plane tree	<i>Sterculia quinqueloba</i>
Egyptian thorn	<i>Acacia nilotica</i>
Ekebergia	<i>Ekebergia capensis</i>
Elephant orange	<i>Strychnos spinosa</i>
Elgon olive	<i>Olea capensis</i> subsp. <i>welwitschii</i>
Fagaropsis	<i>Fagaropsis angolensis</i>
Falcon's claw acacia	<i>Acacia polyacantha</i>
Fever tree	<i>Parinari curatellifolia</i>
Fever tree	<i>Acacia xanthophloea</i>
Finger euphorbia	<i>Euphorbia tirucalli</i>
Flamboyant	<i>Delonix regia</i>
Flame of the forest	<i>Spathodea campanulata</i>
Forest oak	<i>Casuarina junghuhniana</i>
Forest river gum	<i>Eucalyptus tereticornis</i>
Forest tree combretum	<i>Combretum schumannii</i>
Four-leaved combretum	<i>Combretum fragrans</i>
Geb	<i>Ziziphus mauritiana</i>
Geiger tree	<i>Cordia sebestana</i>

English (contd)	
Giant yellow mulberry	<i>Myrianthus holstii</i>
Glossy flat-bean	<i>Dalbergia nitidula</i>
Gmelina	<i>Gmelina arborea</i>
Golden bean tree	<i>Markhamia obtusifolia</i>
Golden-wreath wattle	<i>Acacia saligna</i>
Grapefruit	<i>Citrus paradisi</i>
Grevillea	<i>Grevillea robusta</i>
Grey-leaved cordia	<i>Cordia sinensis</i>
Grey-leaved saucer berry	<i>Cordia sinensis</i>
Guava	<i>Psidium guajava</i>
Gum copal tree	<i>Hymenaea verrucosa</i>
Hagenia	<i>Hagenia abyssinica</i>
Hakea.	<i>Hakea saligna</i>
Henna	<i>Lawsonia inermis</i>
Hopbush	<i>Dodonaea angustifolia</i>
Horn-cap eucalyptus	<i>Eucalyptus tereticornis</i>
Horse-raddish tree	<i>Moringa oleifera</i>
Horsetail tree	<i>Casuarina equisetifolia</i>
Indian almond	<i>Terminalia catappa</i>
Indian ash	<i>Acrocarpus fraxinifolius</i>
Indian jujube	<i>Ziziphus mauritiana</i>
Indian mulberry	<i>Morus indica</i>
Iroko	<i>Milicia excelsa</i>
Iron wood	<i>Senna siamea</i>
Jacaranda	<i>Jacaranda mimosifolia</i>
Jackfruit	<i>Artocarpus heterophyllus</i>
jambolan	<i>Syzygium cuminii</i>
Java plum	<i>Syzygium cuminii</i>
Jerusalem thorn	<i>Parkinsonia aculeata</i>
Julbernardia	<i>Julbernardia globiflora</i>
Kei apple	<i>Dovyalis caffra</i>
Kesiya pine	<i>Pinus kesiya</i>
Khat	<i>Catha edulis</i>
Kkapok tree	<i>Ceiba pentandra</i>
Knobwood	<i>Zanthoxylum chalybeum</i>
Large sourplum	<i>Ximenia caffra</i>
Large-leaved brachystegia	<i>Brachystegia bussei</i>
Large-leaved star chestnut	<i>Sterculia quinqueloba</i>
Large-leaved sterculia	<i>Sterculia quinqueloba</i>
Lemon	<i>Citrus limon</i>
Lemon gum	<i>Eucalyptus citriodora</i>
Lilac tree	<i>Lonchocarpus capassa</i>
lime	<i>Citrus aurantifolia</i>
Loliondo	<i>Olea capensis</i> subsp. <i>welwitschii</i>
Long-leaved dragon tree	<i>Dracaena usambarensis</i>
long-pod cassia	<i>Cassia abbreviata</i> subsp. <i>abbreviata</i>
Long-podded albizia	<i>Albizia schimperiana</i>
Loquat	<i>Eriobotrya japonica</i>
Lowland bamboo	<i>Oxytenanthera abyssinica</i>
Lucky nut	<i>Thevetia peruviana</i>
Lucky-bean tree	<i>Azelia quanzensis</i>

USEFUL TREES AND SHRUBS FOR TANZANIA

English (contd)	
Macadamia nut	<i>Macadamia tetraphylla</i>
Madras thorn	<i>Pithecellobium duke</i>
Maerua	<i>Maerua triphylla</i>
Mahogany bean	<i>Azalia quanzensis</i>
Mango	<i>Mangifera indica</i>
Manila tamarind	<i>Pithecellobium duke</i>
Margosa tree	<i>Azadirachta indica</i>
Mauritius thorn	<i>Caesalpinia decapetala</i>
Meru oak	<i>Vitex keniensis</i>
Mesquite	<i>Prosopis chilensis, P. juliflora</i>
Mexican ash	<i>Fraxinus pennsylvanica</i>
Mexican cypress	<i>Cupressus lusitanica</i>
Mexican lilac	<i>Gliricidia sepium</i>
Mexican weeping pine	<i>Pinus patula</i>
Milk berry	<i>Manilkara mochisia</i>
Millettia	<i>Millettia dura</i>
Miraa	<i>Catha edulis</i>
Monkey orange	<i>Strychnos cocculoides</i>
Monkey pod	<i>Albizia saman</i>
Moreton Bay cypress pine	<i>Callitris robusta</i>
Mother of cocoa	<i>Gliricidia sepium</i>
Mountain bamboo	<i>Arundinaria alpina</i>
Mulberry	<i>Moras alba</i>
Murray red gum	<i>Eucalyptus camaldulensis</i>
Mvule	<i>Milicia excelsa</i>
Mysore thorn	<i>Caesalpinia decapetala</i>
Naivasha thorn	<i>Acacia xanthophloea</i>
Nandi flame	<i>Spathodea campanulata</i>
Neem tree	<i>Azadirachta indica</i>
Newtonia	<i>Newtonia buchananii</i>
Orchid tree	<i>Bauhinia variegata</i>
Papaya	<i>Carica papaya</i>
Pappea	<i>Pappea capensis</i>
Parasol tree	<i>Polyscias fulva</i>
Patula pine	<i>Pinus patula</i>
Pawpaw	<i>Carica papaya</i>
Peach	<i>Prunus persica</i>
Peacock flower	<i>Albizia gummifera</i>
Peacock flower	<i>Caesalpinia pukherrima</i>
Pepper tree	<i>Schinus molle</i>
Persian lilac	<i>Melia azedarach</i>
Peruvian mastic	<i>Schinus molle</i>
Pigeon pea	<i>Cajanus cajan</i>
Pigeon wood	<i>Trema orientalis</i>
Pine	<i>Pinus oocarpa</i>
Pink cedar	<i>Acrocarpus fraxinifolius</i>
Pitch pine	<i>Pinus caribaea</i>
Pod mahogany	<i>Azalia quanzensis</i>
Podo	<i>Podocarpus falcatus, P. latifolius, usambarensis</i>
Poison-arrow tree	<i>Acokanthera schimperi</i>
Poison-grub commiphora	<i>Commiphora africana</i>

English (contd)

Poison-pod albizia	<i>Albizia versicolor</i>
Port Jackson willow	<i>Acacia saligna</i>
Pride of Barbados	<i>Caesalpinia pulcherrima</i>
Pride of Bolivia	<i>Tipuana tipu</i>
Purplewood dalbergia	<i>Dalbergia nitidula</i>
Quick stick	<i>Gliricidia sepium</i>
Quinine tree	<i>Rauvolfia caffra</i>
Rain tree	<i>Lonchocarpus capassa</i>
Rain tree	<i>Albizia saman</i>
Red mahogany	<i>Khaya nyasica</i>
Red River gum	<i>Eucalyptus camaldulensis</i>
Red sandalwood	<i>Adenanthera pavonina</i>
Red stinkwood	<i>Prunus africana</i>
Red thorn	<i>Acacia lahai</i>
Red-hot-poker tree	<i>Erythrina abyssinica</i>
River bean	<i>Sesbania sesban</i>
River oak	<i>Casuarina cunninghamiana</i>
Saman tree	<i>Albizia saman</i>
Sandpaper cordia	<i>Cordia monoica</i>
Sausage tree	<i>Kigelia africana</i>
Scarlet cordia	<i>Cordia sebestana</i>
Scented-pod acacia	<i>Acacia nilotica</i>
Sea pine	<i>Casuarina equisetifolia</i>
Sesbania	<i>Sesbania sesban</i>
She oak	<i>Casuarina junghuhniana</i>
Shingle tree	<i>Acrocarpus fraxinifolius</i>
Silky oak	<i>Grevillea robusta</i>
Silver oak	<i>Brachylaena huillensis</i>
Silver terminalia	<i>Terminalia sericea</i>
Simple-spined carissa	<i>Carissa edulis</i>
Sisal	<i>Agave sisalana</i>
Sissop	<i>Dalbergia sissoo</i>
Slash pine	<i>Pinus caribaea</i>
Small bead bean	<i>Maerua triphylla</i>
Smelly berry vitex	<i>Vitex mombassae</i>
Snake bean tree	<i>Swartzia madagascariensis</i>
Sneezewood	<i>Ptaeroxylon obliquum</i>
Snot apple	<i>Azanza garckeana</i>
Soursop	<i>Annona muricata</i>
Spiny monkey ball	<i>Strychnos spinosa</i>
Spiny terminalia	<i>Terminalia spinosa</i>
Spotted gum	<i>Eucalyptus citriodora</i>
Spreading-leaved pine	<i>Pinus patula</i>
Strangler fig	<i>Ficus thonningii</i>
Sudan gum arabic	<i>Acacia Senegal</i>
Sugar apple	<i>Annona squamosa</i>
Swamp she oak	<i>Casuarina equisetifolia</i>
Sweet orange	<i>Citrus sinensis</i>
Sweetsop	<i>Annona squamosa</i>
Sycamore fig	<i>Ficus sycomorus</i>
Sydney blue gum	<i>Eucalyptus saligna</i>

USEFUL TREES AND SHRUBS FOR TANZANIA

English (contd)

Tall sterculia	<i>Sterculia appendiculata</i>
Tamarind	<i>Tamarindus indica</i>
Tan wattle	<i>Acacia mearnsii</i>
Tangerine	<i>Citrus reticulata</i>
Tasmanian blue gum	<i>Eucalyptus globulus</i>
Teak	<i>Tectona grandis</i>
Tecote pine	<i>Finus patula</i>
Three-thorned acacia	<i>Acacia Senegal</i>
Tick tree	<i>Sterculia africana</i>
Tipu tree	<i>Tipuana tipu</i>
Toothbrush tree	<i>Salvadora persica</i>
Tree cassava	<i>Manihot glaziovii</i>
Tree entada	<i>Entada abyssinica</i>
Tree of iron	<i>Gliricidia sepium</i>
Tree tomato	<i>Gyphomandra betacea</i>
Tropical almond	<i>Terminalia catappa</i>
Tropical resin tree	<i>Ozoroa insignis</i>
Umbrella thorn	<i>Acacia tortilis</i>
Velvet bush willow	<i>Combretum molle</i>
Velvet indigo tree	<i>Indigofera swaziensis</i>
Velvet-leaved combretum	<i>Combretum molle</i>
Violet tree	<i>Securidaca longipedunculata</i>
Water berry	<i>Syzygium guineense, S. owariense</i>
Water-berry tree	<i>Syzygium cordatum</i>
Weeping bottlebrush	<i>Callistemon citrinus var. splendens</i>
Weeping wattle	<i>Acacia saligna</i>
Whistling pine	<i>Casuarina equisetifolia</i>
White bauhinia	<i>Bauhinia petersiana</i>
White dombeya	<i>Dombeya rotundifolia</i>
White mulberry	<i>Morus alba</i>
White teak	<i>Gmelina arborea</i>
White thorn	<i>Acacia seyal</i>
White thorn	<i>Acacia polyacantha</i>
Wild almond	<i>Berchemia discolor</i>
Wild bamboo	<i>Oxytenanthera abyssinica</i>
Wild custard apple	<i>Annona senegalensis</i>
Wild date palm	<i>Phoenix reclinata</i>
Wild jackfruit	<i>Treculia africana</i>
Wild kapok	<i>Bombax rhodognaphalon var. tomentosum</i>
Wild loquat	<i>Uapaca kirkiana</i>
Wild mango	<i>Cordyla africana</i>
Wild medlar	<i>Vangueria infausta</i>
Wild olive	<i>Olea europaea subsp. africana</i>
Wild plum	<i>Ximenia americana</i>
Wild syringa	<i>Burkea africana</i>
Willow-leaved boschia	<i>Boscia salicifolia</i>
Wine bamboo	<i>Oxytenanthera abyssinica</i>
Winged bersama	<i>Bersama abyssinica</i>
Winter thorn	<i>Acacia albida</i>
Yeheb nut	<i>Cordeauxia edulis</i>
Yellow cassia	<i>Senna siamea</i>
Yellow oleander	<i>Thevetia peruviana</i>

English (contd)
Zanzibar bark

FIOME

Amafughun
Banghalmo-lambi
Berima
Bukuumo
Fuguma
Furudau
Galapi
Gendamo
Gwaami
Kakwol
Kuyu
Liasi-lianzovu
Lomo
Mjirya
Morungi
Sahati
Sahhati
Sori
Tiita

FIPA

Asaninga
Kaselenge
Kasunjulu
Kikonda
Kivuzi
Masaka
Mawowo
Mchese
Mchinka, nikiinka
Mfila
Mfulanyelele
Mfulu, mufita
Miombwi
Mkungulanga
Mlalambo, mulambo
Mlangali
Mluka, muuruka
Mnembura
Mng'ongo
Mnyumaji
Mpangala
Mpelemusi
Msanda
Msangula
Msega
Msense

Lawsonia inermis

Strychnos spinosa
Cordia sinensis
Dodonaea angustifolia
Terminalia brownii
Acacia seyal
Securidaca longipedunculata
Piliostigma thonningii
Combretum molle
Prunus africana
Albizia amara
Ficus sycomorus
Cussonia kirkii
Grewia villosa
Balanites aegyptiaca
Zanthoxylum chalybeum
Albizia gummifera
Olea europaea var. africana
Albizia gummifera
Ficus thonningii

Pterocarpus angolensis
Acacia hockii
Dichrostachys cinerea
Swartzia madagascariensis
Ficus sycomorus
Albizia versicolor
Cussonia kirkii
Acacia albida
Vitex doniana, V. mombassae
Prunus africana
Podocarpus latifolius
Vitex doniana, V. mombassae
Acacia polyacantha
Sterculia quinqueloba
Syzygium guineense
Bridelia micrantha
Securidaca longipedunculata
Ximenia americana
Ekeberiga capensis
Polyscias fulva
Dichrostachys cinerea
Sterculia quingueloba
Vangueria infausta
Rhus natalensis
Faurea saligna
Acacia hockii

USEFUL TREES AND SHRUBS FOR TANZANIA

Fipa (contd)

Msima	<i>Julbernardia globiflora</i>
Msindambogo	<i>Piliostigma thonningii</i>
Msu	<i>Syzygium Cordatum</i>
Msuuku	<i>Carissa edulis</i>
Mtanga	<i>Albizia gummifera</i>
Mtanga	<i>Newtonia buchananii</i>
Mtembo	<i>Khaya anthoiheca</i>
Mtiti	<i>Erylhrina abyssinica</i>
Mtonga	<i>Strychnos spinosa</i>
Munyamaji	<i>Bridelia micrantha</i>
Mwanga	<i>Flacourtia indica</i>
Mwikalatulo	<i>Pappea capensis</i>
Mwula	<i>Parinari curatellifolia</i>
Mwunza	<i>Pappea capensis</i>
Mzombo	<i>Brachystegia spiciformis</i>
Mzululwa	<i>Croton macrostachyus</i>
Mzwite	<i>Dodonaea angustifolia</i>
Nakifumbe, mfumbe	<i>Piliostigma thonningii</i>
Namatata	<i>Polyscias fulva</i>
Nkana	<i>Maerua triphylla</i>
Nzungwa	<i>Kigelia africana</i>
Popwe	<i>Zanthoxylum chalybeum</i>
Sasi	<i>Olea capensis</i> subsp. <i>hochstetteri</i>
Takana	<i>Catha edulis</i>
Yunga	<i>Syzygium owariensis</i>

GOGO

Gogo (contd)	
Manyala	<i>Euphorbia tirucalli</i>
Mbilimisi	<i>Erythrina abyssinica</i>
Mbwejele	<i>Sclerocarya birrea</i> subsp. <i>caffra</i>
Mchenje	<i>Albizia schimperiana</i>
Mdawi	<i>Cordia sinensis</i>
Mdawi msena, msenha	<i>Cordia monoica</i>
Mdawisogwe	<i>Cordia sinensis</i>
Mdejedeje	<i>Acacia seyal</i>
Mdoladole	<i>Acacia albida</i>
Mduguyu	<i>Balanites aegyptiaca</i>
Mfuku	<i>Acacia nilotica</i>
Mfulu	<i>Vitex doniana</i>
Mgandu	<i>Berchemia discolor</i>
Mgombogombo	<i>Commiphora eminii</i> subsp. <i>zimmermai</i>
Mgonandele	<i>Acacia albida</i>
Mguji	<i>Julbernardia globiflora</i>
Mguji	<i>Brachystegia spiciformis</i>
Mguoguo	<i>Markhamia obtusifolia</i>
Mjiha	<i>Dalbergia nitidula</i>
Mkakatika	<i>Cassia abbreviata</i>
Mkambale mvugala	<i>Acacia mellifera</i>
Mkengemaji	<i>Albizia schimperiana</i>
Mkola	<i>Azafia quanzensis</i>
Mkole	<i>Grewia bicolor</i>

Gogo (contd)

Mkongo
 Mkonze
 Mkunghuni
 Mkungugu
 Mkuyu
 Mkwata
 Mlaka
 Mluma
 Mlumba
 Mluze
 Mnomko
 Mnyagwe, mnyangwe-mwaha
 Mnyemba
 Mpaapala
 Mpagata
 Mpela
 Msani
 Msinjisa mudo
 Msomvugo
 Mtati
 Mtori
 Mtoyo
 Mtumba
 Mtundulu
 Mtundwe
 Muanga
 Muhogolo
 Muhuu, muhulo
 Mujehe
 Mulimuli
 Munhulwa
 Munyala
 Muwindi
 Muwumbu
 Mvumba
 Mvumvu
 Mwaliganza
 Mwimachigulu
 Mwimachigulu
 Mzabo
 Mzasa
 Nyembe mwitu

Rauvolfia caffra
Manilkara mochisia
Salvadora persica
Acacia tortilis
Ficus sycomorus
Cordyla africana
Acacia seyal
Acacia albida
Ficus thonningii
Sterculia africana
Acacia seyal
Ziziphus mucronata
Ricinus communis
Lonchocarpus capassa
Pterocarpus angolensis
Adansonia digitata
Brachystegia bussei
Maerua triphylla
Commiphora africana
Dombeya rotundifolia
Pappea capensis
Azanza garckeana
Boscia salicifolia
Dichrostachys cinerea
Ximenia americana
Pappea capensis
Albizia amara
Syzygium cordatum, S. guineense
Acacia albida
Cassia abbreviata
Strychnos innocua
Euphorbia tirucalli
Acacia polyacantha
Lannea schweinfurthii var. stuhlmannii
Ekebergia capensis
Cadaba farinosa
Acacia tortilis
Cadaba farinosa
Maerua triphylla
Brachystegia spiciformis
Acacia Senegal
Trichilia emetica

GOROWA (Goro)

Aaray
 Aere-desu
 Amafughuni
 Bagharimo
 Berimi
 Burthi
 Dai

Acacia xanthophloea
Entada abyssinica
Acacia polyacantha
Cordia monoica
Dodonaea angustifolia
Ozoroa insignis
Arundinaria alpina

USEFUL TREES AND SHRUBS FOR TANZANIA

Gorowa (contd)

Dakaumo

Dati

Ditsomi, fitsimo

Ferudou

Fitsimo

Fughumo

Galapi

Getakhubay

Gewawu

Ghal-landi

Gulgurchandi

Gwaata-aati

Hanarmo

Hawi

Hlahumo

Intsanti

Lomo

Mandawiri

Meali

Meali

Moi

Moitsoi, tsori

Morungi

Mototi

Msaki, msagi

Mulughwai

Nafumo

Nari

Niimo

Orrolmo

Qoly

Sagonai

Saski

Sei

Sinyanyi

Tarantu

Thogi

Tlaghay

Tsantsafi

Tsapenai

Wahawi

HA

Mbogonte

Mheru

Mkola

Mninga

Mshasha

Msivia

Mtandaruka

Mtenza, tntoma mtenza

Muguruka

Adansonia digitata

Kigelia africana

Acacia hockii

Strychnos innocua

Acacia polyacantha

Acacia seyal

Piliostigma thonningii

Pappea capensis

Dichrostachys cinerea

Ziziphus mucronata

Sclerocarya birrea subsp. *caffra*

Dombeya rotundifolia

Cordia sinensis

Balanites aegyptiaca

Commiphora emirdi subsp. *zimmermannii*

Phoenix reclinata

Grewia bicolor

Commiphora eminii subsp. *zimmermannii*

Croton macrostachyus

Croton megalocarpus

Albizia versicolor

Albizia amara

Zanthoxylum chalybeum

Combretum molle

Salvadora persica

Euphorbia tirucalli

Brachystegia spiciformis

Acacia xanthophloea

Commiphora africana

Vitex doniana

Crotalaria grandibracteata

Warburgia ugandensis

Grewia similis

Cordia africana

Euclea divinorum

Ximenia americana

Azanza garckeana

Azanza garckeana

Acacia tortilis

Flacourtia indica

Catha edulis

Syzygium guineense

Maesopsis eminii

Markhamia obtusifolia

Pterocarpus angolensis

Ficus thonningi

Syzygium cordatum

Trichilia emetica

Ficus thonningi

Spathodea campanulata

Ha (contd)

Munyam-wonyu

Myofu

Ficus thonningi

Khaya anthotheca

HAYA

Entare yeirungo

Kihondogoro

Lushanaku

Makindu

Mbondo

Mchwezi

Mkomakoma

Mkubange

Mkuku omugu

Mkunya

Mlinzi

Morongo, mulongo, omulongo

Moyonzaki

Msagara

Msambia, msambya

Mshafa

Mshumako, mshamako

Msisimu, mziziru

Mtindambogo

Mufaria

Mugege

MuhibJ

Muhiya

Muhumula

Muhva

Mukuwe

Mulama

Mulamula

Munanzi

Munyereza nguge

Murunda

Musambia

Musikizi

Musimbi

Mutendere

Mutoto

Muyanza, muyonza

Muyungula

Muzuli, mwuli

Myenzeyenze

Mzengute, mzungute

Omuhuwe, muuwe

Omusheshe

Omuzo

Umubanga

Zanthoxylum chalybeum

Gussonia kirkii

Syzygium cuminii

Phoenix reclinata

Sesbania sesban

Syzygium guineense

Grewia bicolor

Cadaba farinosa

Acacia polyacantha

Manilkara mochisia, *M. sansibarensis*

Erythrina abyssinica

Millettia dura

Carissa edulis

Rhus natalensis

Markhamia lutea

Millettia dura

Bridelia micrantha

Podocarpus usambarensis

Piliostigma thonningii

Polyscias fulva

Syzygium cordatum

Croton megapocarpus

Warburgia salutaris

Maesopsis eminii

Ozoroa insignis

Bridelia micrantha

Combretum molle

Dracaena usambarensis

Parinari curatellifolia

Stereospermum kunthianum

Acacia albida

Markhamia lutea

Euclea divinorum

Ekebergia capensis

Dracaena usambarensis

Pseudolachnostylis maprouneifolia

Carissa edulis

Bersama abyssinica

Milicia excelsa

Albizia gummifera

Kigelia africana

Trema orientalis

Rhus natalensis

Teclea nobilis

Pericopsis angolensis

USEFUL TREES AND SHRUBS FOR

HEHE

Kipegero
 Kitindi
 Limulimuli, mulimuli
 Luhahi, lunyahi
 Lungutiwa
 Mbasamono
 Mdaita
 Mdaita
 Mdeke
 Mdobole
 Mfudululenga
 Mfutsa
 Mgiwe
 Mgola
 Mguhu, mkusu
 Mguonguo
 Mguvani
 Mhagati, muhagati
 Mhakwe
 Mhango, muhangu
 Mhekele
 Mhenyi
 Mhimbachigulu
 Mhungulu
 Mkatowato
 Mkarati
 Mkelenafifi
 Mkole
 Mkomba
 Mkomba
 Mkondo
 Mkunguni
 Mkwe
 Mkwelangedege
 Mlwati
 Mnyang'anya
 Mnyatoma
 Mnyemba
 Mnywewa
 Mpelemehe
 Mpeme
 Mpinati
 Mpipete
 Mpogolo
 Mpugusi
 Mputsa
 Msambalawe
 Msambalawe-lulenga
 Msangala
 Msasati
 Msawula
 Msisi

Maerua tripylla
 Oxytenanthera abyssinica
 Cassia abbreviata
 Dodonaea angustifolia
 Ormocarpum trachycarpum
 Bersama abyssinica
 Myrica salicifolia
 Myrica salicifolia
 Polyscias fulva
 Hagenia abyssinica
 Vitex mombassae
 Myrianthus holstii
 Olea europaea subsp. africana
 Flacourtia indica
 Uapaca kirkiana
 Markhamia obtusifolia
 Markhamia obtusifolia
 Olea europaea subsp. africana
 Bauhinia petersiana
 Acacia tortilis
 Euclea divinorum
 Faurea saligna
 Euclea divinorum
 Pappia capensis
 Dombeya rotundifolia
 Burkea africana
 Stereospermum kunthianum
 Grewia bicolor
 Bauhinia petersiana
 Bauhinia petersiana
 Adansonia digitata
 Combretum fragrans
 Brachystegia spiciformis
 Sterculia quinqueloba
 Dombeya rotundifolia
 Acacia hockii
 Bersama abyssinica
 Ricinus communis
 Strychnos cocculoides
 Grewia similis
 Bersama abyssinica
 Julbernardia globiflora
 Garcinia livingstonei
 Acacia albida
 Milicia excelsa
 Teclea nobilis
 Vangueria infausta
 Vangueriopsis lanciflora
 Burkea africana
 Vitex mombassae
 Parinari curatellifolia
 Tamarindus indica

Hehe (contd)

Msukanzi
 Msungu
 Mtandagas
 Mtanula
 Mtelela
 Mtimbwi
 Mtogoto
 Mtopotopo
 Mtowo
 Mtunumbi
 Mubaya
 Mugelagela
 Muheti
 Muhugu, muvulugu
 Muhulo
 Mulansi
 Mulanzi
 Muvembanyigo
 Muvengi
 Muveriveri
 Mvamvalavidunda, muvambalafidunda
 Mwatatsi
 Mwefi
 Mwemba
 Mwesa
 Mwiluti

Acacia polyacantha
Acokanthera schimperi
Strychnos spinosa
Ziziphus mauritiana
Brachstegia bussei
Ormocarpum trachycarpum
Vernonia myriantha
Acacia polyacantha
Azanza garckeana
Rhus natalensis
Acacia seyal
Entada abyssinica
Ocotea usambarensis
Croton macrostachyus
Catha edulis
Arundinaria alpina
Oxytenanthera abyssinica
Podocarpus latifolius, *P. usambarensis*
Syzygium cordatum, *S. guineense*
Rauvolfia caffra
Osyris lanceolata
Teclea nobilis
Myrica salicifolia
Faurea saligna
Bridelia micratha
Prunus africana

IRAQW

Aari
 Amafa-aa
 Amafughuni
 Amu
 Angal
 Bagalmo, bagarumo
 Bagharimo
 Bakchandi
 Bardiget
 Behetoh
 Berima, bermi
 Dar
 Datei
 Dukmo
 Fistoo
 Funidang
 Furudou
 Furufinyanyi
 Garumo
 Gendai, gendaumo
 Gendaryandi
 Gharengi
 Girwangw

Acacia xanthophloea
Parinari curatellifolia
Acacia polyacantha
Grewia villosa
Erythrina abyssinica
Cordia monoica
Cordia sinensis
Commiphora eminii subsp. *zimmermannii*
Maerua triphylla
Faurea saligna
Dodonaea angustifolia, *D. viscosa*
Arundinaria alpina
Rhus natalensis
Podocarpus falcatus, *P. latifolius*
Acacia tortilis
Cordia sinensis
Grewia similis
Euclea divinorum
Fagaropsis angolensis
Combretum molle
Adansonia digitata
Caesalpinia decapetala
Dichrostachys cinerea

USEFUL TREES AND SHRUBS FOR TANZANIA

Iraqw (contd)	<i>Sclerocarya birrea</i> subsp. <i>caffra</i>
Gulgurchandi	<i>Dombeya rotundifolia</i>
Gwaadati, gwaatati	<i>Prunus africana</i>
Gwame, gwaami	<i>Cordia sinensis</i>
Hararmo	<i>Acacia tortilis</i>
Harbagheid	<i>Balanites aegyptiaca</i>
Hawi	<i>Julbernardia globiflora</i>
Hewasi	<i>Olea europaea</i> var. <i>africana</i>
Hlanmo	<i>Balanites aegyptiaca</i>
Hotlimo	<i>Bridelia micrantha</i>
Intsalmo	<i>Syzygium guineense</i>
Irgatu	<i>Acacia nilotica</i>
Kantzi	<i>Acacia seyal</i>
Karbu	<i>Grewia bicolor</i>
Lagaang-aawak	<i>Catha edulis</i>
Lagmeri	<i>Teclea nobilis</i>
Liliisi	<i>Kigelia africana</i>
Mangafi	<i>Euphorbia tirucalli</i>
Manyari	<i>Syzygium guineense</i>
Matlarmo	<i>Grewia similis</i>
Mgombaryandi	<i>Euclea divinorum</i>
Minighit	<i>Albizia versicolor</i>
Moi	<i>Rhus natalensis</i>
Mstunga	<i>Salvadora persica</i>
Mswaki	<i>Fagaropsis angolensis</i>
Mtongoti	<i>Ekebergia capensis</i>
Mtongoti taeewi	<i>Ximenia americana</i>
Mutuhu	<i>Acacia xanthophloea</i>
Narmo	<i>Acacia hockii</i>
Narmo-aawak	<i>Commiphora africana</i>
Niimo	<i>Podocarpus falcatus</i> , <i>P. latifolius</i> ,
Noki, nuki	<i>usambarensis</i>
Orokutuno	<i>Syzygium cordatum</i>
Qanguzi	<i>Erythrina abyssinica</i>
Qoli	<i>Crotalaria grandibracteata</i>
Quach	<i>Carissa edulis</i>
Sagonai	<i>Warbugia salutaris</i>
Sahati	<i>Olea capensis</i>
Sahati	<i>Olea europaea</i> var. <i>africana</i>
Sansuli	<i>Dracaena usambarensis</i>
Santisafi	<i>Acacia tortilis</i>
Sarai	<i>Albizia gummifera</i>
Saski	<i>Grewia similis</i>
Sei	<i>Cordia africana</i>
Sirongi	<i>Rhus natalensis</i>
Slarakahe	<i>Trema orientalis</i>
Sokhaimo	<i>Flacourtia indica</i>
Taeewi	<i>Ekebergia capensis</i>
Taeewi	<i>Fagaropsis angolensis</i>
Tahhamanto	<i>Ximenia americana</i>
Tambaragi	<i>Lannea schweinfurthii</i> var. <i>stuhlmann</i>
Tarantu	<i>Ximenia americana</i>

Lraqw (contd)

Thiaanthi
Thigii
Titiyo
Tumatiimo
Waamisi
Wahari
Walfi
Yudek
Ziloi

Phoenix reclinata
Lansea schweinfurthii var. stuhlmannii
Carissa edulis
Calodendrum capense
Bersama abyssinica
Teclea nobilis
Catha edulis
Acacia mellifera, A. Senegal
Croton megalocarpus

KEREWE (Kere)

Ilula
Issassa
 Mgondogondo
Mkangaonza, mkangayonza
 Mlenzi
 Msambi
Msira, musira
Mufitanda
 Muhasi
Mukoronto
Murendembezwa
Musheshe
 Muzuzume
Mwitamunyu
 Omuhohwe

Acacia seyal
Syzygium guineense
Ekebergia capensis
Carissa edulis
Erythrina abyssinica
Markhamia lutea
Maesopsis eminii
Vangueria infausta
Parinari curatellifolia
Vitex doniana
Cussonia kirkii
Rhus natalensis
Sesbania sesban
Cadaba farinosa
Trema orientalis

KINGA

Imivengi
Irnivono
 Kihere
 Lilanzi
Lurulamono, muvulamono
Mabagala
Mbawira
Mbechera
Misyamba mititu
 Mkensi
Mlanzi
Mpangala
 Mpembati
 Mselemko

Syzygium cordatum
Ricinus communis
Erythrina abyssinica
Arundinaria alpina
Ekebergia capensis
Myrianthus holstii
Ocotea usambarensis
Juniperus procera
Acacia mearnsii
Podocarpus latifolius
Oxytenaritheria abyssinica
Dombeya rotundifolia
Prunus africana
Juniperus procera

KURIA

Ilula lyape
Kirangaru
Mchale
Michame
Momange
 Msangura
Msarakanga

Acacia seyal
Ozoroa insignis
Ozoroa insignis
Acacia nilotica
Pappea capensis
Rhus natalensis
Ziziphus mucronata

USEFUL TREES AND SHRUBS FOR TANZANIA

Kuria (contd)

Msarwa

Msungu

Muhare

Mumendo

Munyore, rinyore

Omongwe

Omosaruwa

Entada abyssinica

Croton macrostachyus

Acokanthera schimperi

Acacia tortilis

Lannea schweinfurthii var. *stulmannii*

Carissa edulis

Sclerocarya birrea subsp. *caffra*

Lannea schweinfurthii var. *stulmannii*

LUGURU (Lugu)

Hambalimwa

Hang

Kiganhilangi, mhangehange

Kigomvu

Kivumba

Luharamira

Malamadza

Mbapu

Mbefu

Mdai

Mfumbiri

Mfuru

Mgora

Mgude

Mguruka

Mgwata

Mhangata

Mhavi

Mhekela, mkehele

Mhimbachigulu

Mhingo

Mhunungu

Mjaya

Mkangazi

Mkenge

Mkengehovu

Mkoga

Mkoko

Mkong'onelo

Mkongo

Mkongolo

Mkunguga

Mlagala

Mlama, mlama mwenge

Mlambadanda

Mlanzi

Mlolo

Mlonge, mlonje

Mlwati

Mmanga

Mnyanza

Mnyemba

Stereospermum kunthianum

Dodonaea viscosa

Dodonaea angustifolia

Euphorbia tirucalli

Myrica salicifolia

Cadaba farinosa

Polyscias fulva

Cordia africana

Trema orientalis

Tamarindus indica

Lonchocarpus capassa

Vitex doniana

Flacourtia indica

Sterculia appendiculata

Boscia salicifolia

Cordyla africana

Pterocarpus angolensis

Millettia dura

Euclea divinorum

Euclea divinorum

Dalbergia melanoxylon

Zanthoxylum chalybeum

Treulia africana

Khaya nyasica

Albizia gummifera, *A. schimperiana*

Albizia amara

Vitex doniana

Diospyros mespiliformis

Polyscias fulva

Balanites aegyptiaca

Acacia albida

Lonchocarpus capassa

Ziziphus mucronata

Cambretum molle, *C. schumanii*

Pterocarpus angolensis

Oxytenanthera abyssinica

Rauvolfia caffra

Moringa oleifera

Dombeya rotundifolia

Percopsis angolensis

Albizia versicolor

Ricinus communis

Luguru (contd)

Mpela
 Mpingo
 Mpondela, mpondelo
 Msalazi
 Msambwa wa kizungu
 Msazawi
 Msinzizi
 Msolo
 Msoto
 Msumba
 Mswayu
 Mtagala
 Mtengotengo
 Mtitu
 Mtoronge
 Muanziri
 Muegea
 Muhembeti
 Muhingilo
 Muwindi
 Mvule, mwule
 Mvumba
 Mvutambula
 Mwawa
 Mwiza
 Mzonapoli
 Mzunguzungu
 Nyahumbu

Adansonia digitata
Dalberiga melanoxylon
Ozoroa insignis
Syzygium guineense
Eriobotrya japonica
Albizia versicolor
Cordia africana
Pseudolachnostylis maprouneifolia
Dombeya rotundifolia
Bridelia mkrantha
Dombeya rotundifolia
Terminalia spinosa
Trichilia emetica
Diospyros mespiliformis
Arudinaria alpina
Podocarpus latifolius, *P. usambarensis*
Kigelia africana
Sterculia quinqueloba
Lanea schweinfurthii var. *stuhlmannii*
Acacia polyacantha
Millicia excelsa
Terminalia brownii
Entada abyssinica
Khaya nyasica
Bridelia micrantha
Acacia hockii
Bauhinia petersiana
Berchemia discolor

MAASAI

Alasiki, engoisiki
 Alchani-lengai
 Elerai, olerai
 Endewasi
 Esitete, os siteti
 Iuaa
 Masamburai, olmasambrai
 Msokono, olmsogoni
 Ngamalag
 Ngivavi
 O1 arash
 O1 asili
 O1 darakwa, oltarakwa
 O1 darboi
 O1 dean, ol marere
 O1 dimigomi
 O1 dorko
 O1 durgo, ol durogo
 O1 getalasua
 O1 geturai
 O1 gorete

Bersama abyssinica
Hagenia abyssinica
Acacia xanthophloea
Acacia hockii
Grewia bicolor
Acacia hockii
Tamarindus indica
Warburgia salutaris
Cadaba farinosa
Hagenia abyssinica
Calodendrum capense
Acacia tortilis
Juniperus procera
Kigelia africana
Arudinaria alpina
Pappea capensis
Cordia sinensis
Cordia sinensis
Myrica salidfolia
Albizia gummifera
Acacia tortilis

USEFUL TREES AND SHRUBS FOR TANZANIA

Maasai (contd)

Ol imisera	<i>Adansonia digitata</i>
Ol magogo	<i>Brachylaena huillensis</i>
Ol meraa	<i>Catha edulis</i>
Ol mergoit, ol margait, ol marbait, omarubai	<i>Croton megalocarpus</i>
Ol mesera	<i>Adansonia digitata</i>
Ol mesigie, ormisigiyo	<i>Rhus natalensis</i>
Ol moljoi	<i>Fagaropsis angolensis</i>
Ol mukuna	<i>Ekebergia capensis</i>
Ol nanboli, ol gngangboli, ol mangulai	<i>Ficus sycomorus</i>
Ol ngaboli	<i>Erythrina abyssinica</i>
Ol obani	<i>Eiythrina abyssinica</i>
Ol oilalei	<i>Ziziphus mucronata</i>
Ol olfot	<i>Cordia sinensis</i>
Ol orien	<i>Olea europaea</i> var. <i>africana</i>
Ol remit	<i>Salvadora persica</i>
Ol wiriwiri	<i>Podocarpus usambarensis</i>
Olama	<i>Ximenia americana</i>
Olbugoi, olbukoi	<i>Terminalia brownii</i>
Olchapukalyan, oljabokaryan	<i>Rauvolfia caffra</i>
Olkonjuku	<i>Prunus africana</i>
Olmaroroi, olmororoi	<i>Combretum molle</i>
Olmasi	<i>Olea capensis</i>
Oloile, ol aile	<i>Euphorbia tirucalli</i>
Ololiondoi	<i>Olea capensis</i>
Oreteti	<i>Ficus thonningii</i>
Os sangararam, ol sagararmi	<i>Piliostigma thonningii</i>
Osangupes	<i>Albizia gummifera</i>
Osiminde	<i>Grewia bicolor</i>
Osongoroi	<i>Ekebergia capensis</i>
Songejaye	<i>Hagenia abyssinica</i>

MAKONDE (Mako)

Mbunga	<i>Oxytenanthera abyssinica</i>
Mpegele	<i>Syzygium guineense</i>
Nambono	<i>Ozoroa insignis</i>
Ndola	<i>Ficus thonningii</i>
Nguluka	<i>Syzygium guineense</i>
Nsese, sese	<i>Faurea saligna</i>

MATENGO (Mate)

Chigenge	<i>Swartzia madagascariensis</i>
Chitimbe	<i>Piliostigma thonningii</i>
Mbilipili	<i>Flacourtia indica</i>
Mbula	<i>Parinari curatellifolia</i>
Mbwegele	<i>Sclerocarya birrea</i> subsp. <i>caffra</i>
Mdama, mlama, mndama	<i>Combretum molle</i>
Mdonga	<i>Strychnos spinosa</i>
Mdonga, mtongawali	<i>Strychnos cocculoides</i>
Mgelegele	<i>Brachystegia bussei</i>
Mgongoma	<i>Azelia quanzensis</i>
Mguluka	<i>Securidaca longipedunculata</i>
Mgwina	<i>Breonadia salicina</i>

Matengo (contd)

Mheveheve
Mhungu
Mkalanga
Mkaranga mti
Mlama
Mng'unga
Mnyonyo
Mpapa
Mpeho
Mpitimbi
Mtanga
Mtangati, munzati
Mteteleka
Mtimbi
Mtindiyombo
Mtondoko
Mtonye
Mtulanzila
Mtumbitumbi
Muholo, nzolo
Mungulungu
Muwanga
Mwao
Myenda
Mzombo
Ndelamwana
Nkolo
Nkuguti
Nzakala we mwana
Orokutuno
Titimbo

Erythrina abyssinica
Syzygium owariensis
Catha edulis
Bombax rhodognaphalon var. *tomentosa*
Combretum fragrans
Flacourtia indica
Syzygium cordatum
Brachystegia spiciformis
Trema orientalis
Vitex doniana
Albizia gummifera
Entada abyssinica
Faurea saligna
Bauhinia petersiana
Brachystegia bussei
Sclerocarya birrea subsp. *caffra*
Acacia polyacantha
Albizia versicolor
Cussonia kirkii
Pseudolachnostylis maprouneifolia
Strychnos spinosa
Pericopsis angolensis
Acacia polyacantha
Bridelia micrantha
Brachystegia spiciformis
Lannea schweinfurthi var. *stuhlmannii*
Syzygium guineense
Myrica salicifolia
Diospyros mespiliformis
Syzygium cordatum
Piliostigma thonningii

MBUGWE (Mbug)

Locheda
Lushinga
Mangarada
Manogogashanda
Mochocho
Modee
Modori
Molongo
Monyangu
Moonga, movunga
Morufu
Mosironga
Motoo
Mtoasi-mwerema
Mukalakanga
Mutogo
Muwiye
Mwerema

Acacia xanthophloea
Trema orientalis
Acacia mellifera
Acacia hockii
Cordia sinensis
Salvadora persica
Balanites aegyptiaca
Zanthoxylum chalybeum
Sclerocarya birrea subsp. *caffra*
Acacia tortilis
Acacia polyacantha
Albizia gummifera
Grewia villosa
Cordia monoica
Dichrostachys cinerea
Azanza garckeana
Adansonia digitata
Cordia monoica

USEFUL TREES AND SHRUBS FOR TANZANIA

Mbugwe (contd)

Olamai

Tarantu

Teteku-riru

Ximenia americana

Ximenia americana

Combretum molle

MERU

Ekeni, ikengi

Ireko

Isau

Iwuwu

Kondekonde

Lorien

Marabai

Mfurufuru

Mkuna, olmkuna, olmkuno

Mlanga

Mringaringa

Msesewe

Mseso

Mshiyo

Msingo

Mwefu

Nderakwa

Nduruka, nruka

Olmasi

Oltawakalyan

Owiriwiri

Euclea divinorum

Arundinaria alpina

Calodendrum capense

Dodonaea angustifolia

Frunus africana

Olea europaea subsp. *africana*

Croton megalocarpus

Croton macrostachyus

Ekebergia capensis

Hagenia abyssinica

Cordia africana

Rauvolfia caffra

Podocarpus latifolius

Olea capensis

Juniperus procera

Trema orientalis

Juniperus procera

Albizia schimperiana

Olea capensis

Rauvolfia caffra

Podocarpus falcatus

MWERA

Chigombo

Chiguruka

Lupelemende

Mbonika

Mchenamela

Mchenga

Mgulungulu

Mguwauwa

Mjerijeri

Mkumbi

Mkuunge

Mkwanga

Mng'olo, ngolo

Mpindimbi

Mpingo

Mpunga

Mpupi

Msufi

Mtalula

Mtandi

Mtanga

Mtawa

Mtondo, ntondo

Mtukuli

Salvadora persica

Securidaca longipedunculata

Cajanus cajan

Bersama abyssinica

Cassia abbreviata

Julbernardia globiflora

Strychnos innocua

Piliostigma thonningii

Brachystegia bussei

Hymenaea verrucosa

Millettia dura

Acacia polyacantha

Pseudolachnostylis maprouneifolia

Vitex doniana

Dalbergia melanoxylon

Oxytenanthera abyssinica

Lanea schweinfurthii var. *stuhlmanni*

Ceiba pentandra

Milicia excelsa

Kigelia africana

Albizia amara

Flacourtia indica

Cordyla africana

Boscia salicifolia

Mwera (contd)
 Mtumbati, mtumbati jangwa
 Mtumbitumbi
 Mwanzi
 Nachiu
 Ngeba
 Nkorosho
 Nng'ekee

NGONI

Mlandege, ndengo

NGUU

Kisalasala
 Lasi
 Lundolundo
 Mamala
 Mbogwa
 Mdundulu
 Mfuno
 Mgagawe
 Mgobwe
 Mgolimazi
 Mgude
 Mhafi
 Mhingo
 Mhunga
 Mkengemaji
 Mkilolo
 Mkolakisi
 Mkolakole
 Mkonga
 Mkongo
 Mkumbaku
 Mkusu
 Mlamadoi
 Mlengwelengwe
 Mng'ong'o
 Mnyasa
 Msimbankolongo
 Msungunde
 Mtagalo
 Mtehi
 Mtunduru
 Muguguni
 Mvungwe

NYAKYUSA (Nyak)

Dulu
 Lifowona, lifuwuna
 Livuluku
 Mbula

Pterocarpus angolensis
Cussonia kirkii
Oxytenanthera abyssinica
Dombeya rotundifolia
Markhamia obtusifolia
Anacardium occidentale
Bauhinia petersiana

Ficus thonningii

Podocarpus usambarensis
Arundinaria alpina
Combretum schumannii
Olea europaea subsp. *africana*
Khaya nyasica
Prunus africana
Sterculia appendiculata
Ziziphus mucronata
Vitex donaina
Trichilia emetica
Sterculia appendiculata
Millettia dura
Dalbergia melanoxylon
Dalbergia nitidula
Albizia gummifera
Acacia albida
Azelia quanzensis
Bridelia micrantha
Balanites aegyptiaca
Polyscias fulva
Carissa edulis
Uapaca kirkiana
Combretum molle
Rauvolfia caffra
Sclerocarya birrea subsp. *caffra*
Newtonia buchananii
Combretum schumannii
Syzygium cordatum
Terminalia spinosa
Vernonia myriantha
Dichrostachys cinerea
Ziziphus mucronata
Kigelia africana

Khaya nyasica
Hagenia abyssinica
Croton machrostachyus
Parinari curatellifolia

USEFUL TREES AND SHRUBS FOR TANZANIA

Nyakyusa (contd)

Mguti, mkuti
Mgwina
Mpegele
Mpehwe
Mpembati
Mpugupugu
Msanguti
Msengele
Msibisibi
Mswiza
Msyavala
Mtulenya
Mturunga, nturunga
Muguti
Muhu
Mwale
Mwisya
Nyaelasi
Nyalulasi
Selemuka
Umulasi

Brachystegia speciformis
Breonadia salicina
Syzygium cordatum
Trema orientalis
Polyscias fulva
Rauvolfia caffra
Trichina emetica
Syzygium guineense
Ocotea usambarensis
Myrianthus holstii
Bombax rhodognaphalon var. *tomentosa*
Hagenia abyssinica
Hagenia abyssinica
Brachystegia spiciformis
Syzygium guineense
Milicia excelsa
Bridelia micrantha
Khaya nyasica
Podocarpus latifolius
Juniperus procera
Arundinaria alpina

NYAMWEZI (Nyam)

Igangula
Kafinularribasa, kapondolampasa
Kagowole
Kagowole
Kalilalila
Kanala
Kasanda
Kasyamongo
Katatula
Katita
Kayeva
Kitemba
Livindwe
Luminu
Mbalazi
Mbanga, muvanga
Mbapa
Mbula, mubula, muvula, muwula
Mdimudimu
Mdubilo
Mduguyu, myuguyu
Mdungwa, mvungwa
Mfila
Mfululegea
Mfumbeli
Mfumbi
Mfunfu
Mfutambula
Mgagigagi

Indigofera swaziensis
Dalbergia nitidula
Ziziphus mauritiana
Ziziphus mucronata
Maerua triphylla
Garcinia livingstonei
Swartzia madagascariensis
Syzygium guineense, *S. owariensis*
Acacia Senegal
Acacia Senegal
Manihot glaziovii
Bauhinia petersiana
Acacia polyacantha
Sesbania sesban
Cajanus cajan
Pericopsis angolensis
Markhamia obtusifolia
Parinari curatellifolia
Teclea nobilis
Acacia nilotica
Balanites aegyptiaca
Kigelia africana
Annona senegalensis
Vitex doniana
Carissa edulis
Bauhinia petersiana
Dalbergia nitidula
Entada abyssinica
Cussonia kirkii

Nyamwezi (contd)	<i>Burkea africana</i>
Mgando, mkalati, mgando mkalati	<i>Vangueriopsis lanciflora</i>
Mgelelya	<i>Dalbergia melanoxylon</i>
Mgembe	<i>Acacia mellifera</i>
Mgongwa	<i>Ziziphus mauritiana</i>
Mgugunu	<i>Ziziphus mucronata</i>
Mgugunwa	<i>Boscia salicifolia</i>
Mguluka	<i>Acacia nilotica</i>
Mgunga	<i>Acacia tortilis</i>
Mgunga	<i>Acacia polyacantha</i>
Mgupulu	<i>Sterculia quinqueloba</i>
Mguwa	<i>Acacia Senegal</i>
Mgwata, mgwatu	<i>Erythrina abyssinica</i>
Mhalalwanhuba, mkalalankuva	<i>Ricinus communis</i>
Mhale	<i>Borassus aethiopum</i>
Mhama	<i>Sterculia africana</i>
Mhozya, muhozya	<i>Ozoroa insignis</i>
Mkalakala	<i>Diospyros mespiliformis</i>
Mkinde, msinde	<i>Albizia versicolor</i>
Mkindwanzagamba	<i>Azelia quanzensis</i>
Mkola	<i>Grewia bicolor</i>
Mkoma, mkomalendi	<i>Grewia similis</i>
Mkomabubu	<i>Ormocarpum trachycarpum</i>
Mkondwampuli	<i>Brachystegia bussei</i>
Mkongolo	<i>Annona senegalensis</i>
Mkonola	<i>Manilkara mochisia</i>
Mkonze	<i>Strychnos innocua</i>
Mkulwa	<i>Sterculia quinqueloba</i>
Mkungulanga	<i>Berchemia discolor</i>
Mkuni	<i>Uapaca kirkiana</i>
Mkusu	<i>Ficus sycomorus</i>
Mkuyu	<i>Acacia mellifera</i>
Mkwata	<i>Ficus thonningii</i>
Mla-ndaeje	<i>Combretum molle</i>
Mlama	<i>Oxytenanthera abyssinica</i>
Mlanzi	<i>Arundinaria alpina</i>
Mlanzi	<i>Cordia monoica</i>
Mlembu	<i>Cordia sinensis</i>
Mlembu, mnembu	<i>Ficus thonningii</i>
Mlumba, mulumba	<i>Cassia abbreviata</i>
Mlundalunda	<i>Ximenia americana</i>
Mnembwa mudo	<i>Sclerocarya birrea</i> subsp. <i>caffra</i>
Mng'ongo	<i>Pterocarpus angolensis</i>
Mninga	<i>Bauhinia petersiana</i>
Mnoga	<i>Acacia hockii</i>
Mnyenyele	<i>Lanea schweinfurthii</i> var. <i>stuhlmannii</i>
Mnyumbu	<i>Stereospermum kunfianum</i>
Mogavagoli, mogavami	<i>Albizia amara</i>
Mpogolo	<i>Vitex doniana</i>
Mpulu	<i>Strychnos innocua</i>
Mpundu, mumundu	

USEFUL TREES AND SHRUBS FOR TANZANIA

Nyamwezi (contd)

Msada	<i>Vangueria infausta</i>
Msagasi	<i>Commiphora africana</i>
Msagusa, nsagusa	<i>Dombeya rotundifolia</i>
Msanghwa	<i>Kigelia africana</i>
Mshindambogo, mtindambogo	<i>Piliostigma thonningii</i>
Msingila, mpuguswa	<i>Flacourtia indica</i>
Msisi	<i>Tamarindus indica</i>
Msungwe, msungwi	<i>Vitex mombassae</i>
Mtalali	<i>Vitex mombassae</i>
Mtangala	<i>Albizia amara</i>
Mteyo, mteyu	<i>Securidaca longipedunculata</i>
Mtonga	<i>Strychnos cocculoides</i>
Mtopetope	<i>Annona senegalensis</i>
Mtovo, mutobo, mutogo	<i>Azanza garckeana</i>
Mtundu	<i>Brachystegia spiciformis</i>
Mtundulu	<i>Dichrostachys cinerea</i>
Mtundusuvuya	<i>Cadaba farinosa</i>
Mtundwa	<i>Ximenia americana</i>
Mtungulu	<i>Pseudolachnostylis maprouneifolia</i>
Muba, muva	<i>Julbernardia globiflora</i>
Mulala	<i>Hyphaene compressa</i>
Mulungusigiti	<i>Teclea nobilis</i>
Muluzyaminzi	<i>Combretum fragrans</i>
Mumilwa	<i>Strychnos cocculoides</i>
Munyala	<i>Euphorbia tirucalli</i>
Munyembe	<i>Mangifera indica</i>
Munzoka	<i>Cassia abbreviata</i>
Muvale	<i>Lonchocarpus capassa</i>
Muvambang'oma	<i>Balanites aegyptiaca</i>
Mvuti	<i>Boscia salicifolia</i>
Mwage	<i>Strychnos spinosa</i>
Mwasya	<i>Syzygium guineense</i>
Mwembe mwitu	<i>Ozoroa insignis</i>
Mwiegea	<i>Kigelia africana</i>
Nyegenye	<i>Swartzia madagascariensis</i>
Vulengo	<i>Sesbania sesban</i>
Vulula, vululawape	<i>Acacia seyal</i>

NYATURU (Nyat)

Mdumwa-kiguu	<i>Cordia sinensis</i>
Mfama	<i>Borassus aethiopum</i>
Mfughuyu	<i>Balanites aegyptiaca</i>
Mgunga	<i>Acacia tortilis</i>
Mjaghamba	<i>Pappea capensis</i>
Mjujumi	<i>Acacia mellifera</i>
Mkwaju	<i>Tamarindus indica</i>
Mlula	<i>Acacia seyal</i>
Mlyati, mulati	<i>Markhamia obtusifolia</i>
Mnyikundu	<i>Acacia seyal</i>
Mobibi	<i>Dalbergia nitidula</i>
Mongoong	<i>Cordia monoica</i>
Msiviti	<i>Erythrina abyssinica</i>

Nyaturu (contd)	
Mudaa	<i>Euclea divinorum</i>
Mughanga	<i>Albizia versicolor</i>
Muhinko	<i>Acacia nilotica</i>
Mukese	<i>Acacia polyacantha</i>
Mukhantokhanto	<i>Grewia similis</i>
Mukhubo	<i>Acacia Senegal</i>
Mulade-mujenghuma	<i>Vangueria infausta</i>
Mulama	<i>Combretum molle</i>
Mumpembe	<i>Grewia villosa</i>
Mungungu	<i>Kigelia africana</i>
Munyaa	<i>Euphorbia tirucalli</i>
Munyang'anyi, munyeng'enye	<i>Acacia hockii</i>
Munyingwampembe	<i>Osyris lanceolata</i>
Munyinkanyuki	<i>Calodendrum capense</i>
Murya	<i>Acacia xanthophloea</i>
Musasati	<i>Vitex mombassae</i>
Musasu	<i>Piliostigma thonningii</i>
Musingisa	<i>Flacourtia indica</i>
Musuna-nu-kuu	<i>Grewia bicolor</i>
Mutogotogho .	<i>Dombeya rotundifolia</i>
Mutrogho	<i>Azanza garckeana</i>
Mutunduu	<i>Dichrostachys cinerea</i>
Muvabaahi	<i>Osyris lanceolata</i>
Songa	<i>Crotalaria grandibracteata</i>
MTHA	
Karati	<i>Ozoroa insignis</i>
Kitwantumbi	<i>Securidaca longipedunculata</i>
Ligambo	<i>Prunus africana</i>
Litanji	<i>Dombeya rotundifolia</i>
Liwisha	<i>Myrianthus holstii</i>
Liwulugu	<i>Groton macrostachyus</i>
Malembelembe	<i>Albizia gummifera</i>
Maula	<i>Parinari curatellifolia</i>
Mbulu	<i>Khaya nyasica</i>
Mkumburu	<i>Hagenia abyssinica</i>
Mkunungu	<i>Vitex doniana</i>
Mkurungu	<i>Croton macrostachyus</i>
Msane	<i>Brachystegia bussei</i>
Msewe	<i>Brachystegia spiciformis</i>
Msingati	<i>Cordia africana</i>
Mturunga	<i>Hagenia abyssinica</i>
Muwawa	<i>Cussonia kirkii</i>
Mzindwi	<i>Brachystegia spiciformis</i>
Nsebi	<i>Ocotea usambarensis</i>
Sengamino	<i>Bridelia micrantha</i>
Sense	<i>Faurea saligna</i>
Siegi	<i>Podocarpus latifolius</i>
Tanji	<i>Dombeya rotundifolia</i>

USEFUL TREES AND SHRUBS FOR TANZANIA

NYIRAMBA (Nyr)

Mkungulusuli
Mpama
Msalati
Msaningala
Msasati
Mtogho
Mtogo
Mudugunga
Mufoghoo
Mugumo-wa-ntwike
Mukuma
Mulera
Mulunzi
Munagani
Munyinga
Mutundulu

PARE

Intindi
Isume
Iteru
Lolyondo
Maase, maasi
Mbono
Mchofwe
Mdaria
Mdudu
Mfune
Mfurifuri
Mgunga
Mgwiti, mnjitwe
Mjongolo
Mkambabu
Mkisingo
Mkokola
Mkonga
Mkongo
Mlama
Mluhindi
Mng'ong'o
Mpololo
Mramba
Mreraiambo
Mririgwi
Mruku
Mrungurya
Msame
Msanga
Mshasha
Mshegheshe
Mshughu
Mshunga

Vangueria infausta
Borassus aethiopum
Vitex mombassae
Entada abyssinica
Vitex mombassae
Azanza garckeana
Dombeya rotundifolia
Balanites aegyptiaca
Albizia amara
Ficus thonningii
Grewia similis
Acacia xanthophloea
Kigelia africana
Acacia hockii
Albizia versicolor
Dichrostachys cinerea

Cussonia kirkii
Commiphora eminii subsp. *zimmermanni*
Balanites aegyptiaca
Olea capensis
Ocotea usambarensis
Ricinus communis
Carissa edulis
Vangueria infausta
Maerua triphylla
Sterculia appendiculata
Croton macrostachyus
Acacia tortilis
Dodonaea angustifolia, *D. viscosa*
Diospyros mespiliformis
Acacia albida
Balanites aegyptiaca
Azelia quanzensis ,
Balanites aegyptiaca
Azelia quanzensis
Syzygium guineense, *S. cordatum*
Maerua triphylla
Sclerocarya birrea subsp. *caffra*
Cordia sinensis
Adansonia digitata
Albizia gummifera, *A. schimperiana*
Albizia gummifera, *A. schimperiana*
Combretum molle
Cordia africana
Albizia gummifera, *A. schimperiana*
Albizia gummifera, *A. schimperiana*
Cordia monoica
Strychnos spinosa
Cajanus.cajan
Podocarpus usambarensis

Pare (contd)

Msighe
Mtakataka
Mtunguja
Muama mjewa
Muangwi
Muhande
Muranganji
Muungu
Mwerera
Mwesu
Mwingo
Mwira

RANGI

Ibuihui
Idaka
Igudabe, ikundabe
Ijovya
Ijwejwe
Ikochocho
Isaimo, saimo
Itonto
Itunene
Iyarampimbi
Kaimbi
Kkhumbichumbi
Kihungawisu
Khungawisu, kikungawiswa
Kijame
Kinkusa
Kinwato
Kivambang'ombe
Luwondu
Mafaa
Mbanjiru
Mchachave
Mchakay
Mchambali
Mdabiti
Mduwau
Mgiito
Mhangala
Mhangala
Mhangeganga
Mkabaku
Mkalankanga
Mkamati
Mkuyu
Mnangu
Mnembu
Mnu

Lannea schweinfurthii var. stuhlmannii
Azanza garkeana
Cyphomandra betacea
Combretum schumannii
Myrica salicifolia
Croton megalocarpus
Olea europaea var. africana
Erythrina abyssinica
Acacia xanthophloea
Trema orientalis
Dalbergia melanoxylon
Bridelia micrantha

Sterculia quinqueloba
Commiphora africana
Acacia albida
Commiphora africana
Entada abyssinica
Bersama abyssinica
Acacia albida
Commiphora eminii subsp. zimmermannii
Markhamia obtusifolia
Pappea capensis
Burkea africana
Erythrina abyssinica
Acacia hockii
Acacia nilotica
Acacia nilotica, A. polyacantha
Indigofera swaziensis
Acacia mellifera
Balanites aegyptiaca
Euphorbia tirucalli
Parinari curatellifolia
Euclea divinorum
Acacia hockii
Dombeya rotundifolia
Vitex mombassae
Dichrostachys cinerea
Grewia bicolor
Combretum molle
Brachystegia bursii, B. spiciformis
Julbernardia globiflora
Dodonaea angustifolia, D. viscosa
Carissa edulis
Acacia mellifera
Syzygium guineense
Ficus sycomorus
Grewia similis
Cordia sinensis
Ekebergia capensis

USEFUL TREES AND SHRUBS FOR TANZANIA

Rangi (contd)

Mnyala
Morungi
Mpoda, mponde
Mpuru
Mringa
Msaamaji
Msakasaka
Msakawa
Msasa, msasha
Msembere
Msisiviri
Msokonoi
Msumai
Mtarima
Mtata
Mtula-ikufa
Mtula, mtwa
Mtundukarya
Muberimo
Muhunga
Mukomu
Mulungu
Mumora
Mumu-muzura
Mungurufa
Musuva
Muvare
Mviru
Mwanya
Mwarinyani
Mweda
Mweda
Mwiwi
Njijiva
Nyamfunza
Saimo
Seese
Wami

Euphorbia tirucalli
Catha edulis
Podocarpus falcatus
Vitex doniana
Albizia versicolor
Albizia gummifera
Rhus natalensis
Lannea schweinfurthii var.
Cordia monoica
Azanza garckeana
Albizia amara
Warburgia salutaris
Rauvolfia caffra
Ekebergia capensis
Julbernardia globiflora
Pappea capensis
Azanza garckeana
Flacourtia indica
Dodonaea angustifolia, *D. viscosa*
Acacia Senegal, *A. tortilis*
Strychnos innocua
Zanthoxylum chalybeum
Parinari curatellifolia
Ficus thonningii
Acacia polyacantha
Kigelia africana
Lonchocarpus capassa
Vangueria infausta
Terminalia brownii
Podocarpus latifolius
Acacia seyal
Acacia xanthophloea
Adansonia digitata
Balanites aegyptiaca
Dalbergia melanoxylon
Acacia xanthophloea
Vernonia myriantha
Prunus africana

SAMBAA (Samb)

Fumbati (West)
Kilongolo
Kogo (East)
Lasi
Luziluzi
Maghogwe
Mbaazi
Mbalu
Mbamba
Mbambakofi
Mbokwe, mtonkwe
Mdaa, mdala

Polyscias fulva
Teclea nobilis
Polyscias fulva
Oxytenanthera abyssinica
Hagenia abyssinica
Cyphomandra betacea
Cajanus cajan
Juniperus procera
Bersama abyssinica
Azalia quanzensis
Annona senegalensis
Euclea divinorum

Sambaa (contd)	
Mdee	Warburgia salutaris
Mfufu	Cordia africana
Mfumba	Carissa edulis
Mfumbii	Lonchocarpus capassa
Mfume	Sterculia appendiculata
Mfyoksi	Prunus persica
Mgelegele, muele	Acacia nilotica
Mgobe	Vitex doniana
Mgolimazi	Trichilia emetica
Mgonambogo	Piliostigma thonningii
Mgonono	Bersama abyssinica
Mgunga	Acacia hockii, A. polyacantha
Mhafa	Millettia dura
Mhasha	Vernonia myriantha
Mhunguru, mhunguru-mhomba	Rhus natalensis
Mkande	Stereospermum kunthianum
Mkenene (West)	Ocotea usambarensis
Mkinu	Albizia versicolor
Mkola	Afzelia quanzensis
Mkomahoya	Prunus africana
Mkomba	Afzelia quanzensis
Mkonde, mkonde dume, moonde	Myrianthus holstii
Mkongolo	Combretum schumannii
Mkulo	Ocotea usambarensis
Mkumbaku	Carissa edulis
Mkundang'ombe	Maerua triphylla
Mkunguni	Fagaropsis angolensis
Ifflalo	Juniperus procera
Mlifu	Warburgia salutaris
Mlobe	Morus alba, M. indica, M. nigra
Mnama	Combretum molle
Mnangu	Grewia similis
Mnyasa	Newtonia buchananii
Monko	Bersama abyssinica
Monko	Ekebergia capensis
Mrosirosi	Hagenia abyssinica
Msambia	Eriobotrya japonica
Mse mawe	Podocarpus falcatus
Mse, msemawe, msenamawe, msekichanga	Podocarpus latifolius, P. usambarensis
Msegese, msegesege	Piliostigma thonningii
Mshai	Albizia gummifera
Mshai, mshaimawe	Albizia schimperiana
Mshasa, magamosi	Cordia monoica
Mshawa	Caesalpinia decapetala
Mshegheshe	Myrica salicifolia
Mshihwi	Syzygium guineense
Mshinga	Trema orientalis
Mshiwu	Syzygium cordatum
Mshunduzi	Croton macrostachyus
Mshunguti	Acokanthera schimperi
Mshushulambuzi	Indigofera swaziensis

USEFUL TREES AND SHRUBS FOR TANZANIA

Sambaa (contd)

Msisi, msize, msize mgosi
 Mswaki
 Mtanga
 Mtata
 Mtoa-mada
 Mtumbati
 Mtundui
 Muhuba
 Muiza, mwiza
 Murungu
 Muwati
 Mvilu, mviu
 Mvumo
 Mwandala
 Mwandama
 Mwangati
 Mwankaa
 Mwembe
 Myuyu
 Mzangazi
 Mziaghembe, mzilaghembe
 Mzindanguue
 Mzingazinga
 Mzongozongo
 Mzono
 Mzuru
 Mzutu, mzutwe
 Ng'weeti
 Ng'weng'we
 Ngwe
 Nshishi
 Nwaati
 Sambaa (contd)
 Sapu
 Urushu
 Vumo

Faurea saligna
 Salvadora persica
 Strychnos innocua
 Bersama abyssinica
 Ocotea usambarensis
 Bersama abyssinica
 Ximenia americana
 Syzygium guineense
 Bridelia micrantha
 Erythrina abyssinica
 Acacia mearnsii
 Vangueria infausta
 Ficus thonningii
 Ptaeroxylon obliquum
 Catha edulis
 Juniperus procera
 Combretum schumannii
 Mangifera indica
 Markhamia obtusifolia
 Cassia abbreviata
 Olea europaea subsp. africana
 Bersama abyssinica
 Cordia africana
 Crotalaria grandibracteata
 Ricinus communis
 Osyris lanceolata
 Dodonaea angustifolia
 Rauwolfia caffra
 Dracaena usambarensis
 Glea africana
 Tamarindus indica
 Teclea nobilis

 Euphorbia tirucalli
 Caesalpinia decapetala
 Borassus aethiopum

SANDAWI (Sand)

Afa
 Dogo
 Gele
 Innee
 Okoo
 Xaxabo
 Xopi

Acacia tortilis
 Azanza garckeana
 Adansonia digitata
 Julbernardia globiflora
 Berchemia discolor
 Azanza garckeana
 Brachystegia spiciformis

SANGU

Kipegero
 Kipula
 Libale
 Mfumbi
 Mgofu

Maerua triphylla
 Ormocarpum trachycarpum
 Lonchocarpus capassa
 Kigelia africana
 Euphorbia tirucalli

Swahili (contd)

Mchungu	<i>Acokanthera schimperi</i>
Mchungwa	<i>Citrus sinensis</i>
Mdaa	<i>Euclea divinorum</i>
Mdimu	<i>Citrus aurantifolia</i>
Mfenesi, mfenesi mfuu	<i>Artocarpus heterophyllus</i>
Mforsadi, mfurusadi	<i>Morus alba, M. indica, M. nigra</i>
Mfudu, mfuu	<i>Vitex keniensis, V. doniana</i>
Mfudumaji	<i>Vitex mombassae</i>
Mfune	<i>Sterculia appendiculata</i>
Mfurungu	<i>Citrus medica</i>
Mgambo	<i>Manilkara mochisia, M. sansibarensis</i>
Mgendagenda	<i>Trema orientalis</i>
Mgiriti	<i>Diospyros mespiliformis</i>
Mgobwali	<i>Bauhinia petersiana</i>
Mgrivea	<i>Grevillea robusta</i>
Mgunga	<i>Acacia albida, A. nilotica, A. polyacantha,</i> <i>A. xanthophloea</i>
Mgunga, mugumba	<i>Acacia tortilis</i>
Mgurure	<i>Combretum schumannii</i>
Mgwata	<i>Cordyla africana</i>
Mgwina	<i>Breonadia salicina</i>
Mhakia	<i>Hakea saligna</i>
Mhina, muina	<i>Lawsonia inermis</i>
Mhoba	<i>Senna spectabilis</i>
Michungwa	<i>Citrus spp.</i>
Mjafari	<i>Zanthoxylum chalybeum</i>
Mjohoro	<i>Senna siamea</i>
Mkababu	<i>Acacia albida</i>
Mkakaya	<i>Delonix regia</i>
Mkalambati, mkarambati	<i>Brachylaena huillensis</i>
Mkamasi	<i>Cordia sinensis</i>
Mkangazi	<i>Khaya nyasica</i>
Mkanju	<i>Anacardium occidentale</i>
Mkaranga mti	<i>Bombax rhodognaphalon var. tomentosa</i>
Mkarati	<i>Bridelia micrantha</i>
Mkaratusi	<i>Eucalyptus camaldulensis, E. citriodora,</i> <i>E. globulus, E. saligna, E. tereticornis</i>
Mkengata	<i>Dodonaea angustifolia, D. viscosa</i>
Mkenge	<i>Albizia gummifera</i>
Mkenge	<i>Albizia versicolor</i>
Mkichikichi	<i>Piliostigma thonningii</i>
Mkilifi	<i>Azadirachta indica</i>
Mkingu	<i>Albizia lebbek</i>
Mkoche	<i>Hyphaene compressa</i>
Mkokoa	<i>Lawsonia inermis</i>
Mkole	<i>Grewia similis</i>
Mkorosho	<i>Anacardium occidentale</i>
Mkufi	<i>Rauvolfia caffra</i>
Mkulagembe	<i>Dichrostachys cinerea</i>
Mkumba	<i>Rhus natalensis</i>
Mkunazi	<i>Ziziphus mauritiana</i>

USEFUL TREES AND SHRUBS FOR TANZANIA

Sukuma (contd)

Mohowe
 Mpingi
 Mpogolo
 Mpuguswa
 Msagwasagwa
 Msayu, nsayu
 Msungwi
 Mswake
 Mtalabanda
 Mtindwa-mbogo
 Mtundulu
 Mtundwa
 Muche
 Mugu, nguingu
 Muhama
 Muyombo
 Mwandu, ngwandu
 Mwicha, mgwicha, ngwicha
 Myuguyugu, nyuguyu
 Nama
 Nanda
 Ndumwashigulu
 Nambu
 Nengonengo
 Ng'ongo
 Ng'ongong'ongo
 Nsongoma
 Nujaminzi
 Nundalunda
 Nyebe
 Pilipili
 Sungute
 Yagi ya nzovu
 Zuzuma

Trema orientalis
Ximenia americana
Albizia amara
Flacourtia indica
Cadaba farinosa
Lannea schweinfurthii var. *stuhlmannii*
Vitex mombassae
Salvadora persica
Markhamia obtusifolia
Piliostigma thonningii
Dichrostachys cinerea
Ximenia americana
Salvadora persica
Acacia polyacantha
Borassus aethiopum
Brachystegia spiciformis
Adansonia digitata
Kigelia africana
Balanites aegyptiaca
Combretum molle
Acacia albida
Cadaba farinosa
Cordia monoica
Securidaca longipedunculata
Sclerocarya birrea subsp. *caffra*
Commiphora eminii subsp. *zimmermannii*
Senna siamea
Combretum fragrans
Cassia abbreviata
Mangifera indica
Erythrina abyssinica
Trichilia emetica
Cussonia kirkii
Sesbania sesban

SWAHILI (Swah)

Embe mafuta
 Kifabakazi
 Loliondo
 Lusina, mlusina
 Maramata
 Mbaazi
 Mbalungi
 Mbambakofi
 Mbanga, muvanga
 Mbarika
 Mbibo
 Mbono, nyonyo
 Mbuyu
 Mchanindovu
 Mchekwa
 Mchenza

Persea americana
Spathodea campanulata
Olea capensis
Leucaena leucocephala
Pithecellobium dulce
Cajanus cajan
Citrus paradisi
Azalia quanzensis
Pericopsis angolensis
Ricinus communis
Anacardium occidentale
Ricinus communis
Adansonia digitata
Albizia versicolor
Annona senegalensis
Citrus reticulata

Swahili (contd)

Mtomoko mwitu	<i>Annona senegalensis</i>
Mtondo	<i>Julbernardia globiflora</i>
Mtonga	<i>Strychnos spinosa</i>
Mtonga	<i>Strychnos cocculoides</i>
Mtopetope	<i>Annona senegalensis</i>
Mtopetope	<i>Annona squamosa</i>
Mtundakula	<i>Ximenia americana</i>
Mtundu	<i>Lanea schweinfurthii</i> var. <i>stuhlmannii</i>
Mturituri	<i>Commiphora africana</i>
Mtutu	<i>Bridelia micrantha</i>
Mubamba-ngoma	<i>Piliostigma thonningii</i>
Mubamba-ngoma	<i>Pappea capensis</i>
Muguruka	<i>Pseudolachnostylis maprouneifolia</i>
Muhuhu	<i>Brachylaena huillensis</i>
Mumbwe	<i>Cordyla africana</i>
Mutumbi	<i>Garcinia livingstonei</i>
Muwati	<i>Acacia mearnsii</i>
Mvale	<i>Longocarpus capassa</i>
Mvinje	<i>Casuarina cunninghamiana</i> , <i>C. equisetifolia</i> , <i>C. junghuhniana</i>
Mviru	<i>Vangueria infausta</i>
Mvule	<i>Milicia excelsa</i>
Mvumo	<i>Borassus aethiopum</i>
Mvunjashoka	<i>Dichrostachys cinerea</i>
Mwalika	<i>Ozoroa insignis</i>
Mwangwakwao	<i>Bersama abyssinica</i>
Mwanzi	<i>Arundinaria alpina</i>
Mwanzi	<i>Oxytenanthera abyssinica</i>
Mwarubaini kamili	<i>Azadirachta indica</i>
Mwasi	<i>Euphorbia tirucalli</i>
Mwegea	<i>Kigelia africana</i>
Mwembe	<i>Mangifera indica</i>
Mwembemwitu	<i>Rauvolfia caffra</i>
Myombo	<i>Brachystegia spiciformis</i>
Mzabibu mwitu	<i>Ozoroa insignis</i>
Mzambarau	<i>Syzygium cuminii</i>
Mzambarau, mzambarau mwitu	<i>Syzygium guineense</i>
Mzambarau ziwa	<i>Syzygium owariensis</i>
Nyamate	<i>Cordia sinensis</i>
Parachichi	<i>Persea americana</i>
Utupa	<i>Euphorbia tirucalli</i>
YAO	
Mkalati	<i>Burkea africana</i>
Mpsa	<i>Hymenaea verrucosa</i>
Unhungu	<i>Dalbergia nitidula</i>
ZARAMO (Zara)	
Mbula	<i>Parinari curatellifolia</i>
Mfuru	<i>Vitex doniana</i>
Mgegewa	<i>Ziziphus mucronata</i>

USEFUL TREES AND SHRUBS FOR TANZANIA

Swahili (contd)

Mkungu	<i>Terminalia catappa</i>
Mkungwina	<i>Trichilia emetica</i>
Mkwaju	<i>Tamarindus indica</i>
Mkwaju wa kihindi	<i>Pithecellobium duke</i>
Mkwakwa	<i>Stychnos innocua</i>
Mkwata	<i>Acacia mellifera</i>
Mkweranyani	<i>Sterculia quinqueloba</i>
Mlimao	<i>Citrus limon</i>
Mlonge	<i>Moringa oleifera</i>
Mmelia	<i>Melia azedirach</i>
Mnago	<i>Berchemia discolor</i>
Mnduruasi	<i>Albizia versicolor</i>
Mng'ong'o, mng'ongo	<i>Sclerocarya birrea</i> subsp. <i>caffra</i>
Mninga	<i>Pterocarpus angolensis</i>
Mnyara	<i>Euphorbia tirucalli</i>
Mnyonyore	<i>Caesalpinia pulcherfima</i>
Mpapa	<i>Strychnos spinosa</i>
Mpapai	<i>Carica papaya</i>
Mpekechu	<i>Garcinia livingstonei</i>
Mpera	<i>Psidium guajava</i>
Mpera mwitu	<i>Combretum schumannii</i>
Mpilipili	<i>Schinus molle</i>
Mpingi	<i>Ximenia americana</i>
Mpingo	<i>Dalbergia melanoxylon</i>
Mpira	<i>Manihot glaziovii</i>
Mpodo	<i>Podocarpus usambarensis</i>
Mrihi, mriti	<i>Brachystegia spiciformis</i>
Mringaringa	<i>Cordia africana</i>
Mroma, mroo, mvoo	<i>Cordyla africana</i>
Mrumbapori	<i>Ficus thonningii</i>
Mrungi	<i>Catha edulis</i>
Msaji	<i>Tectona grandis</i>
Msandari	<i>Osyris lanceolata</i>
Msandarusi, msandaruzi, miandaruzi, mtanderusi	<i>Hymenaea verrucosa</i>
Msapa	<i>Manilkara mochisia</i>
Msindano	<i>Pinus caribaea</i> , <i>P. kesiya</i> , <i>P. insularis</i> , <i>PJ</i> <i>oocarpa</i> , <i>P. patula</i>
Msingino	<i>Dichrostachys cmeria</i>
Msingizi	<i>Maerua triphylla</i>
Mstafeli	<i>Annona muricata</i>
Msufi	<i>Ceiba pentandra</i>
Msufi mwitu	<i>Bombax rhodognaphalon</i> var. <i>tomentosa</i>
Mswaki	<i>Salvadora persica</i>
Mtafuna panya	<i>Stereospermum kunthianum</i>
Mtalali	<i>Vitex mombassae</i>
Mtarawanda	<i>Markhamia obtusifolia</i>
Mti chuma	<i>Manilkara mochisia</i> , <i>M. sansibarensis</i>
Mtigonzi	<i>Cordyla africana</i>
Mtimai, mtimaji	<i>Trichilia emetica</i>
Mtomoko	<i>Annona squamosa</i>

Sangu (contd)

Mhakwe
Mingi
Mjombe
Mkomba
Mkombalwike
Mkondo
Mkunguni
Mkwelangedege
Mperemehe
Msangala
Msinantemo
Mswake
Mtangadas
Mtanula
Mtundwahai
Muhela
Muhemi
Mumemena

Bauhinia petersiana
Ximenia americana
Ficus sycomorus
Bauhinia petersiana
PUIostigma thonningii
Adansonia digitata
Combretum fragrans
Sterculia quinqueloba
Grewia bicolor
Burkea africana
Daibergia nitidula
Salvadora persica
Strychnos spinosa
Ziziphus mucronata, *Z. mauritiana*
Ximenia americana
PUIostigma thonningii
Erythrina abyssinica
Pseudolachnostylis maprouneifolia

SUKUMA (Suku)

Bukindu
Bushishi
Igwata, mkwata
Ilula lyape, ilula lyelu
Inala, munyala
Kalilalila
Kaninigwa
Mbanga
Mbapa
Mbese
Mdubilo
Mfumbi
Mgembe, ngembe
Mgugunu
Mgukubi
Mgumambu
Mgunga
Mhoja
Mhunga shalo
Mhungulu

Phoenix reclinata
Tamarindus indica
Acacia Senegal
Acacia seyal
Euphorbia tirucalli
Maerua triphylla
Cadaba farinosa
Pericopsis angolensis
Markhamia obtusifolia
Acacia hockii
Acacia nilotica
Bauhinia petersiana
Daibergia melanoxylon
Ziziphus mauritiana, *Z. mucronata*
Vitex mombassae
Vernonia myriantha
Acacia tortilis
Sterculia quinqueloba
Euphorbia tirucalli
Rhus natalensis
Teclea nobilis
Ozoroa insignis
Erythrina abyssinica
Erythrina abyssinica
Albizia versicolor
Grewia bicolor
Ormocarpum trachycarpum
Manilkara mochisia
Sclerocarya birrea subsp. *caffra*
Acacia mellifera
Parinari curatellifolia

Mkala
Mkalalwanghuba, mkalawahuba
Mkalalwanhuba
Mkingu
Mkoma, mukoma
Mkondwampuli
Mkonje
Mlongwe
Mlugala
Mnazi

Zaramo (contd)

Mguruka
 Mhingi
 Mkarangatanga
 Mkole mweupe
 Mkorolo
 Mkuju
 Mkulagembe
 Mkwesu
 Mnango, munanyo
 Mng'ongo
 Mninga
 Mnungu
 Moza
 Mpehe
 Mpingi
 Mpiwipwi
 Mpulu
 Msempelele
 Mshanulo
 Mswere
 Msyolo
 Mtalala mweupe
 Mtawa
 Mtonga
 Mtopetope
 Mtumbati
 Mtunda
 Muhamvi
 Muhangula, mtakalla
 Mukambaku
 Muwewenya mbewa
 Mwangare
 Myigeza
 Mzarabi
 Mzati
 Nsata
 Tagala
 Ududu kisazi

Boscia salicifolia
Ximenia americana
Bridelia micrantha
Grewia bicolor, *G. similis*
Cassuarina equistifolia
Ficus sycomorus
Dichrostachys cinerea
Tamarindus indica
Hymenaea verrucosa
Sclerocarya birrea subsp. *caffra*
Pterocarpus angolensis
Zanthoxylum chalybeum
Sterculia quinqueloba
Trema orientalis
Ximenia americana
Lanea schweinfurthii var. *stuhmannii*
Pseudolachnostylis maprouneifolia
Maerua triphylla
Trema orientalis
Grewia bicolor
Pseudolachnostylis maprouneifolia
Syzygium cordatum
Flacourtia indica
Strychnos spinosa
Annona senegalensis
Pterocarpus angolensis
Manilkara sansibarensis
Millettia dura
Terminalia spinosa
Carissa edulis
Stereospermum kunthianum
Terminalia spinosa
Kigelia africana
Syzygium cordatum
Syzygium cordatum
Cassuarina equistifolia
Terminalia spinosa
Maerua triphylla

ZIGUA

Boriti
 Ina
 Lasi
 Mchelegembe, mjerejele
 Mdogowe
 Mdunga
 Mfufumasimba
 Mfunu, mgude
 Mfuruwadi
 Mgasawe
 Mgobe
 Mgota

Trema orientalis
Lawsonia inermis
Oxytenanthera abyssinica
Dichrostachys cinerea
Breonadia salicina
Acacia polyacantha
Entada abyssinica
Sterculia appendiculata
Morus alba
Ziziphus mucronata
Vitex doniana, *V. mombassae*
Flacourtia indica

Zigua (contd)

Mgolimazi
 Mgungankundu
 Mhangala
 Mhangala
 Mhembeti
 Mhingo
 Mhugwe, muhugwe
 Mhukwi, mkulwi, mkulwe
 Mkalakala -
 Mkangazi
 Mkarambaki, mkarambati
 Mkingu
 Mkongoe
 Mkwakwa
 Mluati, mlwati
 Mnenge
 Mniramira
 Mnyukapala
 Mpera
 Msandarusi
 Msasa
 Msegese
 Mselenkanga
 Mshinga
 Msinga
 Mswaki
 Mtondoro
 Mtonga
 Mtonkwe
 Mtundwi
 Muesa, mweza
 Muhagata
 Muhagati
 Mumbu
 Muvenge, muwenge
 Muwambangoma
 Mvungwe
 Myuyu
Mzule

ZINZA

Bivara
 Mangara, mnyara
 Mawezi
 Mbanga
 Mcherenge
 Mgege
 Mgembya
 Mkakata
 Mkarasaritu
 Mkomakoma

Trichilia emetica
 Acacia nilotica
 Brachystegia bussei
 Julbernardia globiflora
 Sterculia quinqueloba
 Dalbergia melanoxylon
 Brachylaena huillensis
 Diospyros mespiliformis
 Ozoroa insignis
 Khaya anthotheca
 Brachylaena huillensis
 Albizia versicolor
 Acacia tortilis
 Strychnos spinosa
 Dombeya rotundifolia
 Pappea capensis
 Maerua triphylla
 Cadaba farinosa
 Trema orientalis
 Hymenaea verrucosa
 Acacia mellifera
 Piliostigma thonningii
 Pseudolachnostylis maprouneifolia
 Trema orientalis
 Trema orientalis
 Salvadora persica
 Julbernardia globiflora
 Strychnos innocua
 Annona senegalensis
 Ximenia americana
 Bridelia micrantha
 Pterocarpus angolensis
 Olea europaea subsp. africana
 Lannea schweinfurthii var. stuhlmannii
 Syzygium guineense
 Balanites aegyptiaca
 Kigelia africana
 Markhamia obtusifolia
 Milicia excelsa

Acacia Senegal
 Euphorbia tirucalli
 Commiphora africana
 Pericopsis angolensis
 Ozoroa insignis
 Syzygium owariense
 Dalbergia melanoxylon
 Vitex mombassae
 Albizia amara
 Grewia bicolor

USEFUL TREES AND SHRUBS FOR TANZANIA

Zinza (contd)

Mkonyo	<i>Annona senegalensis</i>
Mkoto	<i>Acacia Senegal</i>
Mkukurama	<i>Stereospermum kunthianum</i>
Mnyabwita	<i>Vangueria infausta</i>
Mnyamendi	<i>Lannea schweinfurthii</i> var. <i>stuhlmannii</i>
Mranda	<i>Acacia albida</i>
Mribwampara	<i>Lannea schweinfurthii</i> var. <i>stuhlmannii</i>
Mruguhu	<i>Balanites aegyptiaca</i>
Msambia	<i>Markhamia lutea</i>
Msamiko	<i>Bridelia micrantha</i>
Msangura	<i>Syzygium guineense</i>
Msense	<i>Rhus natalensis</i>
Msindaga	<i>Piliostigma thonningii</i>
Msira	<i>Maesopsis eminii</i>
Msisa	<i>Tamarindus indica</i>
Msule	<i>Milicia excelsa</i>
Msungusu	<i>Flacourtia indica</i>
Msungwa	<i>Vitex mombassae</i>
Mtasa	<i>Erythrina abyssinica</i>
Mtwalachenya	<i>Combretum fragrans</i>
Mufubia	<i>Prunus africana</i>
Muhondobogo	<i>Lannea schweinfurthii</i> var. <i>stuhlmannii</i>
Muhuwa	<i>Croton macrostachyus</i>
Mukimbo mkimbi	<i>Morus indica</i>
Mukwatanzuluma	<i>Ziziphus mucronata</i>
Muliwa-mpango	<i>Pappea capensis</i>
Mumemeno	<i>Maerua triphylla</i>
Munazi	<i>Parinari curatellifolia</i>
Musangisangi	<i>Entada abyssinica</i>
Muvuru	<i>Vitex doniana</i>
Muzo	<i>Teclea nobilis</i>
Muzuzumo	<i>Sebania seban</i>
Mweyo	<i>Securidaca longipedunculata</i>
Mzeze	<i>Syzygium cordatum</i>
Mzingute	<i>Kigelia africana</i>
Umuyagu	<i>Ekebergia capensis</i>

PART II

THE USEFUL TREES AND SHRUBS

Acacia albida (Faidherbia albida)

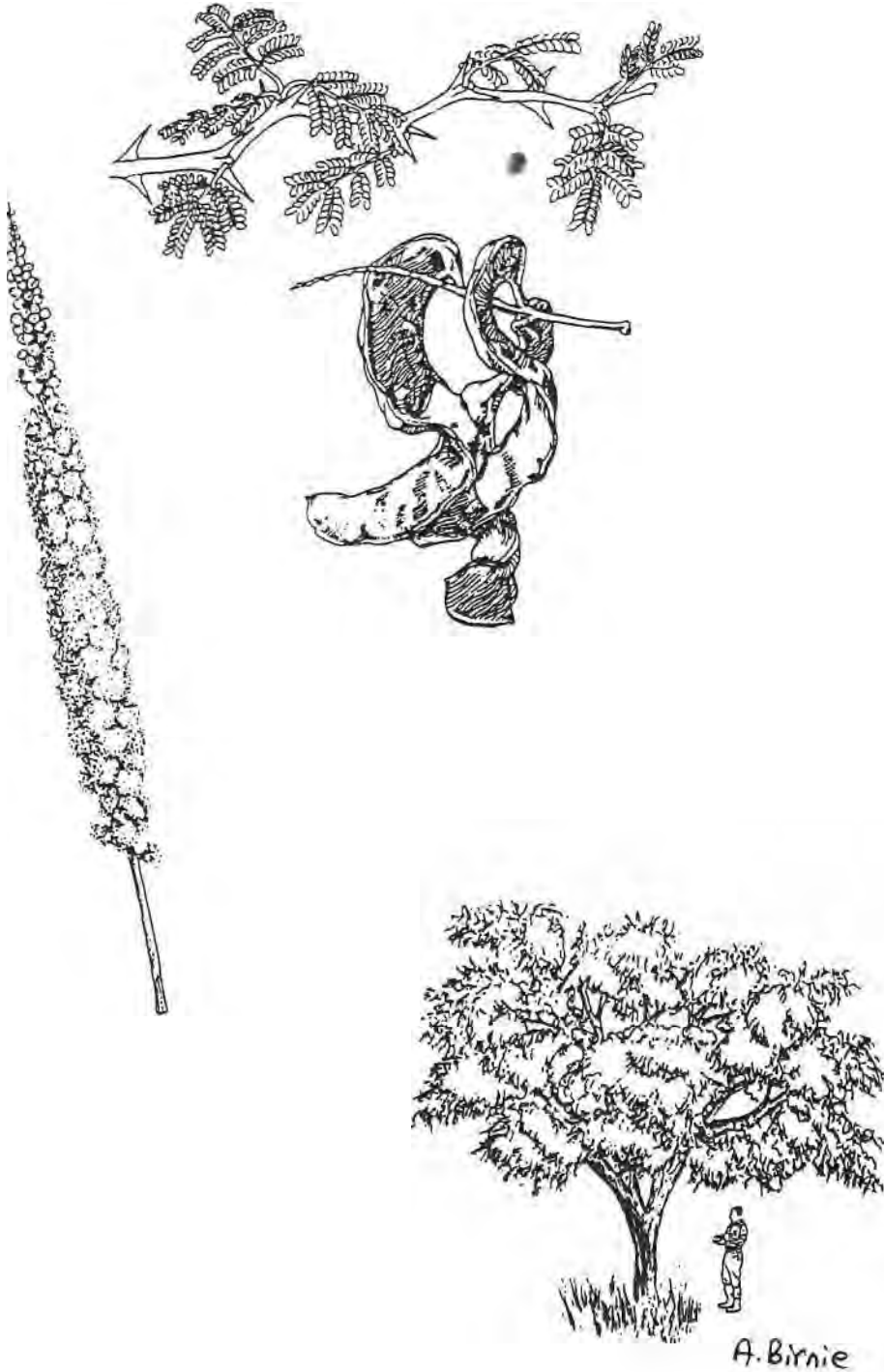
Mimosoideae

Indigenous

- Common names:** Eng: apple-ring acacia, winter thorn. **Fipa:** mchese; **Gogo:** mdoladole, mgonandele, mluma, mujehe; **Haya:** murunda; **Hehe:** mpogolo; **Lugu:** mkongolo; **Nguu:** mkilolo; **Pare:** 3mkambabu; **Rangi:** ikundabe, igudabe, isaimo, saimo; **Suku:** nanda; **Swah:** mkababu, mgunga; Zinza: mranda.
- Ecology:** Native to the Middle East and Africa. Within Africa, widespread in semi-arid areas. Prefers semi-arid and riverine zones in Tanzania, 0-1,800 m. It grows well in areas with a high watertable and alluvial, loamy or sandy soils which drain well.
- Uses:** Firewood, charcoal, timber (construction), posts, utensils, flavouring (pod), medicine (bark), fodder (pods and leaves), shade, nitrogen fixation, soil conservation, soil improvement.
- Description:** One of the tallest of the Acacias, deciduous, sometimes to 30 m with high rounded spreading crown. Branchlets **zigzag, shiny grey**. **BARK:** dull grey, fissured and scaling; thorns in pairs, **straight to 2 cm, often pointing downwards**. **LEAVES:** compound, 3-8 pairs of pinnae each with 6-23 (usually 9-16) pairs of **grey-green** leaflets, up to 1 cm, **rounded and overlapping**. **FLOWERS:** In **slender spikes to 14 cm, cream-white**, attracting bees, fragrant, on the bare tree. **FRUIT:** distinctive **twisted pods**, smooth, **bright orange**, to 25 cm long and quite thick, edge thickened, containing 10-20 seeds which ripen at the end of the dry season. Seed are set free when the pods rot on the ground.
- Propagation:** Seedlings, direct sowing.
- Seed info.:** No. of seeds per kg: about 9,000; germination 45-96%.
- treatment:** nick the seed or immerse in hot water, allow to cool and soak for 24 hours.
- storage:** seed can be stored for many years if dried properly and kept in a dry cool place free from insects.
- Management:** Slow initial growth, later fairly fast growing on good site; and even in poor sites provided the watertable is high.
- Remarks:** The tree is widely used in dryland agroforestry. It is deep rooted and does not compete with food crops.

Acacia albida (Faidherbia albida)

Mimosoideae



Acacia auriculiformis

Mimosoideae

Queensland, Australia; New Guinea and Torres Strait

Common names: **Eng:** coast wattle; **Swah:** mkesia.

Ecology:

An Australian tree which is now grown in many tropical lowlands on a variety of soils. It thrives on poor coastal sands, sandy loams and coral rag. It is one of the main fuelwood species in Zanzibar and Pemba.

Uses:

Firewood, charcoal, tool handles, pulp, bee forage, shade, ornamental, nitrogen fixation, soil conservation, soil improvement, windbreak, dye (bark).

Description:

An evergreen tree up to 30 m with dense foliage and an open, spreading crown, but usually smaller, appearing rather like a small gum tree, often low branched with *i* crooked trunk. **BARK:** grey, smooth at first then rough with vertical fissures and cracks when old and exuding red gum **LEAVES:** **up to 10 cm long and 2 cm wide with 3-*i* parallel nerves**, thick, leathery and **sickle-shaped (curved)** Leaves are phyllodes—developed from the leaf stalk **FLOWERS:** **cream-pale yellow** on flowering stalks between leaves and branchlets or at tips of branchlets **sweet-scented, to 8 cm long**, in pairs. **FRUIT:** **thin coiled pods** containing 10-20 small shiny black seeds which ripen at the end of the dry season.

Propagation:

Seedlings, direct sowing, suckers.

Seed info.:

Seeds are hard. No. of seeds per kg: 55,000-75,000
Germination rate 40-80%.

treatment:

immerse in hot water and allow to cool and soak for 2< hours.

storage:

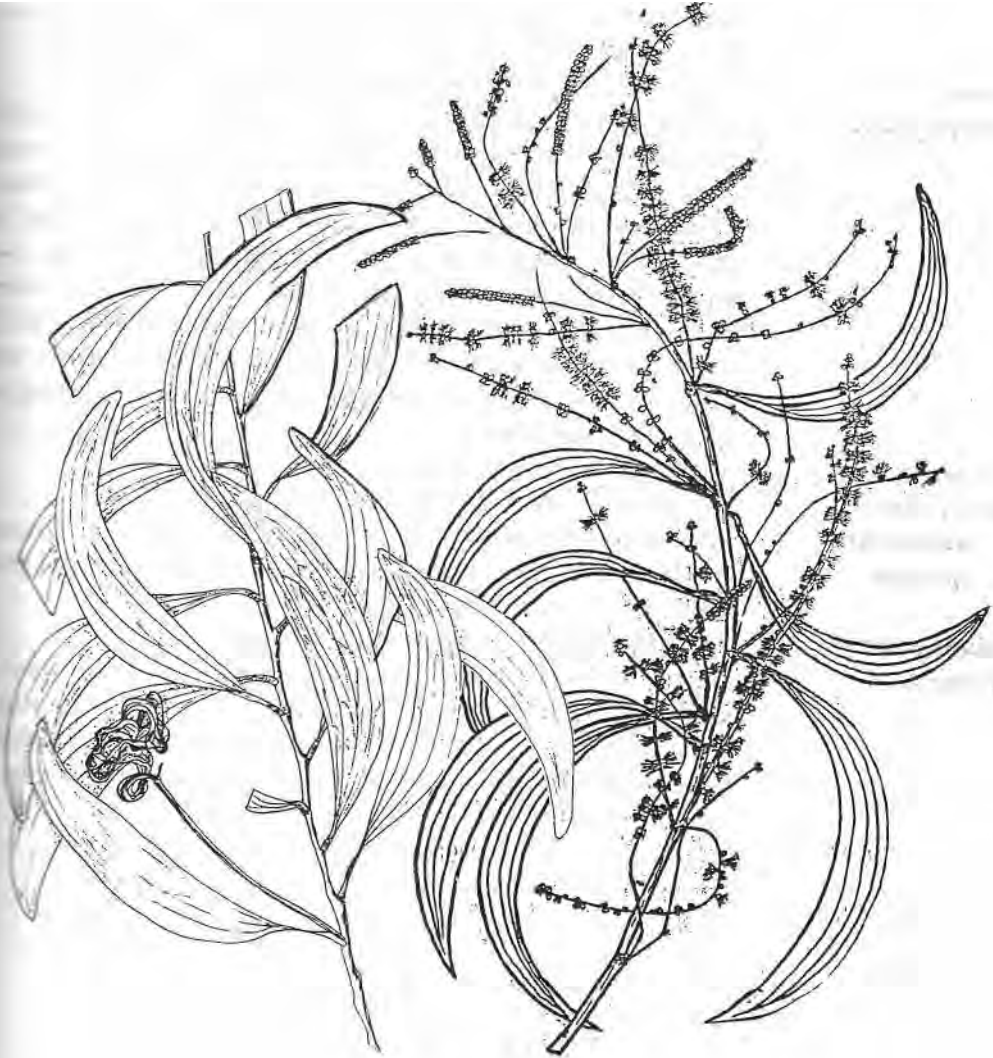
store seeds in a dry place free of insects. Seeds retain viability for four years.

Management:

Pruning, coppicing, weeding, fire protection. A fast-growing tree.

Remarks:

Acacia auriculiformis grows on difficult sites, including seasonally waterlogged soils, where very few other tree species can grow. In Asia it has been widely planted for fuel, erosion control, shade and ornament. The shallow spreading root system stabilizes eroded soil.

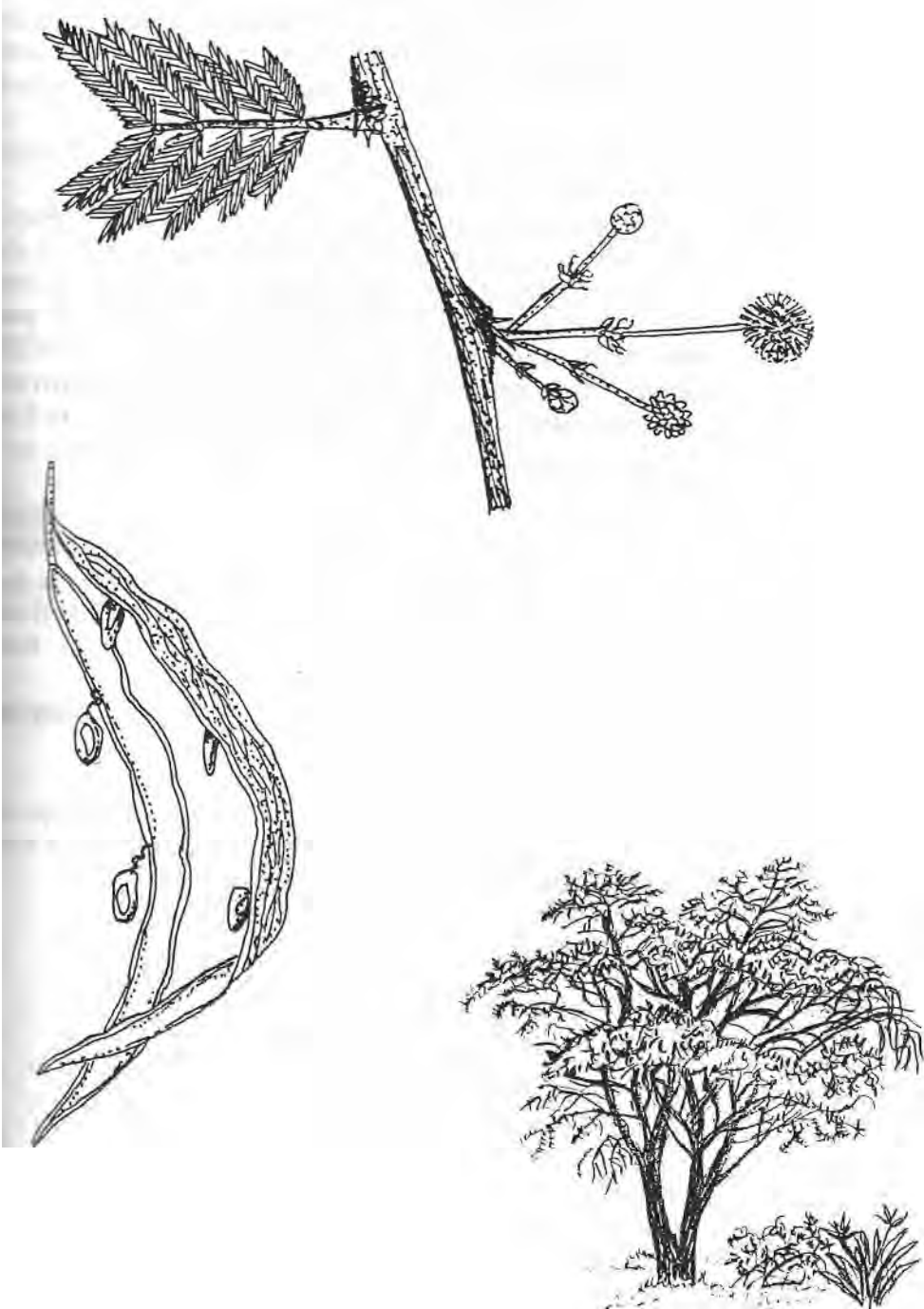


Acacia hockii

Mimosoideae

Indigenous

- Common names:** **Arusha:** endawasi; **Bende:** kasemele; **Fipa:** kaselenge msense; **Goro:** ditsomi, fitsimo; **Hehe:** mnyang'anya; **Iraqw** narmo-aawak; **Lugu:** mzonapoli; **Maasai:** endewasi, iuaa **Mbug:** manogo-gashanda; **Nyam:** mnyenyela; **Nyal** munyang'anyi, munyeng'enye; **Rangi:** kihungawisi mchachave; **Samb:** mgunga; **Suku:** mbese; **Swah:** mgunga
- Ecology:** Very widespread in Africa in wooded grasslands and savannah up to 2,100 m; often associated with overgrazing. It is found in all regions in Tanzania except Ruvuma.
- Uses:** Firewood, dry fencing (branches), ropes (bark).
- Description:** A tree 6-12 m high, often with rounded crown. **BARK:** greenish-brown, thinly peeling and papery, becoming rough dark brown. Branchlets **red-brown, sticky and hairy**. **THORNS:** in pairs, straight and rather weak, usually less than 2 cm, sometimes absent. **LEAVES:** compound, 4-10 pairs of pinnae with 20-25 pairs of tiny leaflets, hairless. **FLOWERS:** in **small round heads, orange-yellow**. **FRUIT:** narrow, **strongly curved pod, to 15 cm, red-brown** with black dots, splitting on the tree with the seeds hanging on thread-like stalks.
- Propagation:** Seedlings, wildings, direct sowing.
- Seed info.:** No. of seeds per kg: 13,000-15,000.
- treatment:** Immerse in hot water, allow to cool and soak for 12 hours.
- storage:** can be stored for many years if kept in a dry and cool place free from insects.
- Management:** Associated with overgrazing. Slow-growing.
- Remarks:** *Acacia hockii* is one of the main species in drier areas in central and northern Tanzania within the Acacia Commiphora - Combretum - Grewia bush / shrub vegetation type. Branches are commonly used to make cattle *boma*.



Acacia lahai

Mimosoideae

Indigenous

Common names: **Arusha:** melelek, ormelelek; Eng: red thorn; **Maasai** melelek, ormelelek.

Ecology: One of the highland umbrella thorns, 1,500-2,500 m. Often left for shade in pastureland. In Tanzania locally abundant on the Maasai highlands in the north, scattered in some parts of the Rift Valley and in woodlands with a cool moist climate.

Uses: Firewood, charcoal, timber (heavy construction, bridges) posts, shade, dye (bark).

Description: A conspicuously **flat-topped tree** to 15 m. BARK: grey to dark brown, rough, grooved, branchlets brown, hairy THORNS: straight, grey-brown, small but up to 7 cm long LEAVES: compound, **leaf stalk 2-8 cm with 6-15 pair: pinnae** bearing many tiny **pointed** leaflets. FLOWERS **cream-yellow spikes to 7 cm**, flowering **branchlets covered with red gland dots**. FRUIT: **short and wide pods, to 7 cm** straight or curved, shiny brown, splitting on the tree to set free seed.

Propagation: Seedlings.

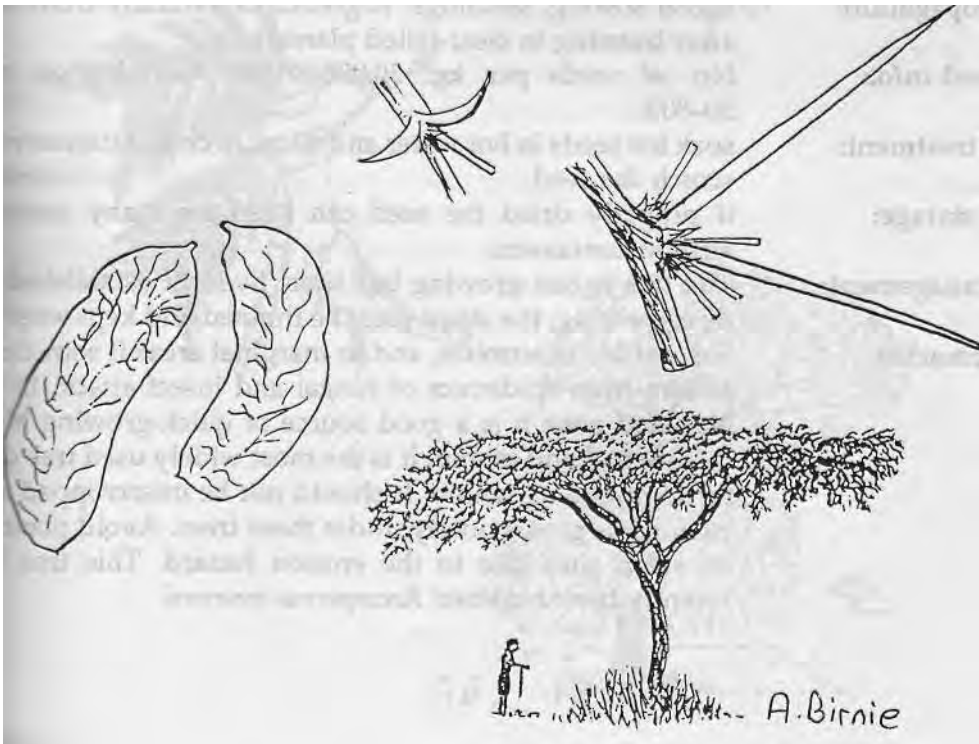
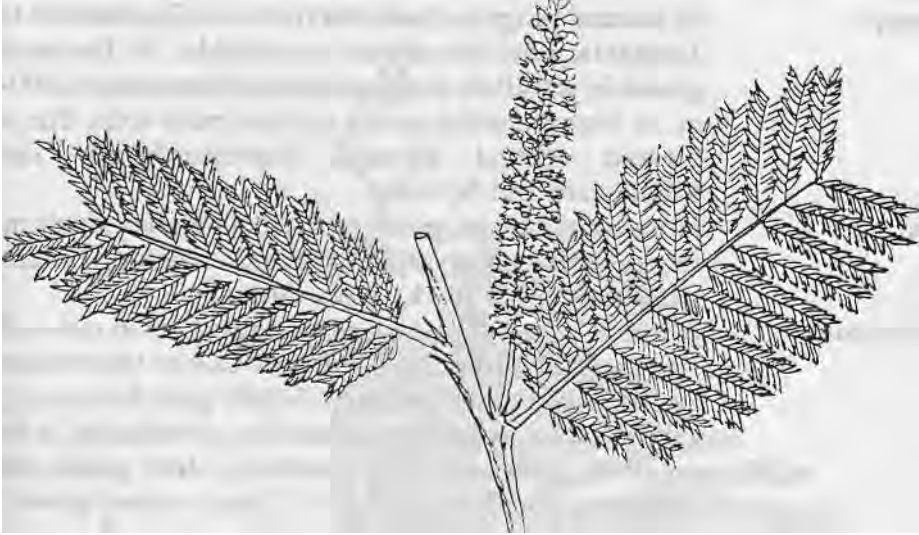
Seed info.: No. of seeds per kg: about 4,000. Many seeds are damaged by insects while still in pods. These can be separated from good seeds through immersion in water: bad seeds float.

treatment: not necessary, but soaking in cold water for 12 hours enhances germination.

storage: seed can be stored for long periods if kept cool, dry and insect free.

Management: Slow growing; lopping.

Remarks: The tree is not well suited for combination with crops due to its broad canopy and heavy shade. Bark crushed in water can be sprinkled on hot pots to colour them red.



Australia

Common names: **Chag:** man'goi; **Eng:** black wattle, tan wattle; **Kinga:** misyamba mititu; **Samb:** muwati; **Swah:** muwati.

Ecology: Its natural range is Australia from hot Queensland to cool Tasmania; now introduced worldwide. In Tanzania it is grown in woodlots and commercial plantations, 1,500-2,500 m, in high-potential zones and on most soils. The tree is planted around farmers' homesteads in Lushoto, Kilimanjaro and Njombe.

Uses: Firewood, charcoal, poles, posts, tool handles, medicine, bee forage, soil conservation, nitrogen fixation, ornamental, windbreak, fibre (bark), gum, tannin.

Description: A tree 2-15 m tall providing straight poles in close-planted stands. The trunk often leans over due to the shallow root system. Most parts are hairy. **BARK:** grey, becoming black and fissured, splitting and curling, **producing a brown resinous gum.** **LEAVES:** feathery, **dull green, leaflet! extremely small,** on stalks to 12 cm, a small gland at the base of the leaf stalk. **FLOWERS:** **pale yellow** in small round heads on **branched stalks,** sweet scented. **FRUIT** pods, straight or bent, **3-10 cm, jointed between the seeds drying dull brown.**

Propagation: Direct sowing, seedlings. Regenerates naturally from seed **after burning** in clear-felled plantations.

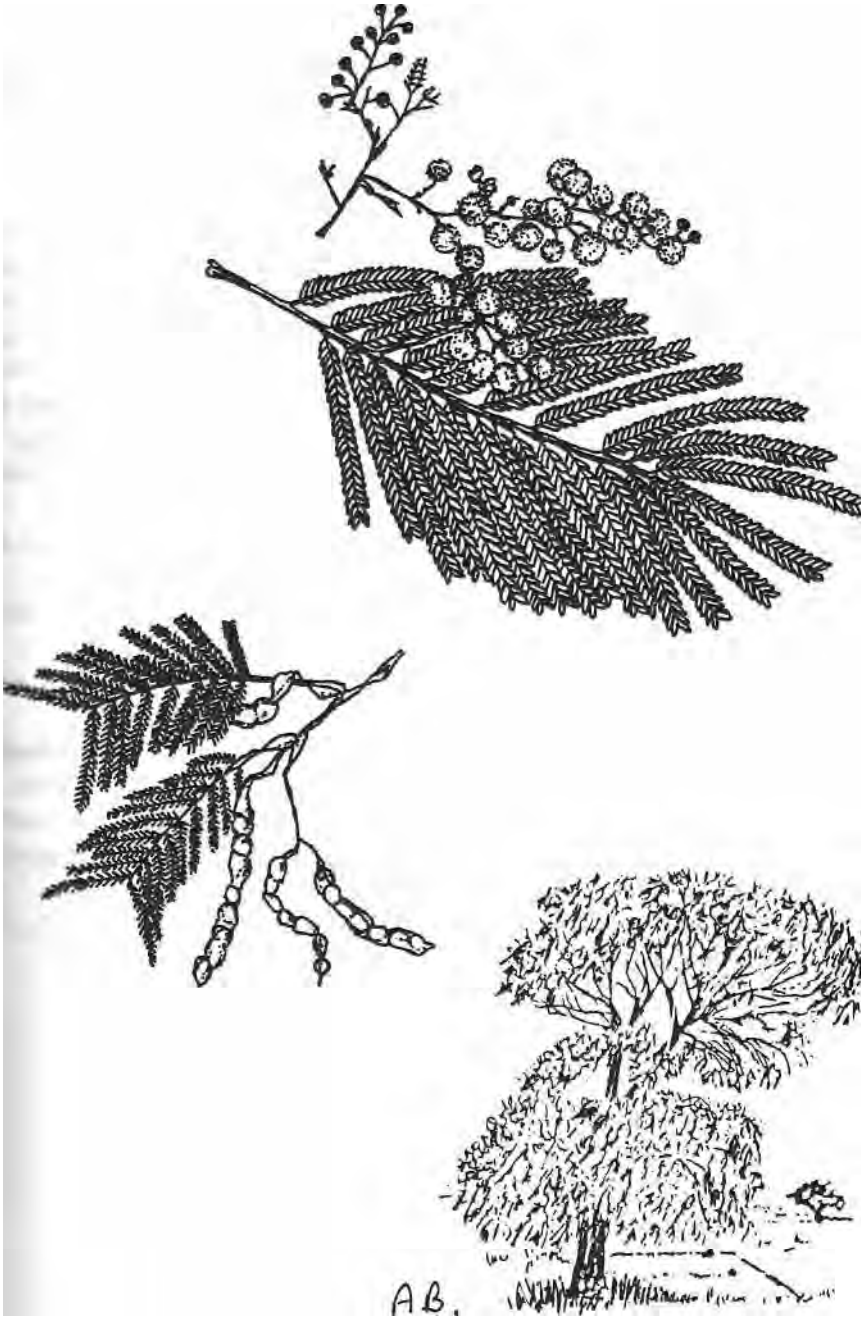
Seed info.: No. of seeds per kg: 50,000-80,000. Germination rate 50-80%.

treatment: soak the seeds in hot water and allow to cool. Alternatively scorch the seed.

storage: if properly dried the seed can keep for many years in airtight containers.

Management: The tree is fast growing but short lived. If established by direct sowing, the stand must be thinned and kept weeded

Remarks: Susceptible to termites, and in marginal areas it sometime suffers from epidemics of fungal and insect attack. In the highland zone it is a good source of quick-growing high quality fuel and tannin. It is the most widely used tree crop for high-quality tannin. It should not be intercropped and even grass grows poorly under these trees. Avoid planting on steep sites due to the erosion hazard. This tree has recently been renamed *Rocosperma mearnsii*.

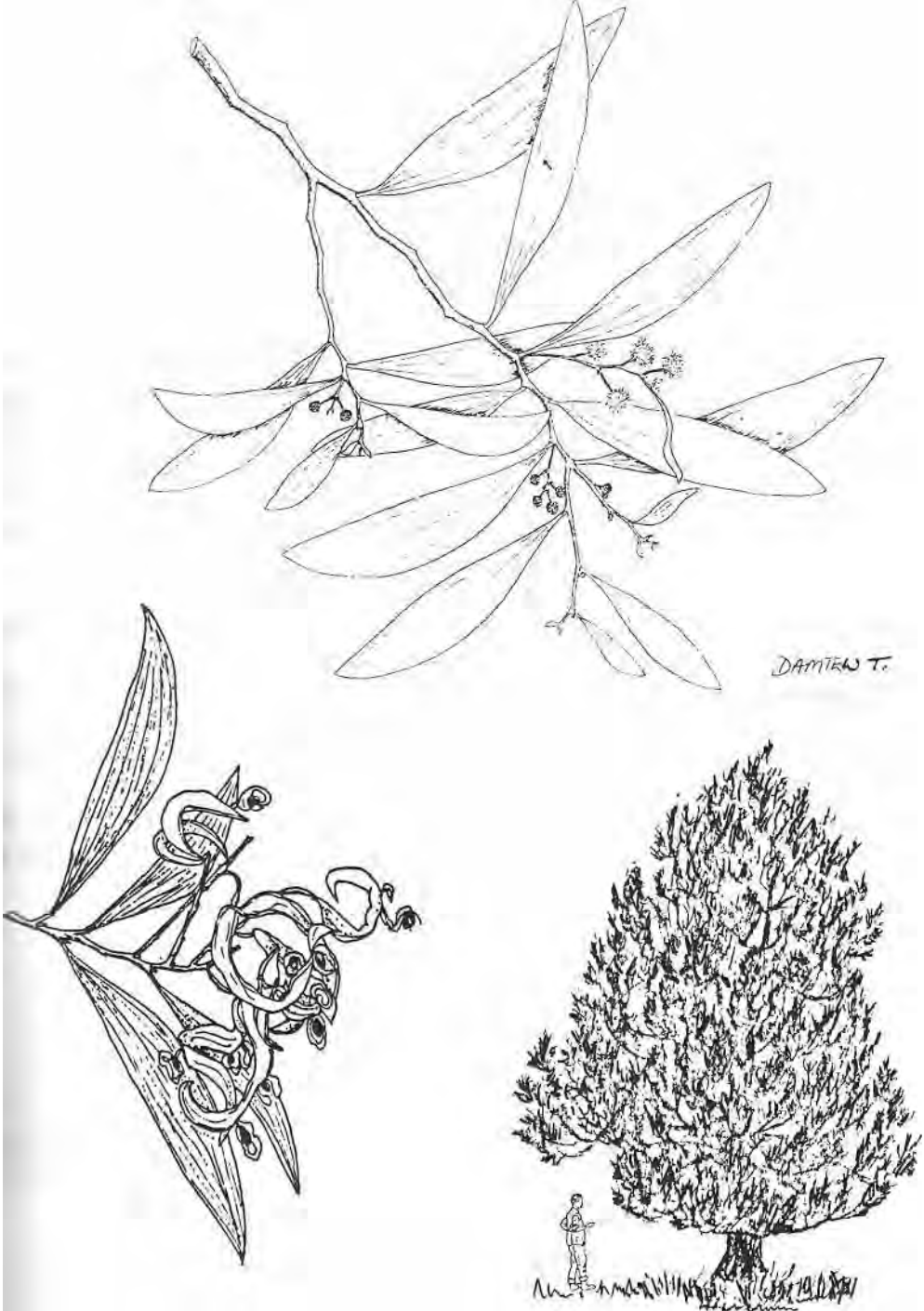


Acacia melanoxylon

Mimosoideae

Australia, Tasmania

- Common names: Eng: Australian blackwood.
- Ecology: Introduced in South America (Uruguay), Asia (Sri Lanka), the Mediterranean region and several countries in Africa. In Tanzania it was first grown at Amani, Mt. Meru and Iringa — although it has not been widely planted. It grows best in deep, fertile loams but will also tolerate wet and nearly swampy soil. It performs well in the climatic range of transitional to wet montane, 1,500-2,500 m.
- Uses: Firewood, charcoal, timber (furniture), plywood, posts, tool handles, ornamental, shade, windbreak, gum.
- Description: Much-branched evergreen timber tree up to 35 m, conical in shape with dense foliage. BARK: dark grey, much fissured. LEAVES: the very first leaves have feathery leaflets but mature leaves are **flat leathery leaf stalks** (phyllodes), slightly curved to 10 cm. FLOWERS: creamy-white in **small round heads on a branched stalk**. FRUIT-, curved, twisted pods about 12 cm long with **hanging, shiny black seeds surrounded by a soft orange aril**.
- Propagation: Seedlings, stumps and direct sowing in high-rainfall areas.
- Seed info.: No. of seeds per kg: 50,000-70,000. Seeds are hard. Germinate in 10-30 days; good seed has a 30-60% germination rate.
- treatment: soak in hot water and allow to cool for 24 hours, or soak in water at 90°C for 1 minute.
- storage: stores well for many years if kept dry and insect free.
- Management: After felling regeneration by root suckers is possible.
- Remarks: A fast-growing tree producing hard and valuable timber. It is moderately resistant to termites but highly susceptible to *Loranthus* spp. and to the fungus *Armillaria mellea*.

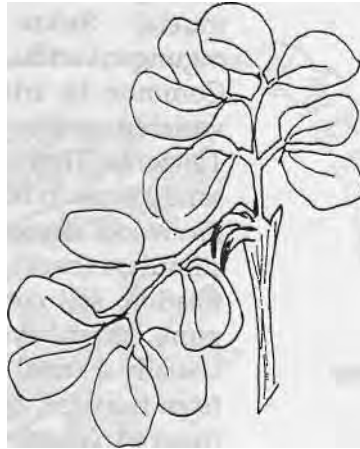


Acacia mellifera

Mimosoideae

Indigenous

- Common names:** **Arusha:** eiti; **Eng:** black thorn, hook thorn; **Gogo:** mkambale mvugala; **Iraqw:** yudek; **Mbug:** mangarada; **Nyam:** mgongwa, mkwata; **Nyat:** mjujumi; **Rangi:** kinwato, mkalankanga; **Suku:** mrugara; **Swah:** kikwata; **Zigua:** msasa.
- Ecology:** A low shrubby Acacia with a natural range in North and East Africa. Widespread in dry scrub with trees, deciduous bushland. In Tanzania, common in Shinyanga, Dodoma, Same and Singida. It may be the main species in dense thorn bush at 300-1,000 m.
- Uses:** Firewood, charcoal, utensils (pestles), fodder (pods, twigs, leaves, flowers), bee forage, medicine (bark), live fence, nitrogen fixation, soil conservation.
- Description:** A shrub or small tree up to 9 m. **BARK:** pale grey-brown, smooth. **THORNS:** distinctive, **small hooked prickles, in pairs, grey with black tips.** **LEAVES:** usually **2-3 pairs of blue-green leaflets each to 2 cm.** **FLOWERS:** creamy spikes to 4 cm attracting bees. **FRUIT:** short, wide pods, tapering abruptly at both ends, **flat papery, pale brown-yellow, rarely to 8 cm,** veined, 3 seeds within.
- Propagation:** Direct sowing, seedlings.
- Seed info.:** No. of seeds per kg: about 20,000. Seed germinate in 2-14 days and germination is 50-80% with good seed.
- treatment:** Soak in cold water for 12 hours or nick seed coat at cotyledon end of seed.
- storage:** Can be stored for long periods if kept dry and insect free.
- Management:** Coppicing.
- Remarks:** The flowers produce excellent-quality honey. The tree is heavily browsed by game and cattle where few trees grow. Can make impenetrable thickets.



Acacia nilotica (A. arabica)

Mimosoideae

Indigenous

- Common names:** **Arusha:** ol giloriti, ol kiloriti; **Eng:** Egyptian thorn, scented-pod acacia; **Gogo:** mfuku; **Iraqw:** kantzi; **Kuria:** michame; **Nyam:** mdubilo, mgunga; **Nyat** muhinko; **Rangi:** kihungawisu, kihungawiswa, kijame; **Samb:** mgelegele, muela; **Suku:** mdubilo; **Swah:** mgunga; **Zigua:** mgungankundu.
- Ecology:** Common in arid and semi-arid areas in Africa. A very variable species with several subspecies, including three in Tanzania. They grow on a wide variety of soils from coastal sandy ones to black cotton soils, 0-1,800 m.
- Uses:** Firewood, charcoal, poles, tools, carvings, medicine (roots), stimulant (bark), fodder (leaves, pods), bee forage, nitrogen fixation, soil conservation, soil improvement, shelterbelts, gum, tannin, dye, live fence, toothbrushes.
- Description:** Usually a small tree to no more than 6 m. Often branched from the base, crown rounded. **BARK:** brown-black, rough, fissured, young shoots red-brown, hairy. **THORNS:** **greyish, to 10 cm, straight, usually shorter.** **LEAVES:** compound grey-green, new growth in dry season, 2-11 pinnae with few to many leaflets, small glands visible along leaf stalks. **FLOWERS:** fragrant, **round heads, bright yellow.** **FRUIT:** straight or curved pods, **17 cm long, to 2 cm wide,** coast variety is dark, shiny, inland variety **green and fleshy, soft, hairy, with fruity smell.** Some varieties have pods that are constricted between the large seeds like a necklace.
- Propagation:** Seedlings, direct sowing.
- Seed info.:** No. of seeds per kg: 6,000-11,000. Seed attacked by beetles in pods; separate through immersion in water — bad seeds float. Germination rate 60-90%.
- treatment:** not necessary for fresh seeds. For stored seeds only, nick or soak in hot water, allow to cool, and soak for 24 hours,
- storage:** seed stores well if kept cool, dry and insect free.
- Management:** Medium to fast growing on good sites; lopping, pollarding.
- Remarks:** Seedlings do not compete well so weeding is essential. Wood is tough, termite resistant. Can form thickets.

Indigenous

Common names: **Eng:** falcon's claw acacia, white thorn; **Fipa:** miombwi; **Haya:** mkuku, omugu; **Hehe:** msukanzi, mtopotopo; **Gogo:** muwindi; **Goro:** amafughuni, fitsimo; **Iraqw:** amafughuni; **Lugu:** muwindi; **Mate:** mtonya, mwao; **Mbug:** morufu; **Mwera:** mkwanga; **Nyam:** livindwe, mgupulu; **Nyaf:** mukese; **Rangi:** kijame, mungurufa; **Samb:** mgunga; **Sukir:** mugu, ngingu; **Swah:** mgunga; **Zigua:** mdunga.

Ecology: This Acacia is widespread in tropical Africa with several varieties. Common along water courses and swamp edges throughout the dry and moist plateau area of Tanzania. Although tolerant of alkaline and saline soils, it requires rich valley soil or black cotton soil with permanent moisture in subsoils to grow well. Trees planted in eroded areas like Kondo and Shinyanga have performed well.

Uses: Firewood, timber, posts, farm tools, medicine (leaves and roots), fodder (pods, leaves, seeds), ornamental, nitrogen fixation, soil improvement, gum, live fence.

Description: A tree with feathery foliage up to 20 m, an **open canopy with a spreading crown**. **BARK:** yellow-grey, fissured, variable, sometimes flaking or scaling. The trunk and branches may bear hooked prickles on a swollen woody base. **THORNS:** in pairs, **small hooked prickles, pale or dark**. **LEAVES:** compound, **13-40 pairs pinnae, leaflet very small and narrow, sharp pointed**, paler below, leaf stalk hairy, with glands to 8 cm long. **FLOWERS:** **in spike to 12 cm, two or more together, creamy white**, fragrant, flowering with new leaves, flower stalks hairy. **FRUIT:** pods, **straight, flat**, tip pointed, **to 18 cm, smooth, brown**. **Propagation:** Seedlings, direct sowing.

Seed info.: Seeds prolifically. No. of seeds per kg: 14,000-16,000. Good seeds germinate in 10-20 days; germination rate 60-90%.

treatment: immerse in hot water, allow to cool and soak for 24 hours or nick seed at cotyledon end.

storage: seed can be stored if kept cool, dry and insect free.

Management: Fast growing on good sites; pollarding, coppicing.

Remarks: The tree provides excellent fuel and termite-resistant timber but is unpleasant to handle or work with in plantation because of the exceptionally sharp and hooked thorns of the branches. It is regarded as an indicator of suitability for cotton and tobacco.

Acacia polyacantha (*A. campylacantha*)

Mimosoideae



Acacia saligna (Acacia cyanophylla)

Mimosoideae

Australia

Common names: **Eng:** blue-leafed wattle, golden-wreath wattle, Port Jackson willow, weeping wattle.

Ecology: This tree is indigenous to western Australia but now widely planted in tropical and sub-tropical areas as well as in the Middle East, Uruguay and Mediterranean Africa. In Tanzania it grows on a wide range of soils tolerating saline and alkaline soils and even infertile acid soils. It grows well in lowlands (below 500 m) with a mean annual rainfall of 250-1,000 mm.

Uses: Firewood, posts, fodder (leaves), nitrogen fixation, soil conservation, soil improvement, shade, windbreak, live fence, gum (food preservative).

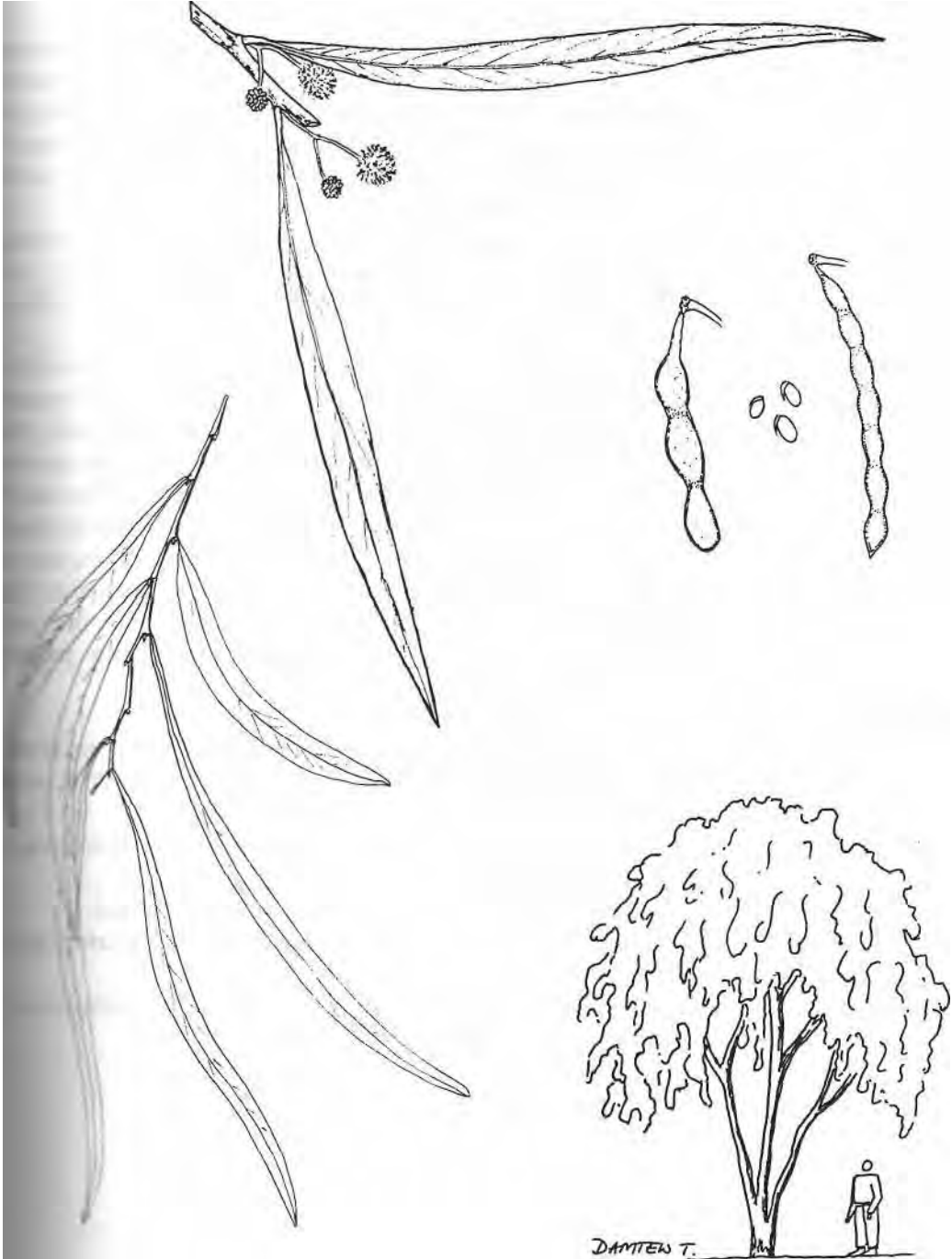
Description: A small tree up to 8 m in height, the bole usually less than 1 m. Old trees can have trunks up to 30 cm in diameter. Many low descending branches give the tree a shrubby appearance. **BARK:** smooth, grey-brown. **LEAVES: long and thin to 22 cm** (feathery leaves in seedlings are followed by flattened leaf stalks, the mature "leaves" which look like gum-tree leaves). **FLOWERS: bright yellow, in small round heads**, on stalks to 2 cm. **FRUIT:** thin pods, straight or curved to 15 cm, narrowed between seeds.

Propagation: Seedlings, root suckers.

Seed **info.:** No. of seeds per kg: 50,000-60,000. The seeds are hard.
treatment: immerse in hot water, allow to cool and soak for 24 hours.
storage: seed stores well if kept dry and insect free.

Management: *Acacia saligna* grows well from seed. It is usually grown as an understory in fuelwood stands of Eucalyptus as it will tolerate moderate shading. Coppices.

Remarks: Suitable for planting in steep eroded and degraded sites in the coastal zones where loose and dry soil prevents establishment of other species. It is grown commercially for the gum content. Leaves are only eaten by animals if no other fodder is available.

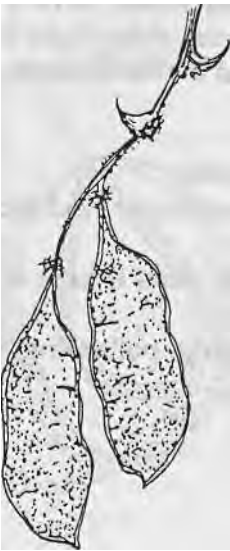


Acacia Senegal

Mimosoideae

Indigenous

- Common names:** **Bara:** yudek; **Eng:** three-thorned acacia, Sudan gum arabic; **Gogo:** mzasa; **Iraqw:** yudek; **Nyam:** mgwata, mgwatu, katatula, katita; **Nyat:** mukhubo; **Rangi:** muhunga; **Suku:** igwata, mkwata; **Zinza:** bwara, mkoto.
- Ecology:** An African Acacia common in arid and semi-arid zones, 0-1,700 m, very drought resistant but prefers moist, well-drained soils and tolerates high daily temperatures and long dry seasons. The extensive lateral root system helps to bind soil together. In Tanzania it is widespread in dry scrub and wooded grassland.
- Uses:** Firewood, charcoal, poles, tool handles, medicine (roots), fodder (pods, shoots, leaves), nitrogen fixation, soil conservation, soil improvement, rope (root bark fibres), gum, dye (seeds).
- Description:** A shrub or tree to 12 m, rounded, many low branches **BARK:** waxy, smooth, then **peeling yellow and papery from red-brown base.** **THORNS:** prickles in threes, the central one hooked downwards, the two laterals curved up, brown to black. **LEAVES:** compound, usually hairy, only 3-6 pairs of pinnae, on a stalk to 7 cm, leaflets grey-green, small and narrow. **FLOWERS:** **creamy spikes**, one or more, 2-8 cm long, fragrant, usually develop before the rainy season, buds are red. **FRUIT:** pods, variable, thin and flat, oblong 10 cm, soft **grey-yellow becoming paper brown, veins clear**, few seeds.
- Propagation:** Seedlings, direct sowing.
- Seed info.:** No. of seeds per kg: 8,000-11,200. Susceptible to beetle attack, germination is uniform and good, up to 70 % at 15 days.
- treatment:** not necessary for fresh seed; for stored seed nick or soak in cold water for 24 hours.
- storage:** will store well in a cool, dry and insect-free place.
- Management:** Slow growing, needs protection from animals during early stages; lopping, coppicing.
- Remarks:** Can be intercropped (sorghum, millet). Gum production is excellent when grown on poor soils.



Acacia seyal

Mimosoideae

Indigenous

Common names: **Chag:** mwera; Eng: white thorn; **Fiome:** fuguma; **Hehe:** mubata, mubaya; **Gogo:** mdejedeje, mlaka, mnomko; **Jita:** ilula lyape; Kere: ilula; **Goro:** fughumo; **Iraqw:** karbu; Nyam: vulula, vulula-wape; **Nyat:** mlula; **Nyir:** mlula mnykundu; Rangi: mweda **Suku:** ilula lyape, ilula lyelu.

Ecology: This is a typical tree of semi-arid zones widespread in tropical Africa with various varieties. In Tanzania it is found on seasonally flooded black cotton soils, in river valleys and wooded grasslands, 600-1,800 mm.

Uses: Firewood, charcoal, poles, posts, medicine (bark, gum), fodder (leaves), bee forage, nitrogen fixation, soil conservation, windbreak, gum, tannin (bark), dye (bark), live fence.

Description: A small- to medium-sized tree 3-12 m, irregular umbrella crown, often many trees together. **BARK:** distinctive powdery **white to pale green or orange-red**. **THORNS:** **diverging pairs, white, stout, to 8 cm** sometimes smaller or none. Variety *fistula* bears whistling thorns (ant galls) at the base. **LEAVES:** compound with 3-7 pairs of pinnae, bearing a gland on the leaf stalk, leaflets tiny. **FLOWERS:** very many, **yellow, in large round heads** over 1 cm across, fragrant. **FRUIT:** narrow, curved, shiny light brown pods, in bunches, slightly constricted between seeds, splitting on the trees, 7-20 cm long.

Propagation: Seedlings.

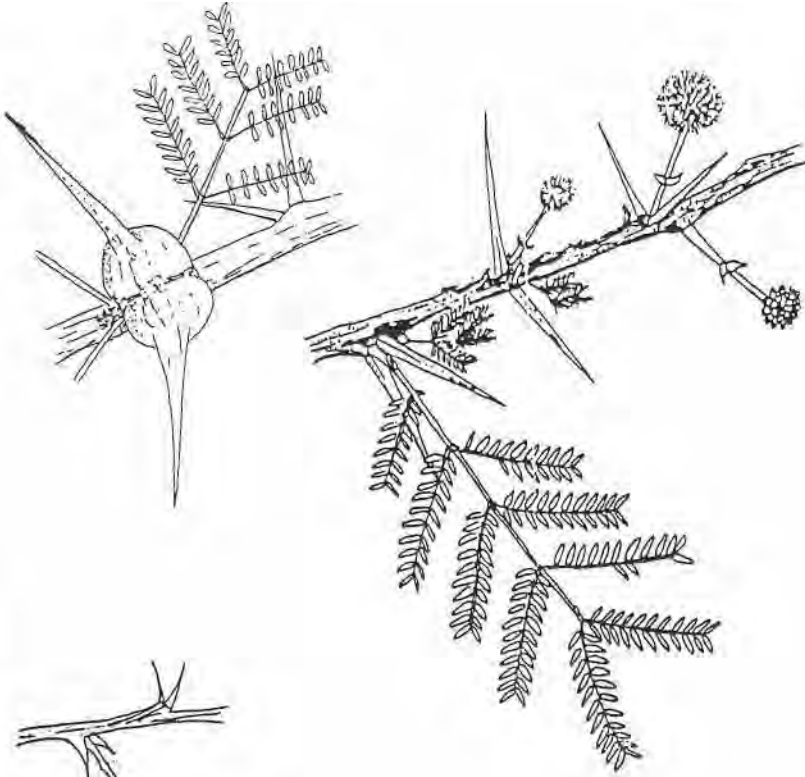
Seed info.: No. of seeds per kg: about 20,000.

treatment: not necessary for fresh seed; for stored seed nick or soak in cold water for 24 hours.

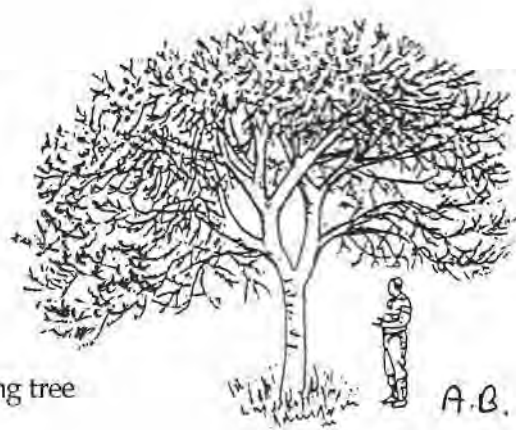
storage: seed can be stored for several years if kept cool, dry and insect free.

Management: Medium to fast growing; lopping, pollarding, coppicing.

Remarks:



young tree



Acacia tortilis (A. spirocarpa)

Mimosoideae

Indigenous

Common names: **Arusha:** oldepesi, olerai, sanzavi; **Bara:** harbanghedj honywam; **Chag:** mrimba, msawero; Eng: umbrella thorn; Gogo: mkungugu, mwaligunza; **Goro:** tsantsafi; **Hehe:** mhango, muhangu; **Iraqw:** harbagheid, fistoo, santsafi; **Jita:** muhare; **Maasai:** ol asili, ol gorete; **Mbug:** moonga, movunga; Nyam: mgunga; **Nyat:** mgunga; **Pare:** mgunga; Rangi: muhunga; **Sand:** afa; **Swah:** mgunga, mugumba; **Suku:** mgunga; Zigua: mkongoe.

Ecology: A common Acacia all over Africa and also found in the Middle East, Israel, Saudi Arabia and Yemen. In Tanzania, it grows in most parts of the country, especially the north. It prefers deep well-drained loamy soil but can also **grow** in shallow soil. Its deep roots penetrate a wide area to collect water. Grows up to 1,500 m in Tanzania.

Uses: Firewood, charcoal, timber, poles, posts, fodder (shoots,] leaves, pods), bee forage, soil conservation, nitrogen fixation, shade (livestock), fences (cut branches), fibre (bark).

Description: A medium-sized thorny tree 4-20 m, the **crown layered, flat and spreading**, or rounded. **BARK: grey-black, cracked and fissured** when mature. **THORNS: two kinds: pairs of small hooked thorns, also pairs of straight white thorns to 8 cm**, sometimes mixed pairs. **LEAVES:** compound, 2-10 pairs of pinnae on a **short stalk** 2-4 cm. **FLOWERS:** round, fragrant, **cream**. **FRUIT: yellow-brown pods**, each containing up to 10 brown seeds, hang in **dense bunches spirally twisted**, sometimes **in rings**.

Propagation: Seedlings, direct sowing.

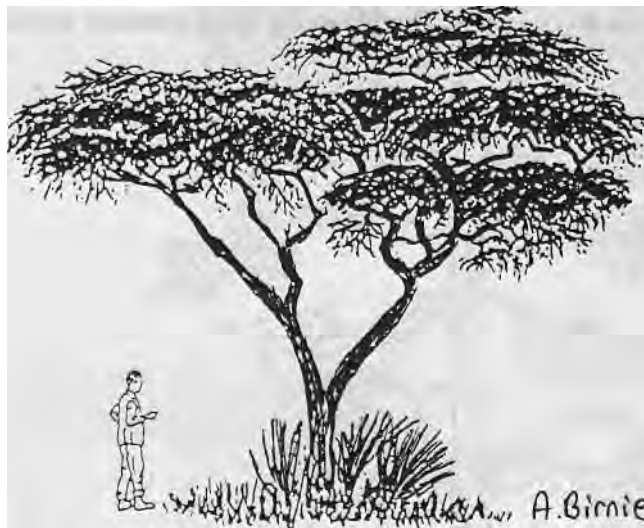
Seed info.: No. of seeds per kg: 12,000-31,000. Slow germination; 72% after 30 days, can be quicker under ideal conditions.

treatment: immerse in hot water, allow to cool and soak for 24 hours or nick seed coat.

storage: seed can be stored for a very long period without losing viability if kept dry and insect free.

Management: A slow-growing species but will grow relatively fast on dry sandy soils. Young trees should be protected from goats. Lopping.

Remarks: *Acacia tortilis* is recommended for fuelwood production in semi-arid areas with low rainfall and sandy soils. It can be left in pasture or crop land. Protect an area from goats to encourage natural regeneration.

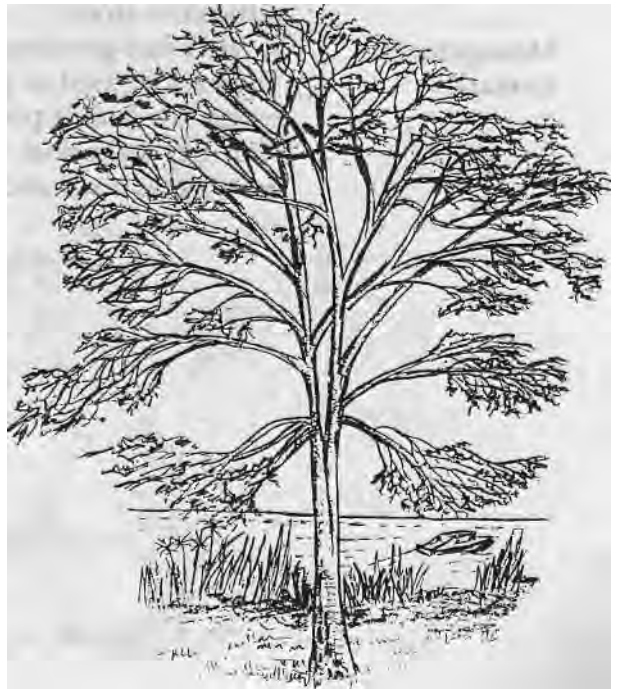


Acacia xanthophloea

Mimosoideae

Indigenous

- Common names:** **Arusha:** olerai; **Bara:** honywam; **Eng:** fever tree, Naivasha thorn; **Goro:** aaray, nari; **Iraqw:** aari, narmo; **Maasai:** elerai, olerai; **Mbug:** locheda; **Nyat:** murya; **Nyir:** mulera; **Pare:** mwerera; **Rangi:** mweda, saimo; **Swah:** mgunga.
- Ecology:** Often many trees together. Prefers a high ground watertable beside lakes or rivers. Also found in central and southern Africa 600-2,000 m, often on black cotton soil but as an ornamental grown in much drier soils.
- Uses:** Firewood, charcoal, poles, posts, medicine (bark), fodder (foliage and pods), bee forage, ornamental, nitrogen fixation, live fence.
- Description:** A large shallow-rooted graceful tree with wide crown to 25 m. **BARK:** easily **recognized by its yellow-green bark**, hairy or powdery, brown and cracked when older. **THORNS:** conspicuous when young, straight, white, in pairs up to 1(cm long. **LEAVES:** compound, 3-6 pairs of pinnae on stall 3-7 cm, many small leaflets. **FLOWERS:** round heads, white or yellow, buds pink. **FRUIT:** yellow-brown pods, to 13 cm, **flat**, slightly **constricted between seeds, breaking into segments.**
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: 24,000-30,000. Germination is good and moderately uniform, reaching 70% after 14 days.
- treatment:** not necessary for fresh seed. Stored seed should be soaked in cold water for 24 hours or nicked at the cotyledon end.
- storage:** seed susceptible to insect damage but can be stored for long time if kept dry and insect free.
- Management:** Growth rate medium to fast; lopping.
- Remarks:** Traditionally bark extracts are used for malaria treatment.

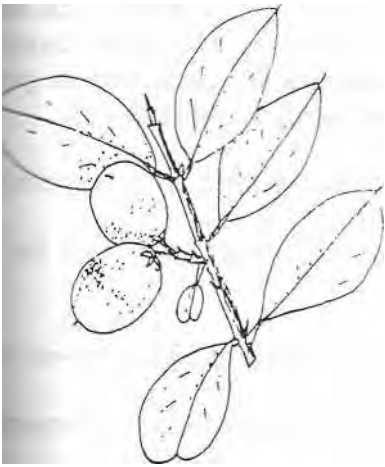


Acokanthera schimperi

Apocynaceae

Indigenous

- Common names:** **Eng:** common poison bush, poison-arrow tree; **Hehe:** msungu; **Samb:** mshunguti; **Swah:** mchungu; **Zana:** msungu.
- Ecology:** A tree of dry woodland, thickets and grasslands, 1,100-2,300 m, often at the margin of dry forest or forest remnants. Prefers rich well-drained forest soil but also grows on black cotton and poor soils in dry sites, for example in Loliondo forest.
- Uses:** Tools (spear shafts), food (ripe fruit), medicine (roots) ornamental, arrow poison (white latex from roots, leaf, bark).
- Description:** A shrub or small **rounded tree**, with **short bole**, to 5 m, sometimes 10 m. **BARK:** dark brown, grooved with age, young twigs flattened. **LEAVES:** opposite, dark shiny green above, **stiff and leathery, oval to rounded 4-7 cm, the tip pointed and sharp.** **FLOWERS:** appearing with early rains, in dense, **fragrant clusters**, almost stalkless, **white-pink, tubular.** **FRUITS:** **oval berries to 2.0 cm, red, becoming purple when ripe**, edible.
- Propagation:** Seedlings.
- Seed info.:** Seed germination is good but sporadic. No. of seeds per kg: 400-450.
- treatment:** No treatment required.
- storage:** Seeds have a high natural water content and therefore are difficult to store.
- Management:** A fairly fast-growing tree.
- Remarks:** The bark is used as poison for arrows and the whole tree except the fruit is poisonous so great care should be taken with any medicinal dosage. Children eat the ripe purple fruit, as do birds and monkeys.



Acrocarpus fraxinifolius

Caesalpinioideae

India, South-East Asia

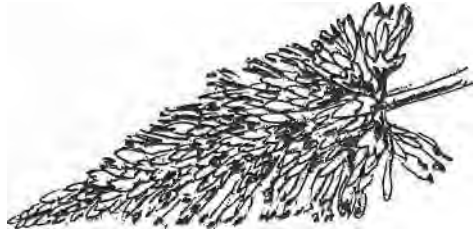
- Common names:** **Eng:** Indian ash, pink cedar, shingle tree.
- Ecology:** Introduced to Tanzania as a plantation tree originally in trials in Lushoto and Tabora, later throughout Tanzania. It is most suitable for moderate altitudes with red soil (1,000-1,500 m) and a moist climate, but can also stand some drought.
- Uses:** Firewood, timber (furniture, tea boxes), roof shingle, beehives, bee forage, shade, ornamental, mulch, windbreak.
- Description:** A large tree reaching 60 m. The bole is often buttressed but then a long straight trunk. It is an evergreen tree except in areas with a marked dry season. **BARK:** pale grey and smooth, trunk and branches bear leaf scars. **LEAVES:** **large compound in distinctive fan shapes to 1 m, young red leaves** look like blossoms, leaflets oval, wavy and pointed to 14 cm. **FLOWERS:** appear on the tree when it is leafless, up to **20 dense heads hang down from branch ends, each 12 cm long, dripping nectar from the red-green flowers, short lived.** **FRUIT:** **big bunches of dark brown pods** persist on the tree. They split easily to release seed.
- Propagation:** Seedlings, direct sowing.
- Seed info.:** No. of seeds per kg: 24,000-29,000. Germination is sporadic, 10-30 days after good pre-treatment.
- treatment:** nick or soak seed in hot water and allow to cool for hours.
- storage:** seed loses viability rapidly.
- Management:** Very fast growing; pollarding, coppicing. Rotation for fuel 8-10 years, timber 30-40 years.
- Remarks:** The tree should not be planted near houses as dry branches drop off. Competes with crops if grown in fields.

Acrocarpus fraxinifolius

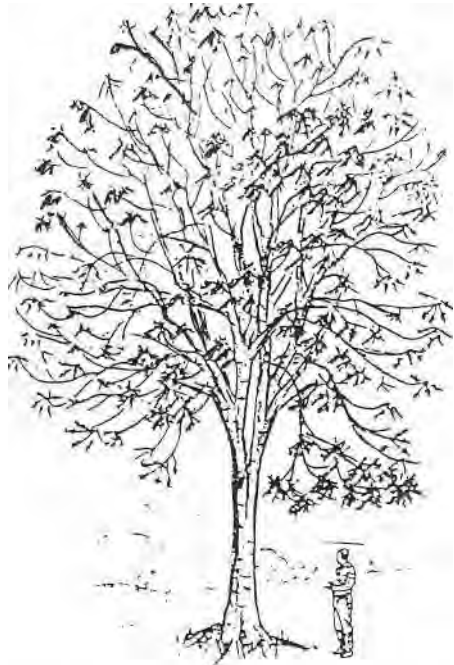
Caesia Ipinioideae



one leaflet



flower head



Adansonia digitata

Bombacaceae

Indigenous

Common names: **Arusha:** mesera; **Eng:** baobab; **Gogo:** mpela; Goro: dakaumo; Hehe: mkondo; **Iraqw:** gendaryandi; **Lugu:** mpela; **Maasai:** ol mesera; **Mbug:** muwiye; **Pare:** mramba; **Rangi:** mwiwi Sand: gele; **Sangu:** mkondo; **Suku:** mwanda, mwandu, ngwandu; **Swah:** mbuyu.

Ecology: The baobab is a well-known tree of tropical Africa south of the Sahara. In Tanzania it grows from the coast to 1,250 m. It is one of the longest living trees in the world (about 3,000 years). Grows in most well-drained soils, is deep rooted, drought resistant and prefers a high watertable.

Uses: Utensils, fodder (leaves, fruit), food (shoots, fruit), drink (seed pulp), medicine (roots, bark), bee forage, string, rope (bark fibres), gum, resin, dye (roots).

Description: **A large deciduous tree**, the trunk diameter may reach 8m and often 20 m high. Bare for up to 9 months, the stiff bare branches resemble roots (upside-down tree). The trunk is sometimes hollow. **BARK: smooth, grey to 10 cm thick**, the spongy wood holding much water. **LEAVES:** mature leaves with **up to 9 leaflets arranged like the fingers of a hand**, **FLOWERS: large and white**, opening at night; the unpleasant smelling nectar attracts pollinating fruit bats. **FRUIT: hairy yellow-brown, very big capsules hang on long stalks** on the bare tree. About 100 seeds lie within white-pink, dry, edible pulp.

Propagation: Seedlings.

Seed info.: No. of seeds per kg: 2,000-3,000. Germination is fair, but very sporadic, up to three months. Good well-treated seed can germinate in 30-50 days,

treatment: immerse in hot water, allow to cool and soak for 24 hours,

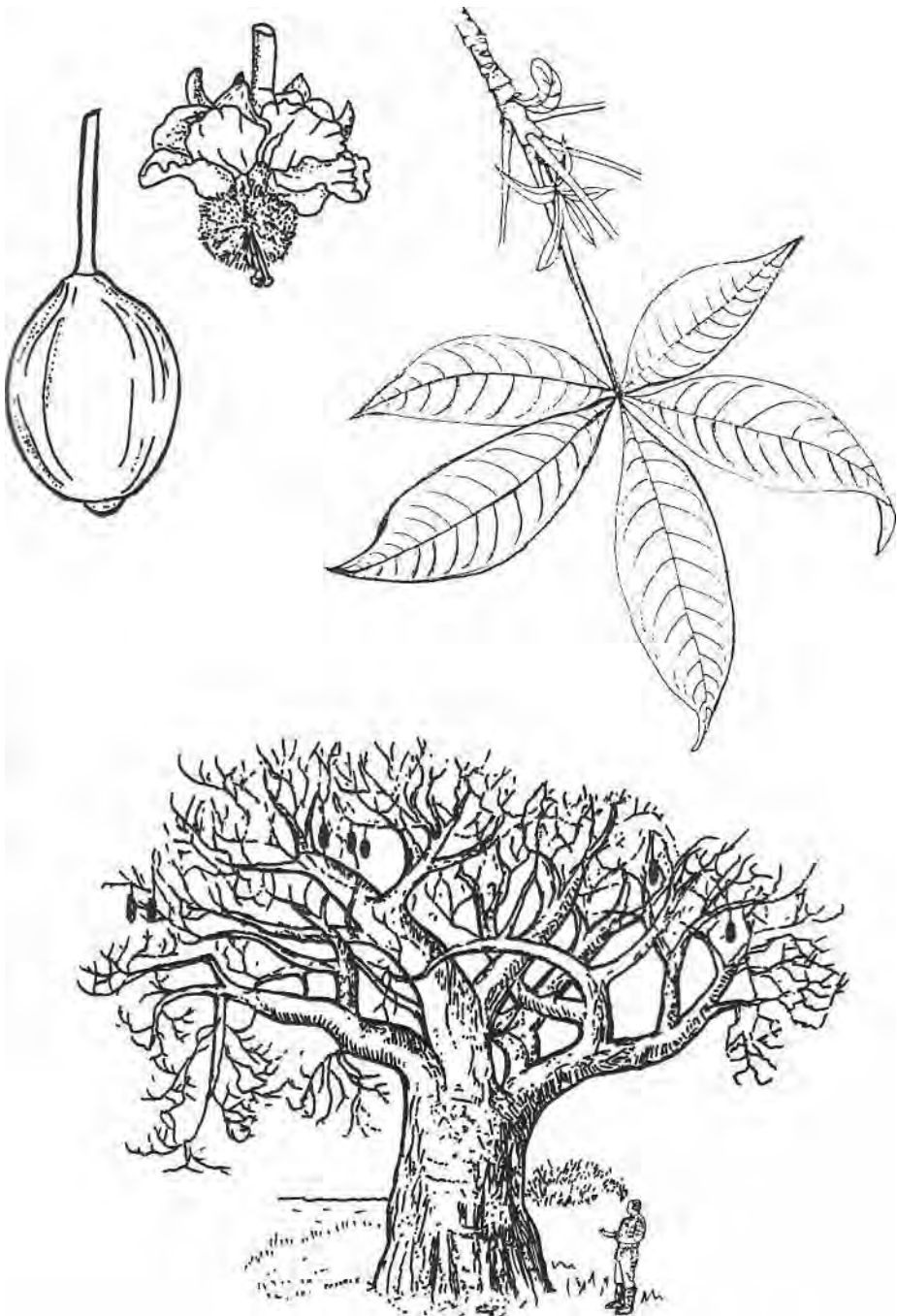
storage: seed can be stored for a long time if kept cool and dry.

Management: Fairly fast growing when young; lopping.

Remarks: The tree is fire and termite resistant and very much liked by elephants who eat the spongy tissues of the bole and can damage or destroy trees. The seeds are eaten by monkeys and humans.

Adansonia digitata

Bombacaceae

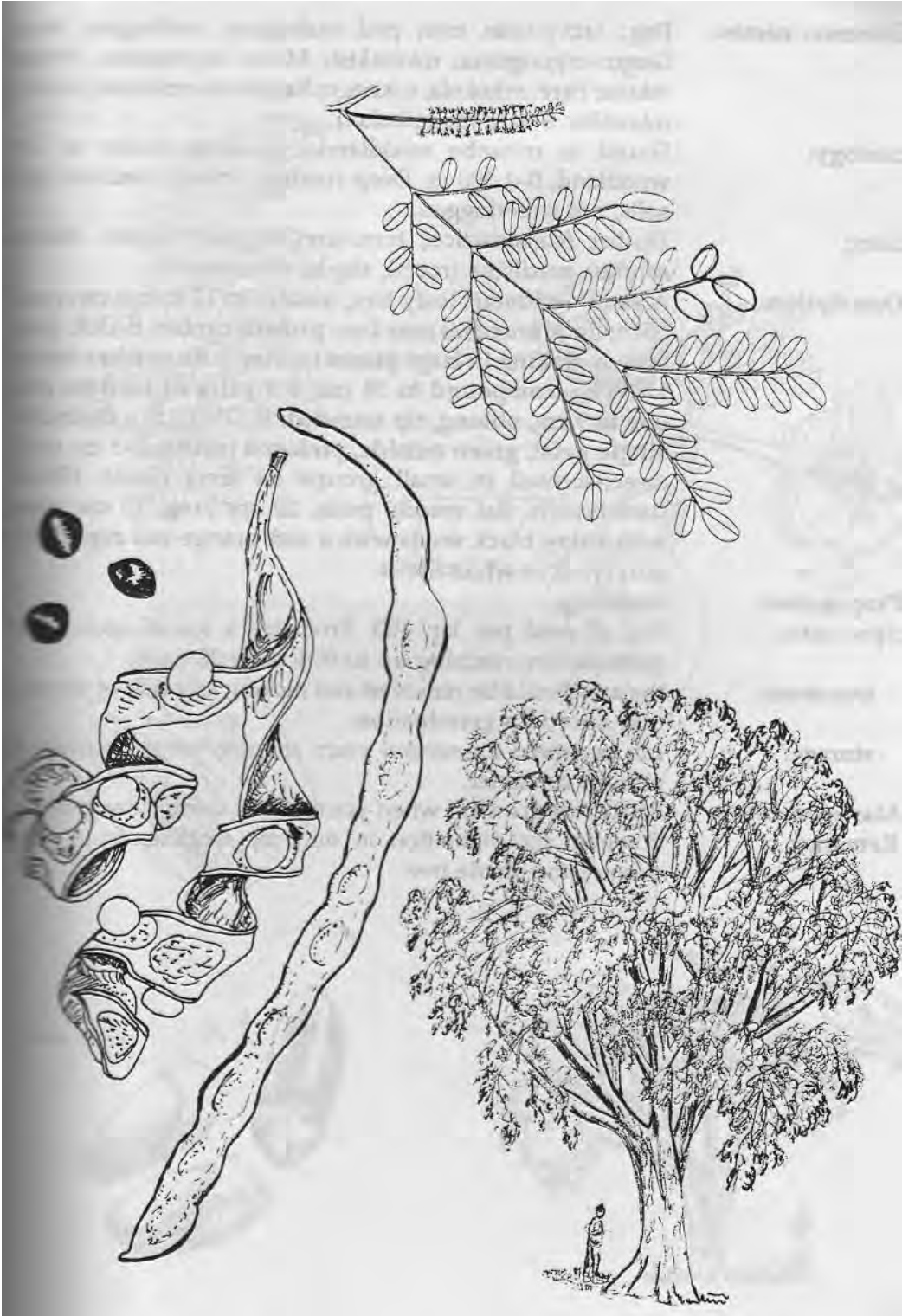


Adenanthera pavonina

Mimosoideae

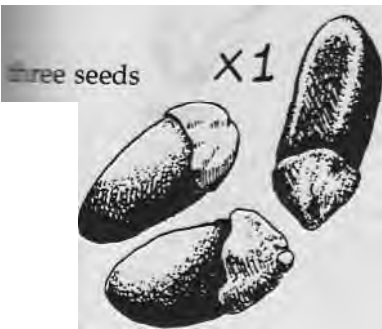
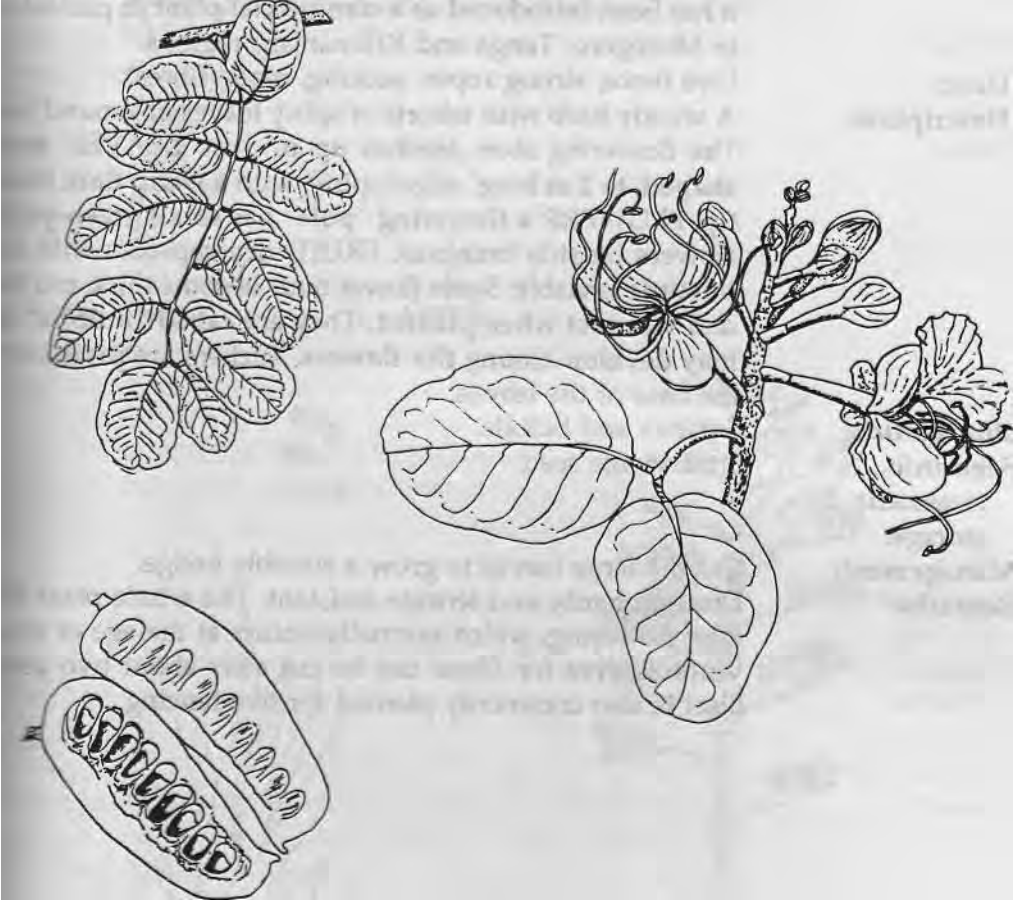
India, South-East Asia

- Common names:** **Eng:** bead tree, Circassian seed, crab's eyes, red sandalwood.
- Ecology:** It has been planted in East Africa as an ornamental tree, often naturalized. At the coast, trees flower in April, produce fruit in June and seed in September. It will grow on infertile sandy soils.
- Uses:** Shade, ornamental, food (leaves), weights (seeds), beads.
- Description:** A deciduous, spreading tree 4-20 m with low leafy branches; **BARK:** grey, smooth when young, becoming rough at maturity. **LEAVES:** compound, alternate, to 40 cm, the **leaflets oval to 4 x 2 cm, the tip rounded, short stalks.** **FLOWERS:** very small, **yellow-brown on slender drooping stalks,** fragrant. **FRUIT:** brown, narrow pods, about 20 cm long, curved and bulging with seeds. **Pods split into two twisted halves to show shiny scarlet seeds against the yellow inner pod.** Seeds are slightly flat, like pills, very hard.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: 4,000. Seed germination is very good, up to 90% after only 7 days.
- treatment:** nick the hard seed coat or immerse in hot water, allow to cool and soak for 24 hours.
- storage:** seeds store very well for a long time if kept dry.
- Management:** Fast growing on good sites.
- Remarks:** Much favoured for planting as an avenue tree in towns especially at low altitudes. The heartwood is hard and red. The young leaves are used as a vegetable in India.



Indigenous

- Common names:** **Eng:** lucky-bean tree, pod mahogany, mahogany bean; **Gogo:** mgongoma, mkolakisi; **Mate:** mgongoma; **Nyam:** mkola; **Pare:** mkokola, mkongo; **Samb:** mbambakofi, mkola mkomba; **Swah:** mbambakofi.
- Ecology:** Found in miombo woodlands, lowland thicket or dr woodland, 0-1,300 m. Deep rooting. Prefers medium light soils, not waterlogged.
- Uses:** Timber (construction, furniture), carving (doors, dhows, canoes), medicine (roots), shade, ornamental.
- Description:** A semi-deciduous leafy tree, usually to 12 m but can reach 35 m; thick branches near base provide timber. **BARK:** grey brown, **flaking in large pieces leaving pale patches below**. **LEAVES:** compound to 30 cm, 4-9 pairs of leaflets, each one to 9 cm, oblong, tip rounded. **FLOWERS:** a distinctly single petal, green outside, pink-red inside, 2-3 cm wide sweet-scented in small groups on erect heads. **FRUIT:** dark-brown, **flat woody pods, 20 cm long, 10 cm wide**, with **shiny black seeds with a soft orange-red cup** (flesh aril) lying in white fibres.
- Propagation:** Seedlings.
- Seed info.:** No. of seed per kg: 480. Produces a lot of seed. Good germination, reaching up to 90% after 28 days.
- treatment:** the aril should be removed and nicking any side of the seed may speed up germination.
- storage:** can be stored for several years at room temperature in an airtight container.
- Management:** Fairly fast growing when young, later quite slow growing
- Remarks:** Potential for plantation in miombo woodlands. A good avenue and shade tree.

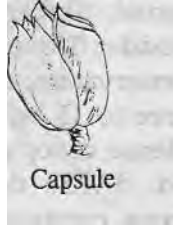


Agave sisalana

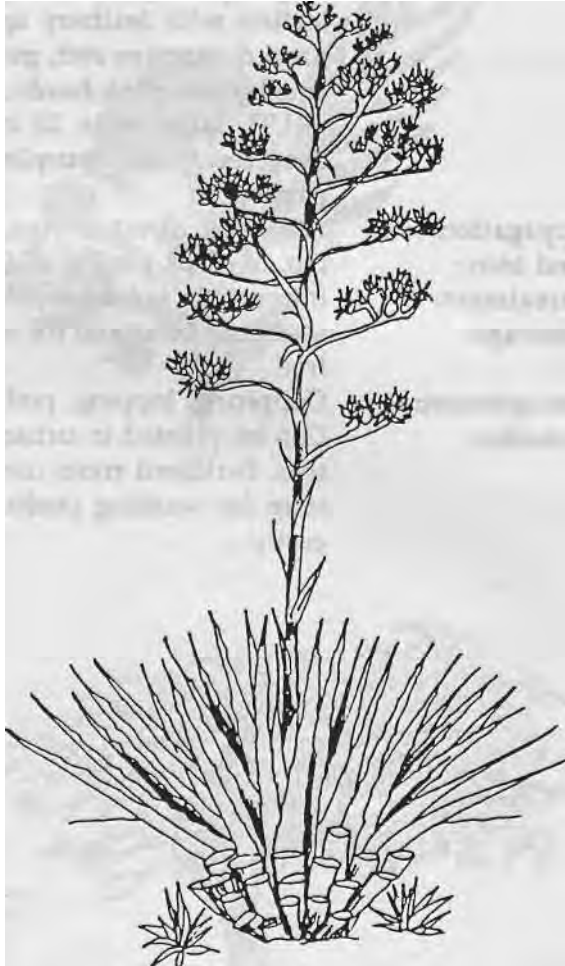
Agavaceae

Exotic from Mexico

- Common names: Eng: sisal; **Swah:** katani, mkonge.
- Ecology: Grows on a wide range of soils from sandy loam to clay, withstands waterlogging and is drought hardy. In Tanzania it has been introduced as a commercial plant in plantations in Morogoro, Tanga and Kilimanjaro regions.
- Uses: Live fence, strong ropes, sacking, mats (fibres).
- Description: A woody herb with whorls of spiny leaves at ground level. The flowering stem reaches up to 6 m. **LEAVES:** sword shaped, **to 2 m long**, edges spiny, with a **sharp dark brown tip**. **FLOWERS:** a **flowering "pole" has small green-yellow flowers** on side branches. **FRUIT:** dry capsules with seed but little is viable. Some flower buds become thick and hard and will root when planted. They are called **"bulbils" and may develop among the flowers**. Suckers are produced at the base of the leaves.
- Propagation: Suckers and bulbils.
- Seed info.: Little viable seed.
- treatment:
- storage:
- Management: Cut the large leaves to grow a suitable hedge.
- Remarks: Drought hardy and termite resistant. The whole plant dies after flowering, which normally occurs at the age of seven years. Leaves for fibres can be cut after about two years. Sisal is also commonly planted for live fencing.



Seeds



Albizia amara

Mimosoideae

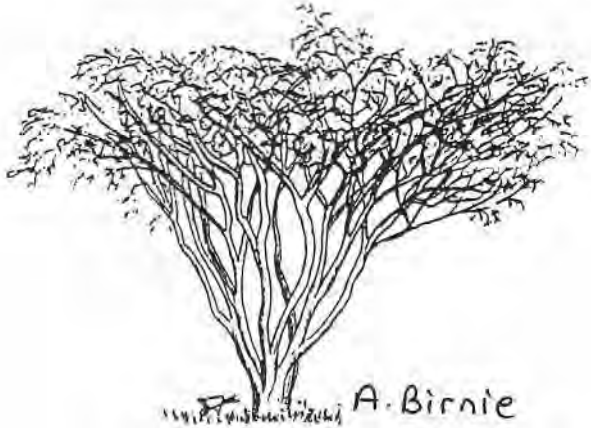
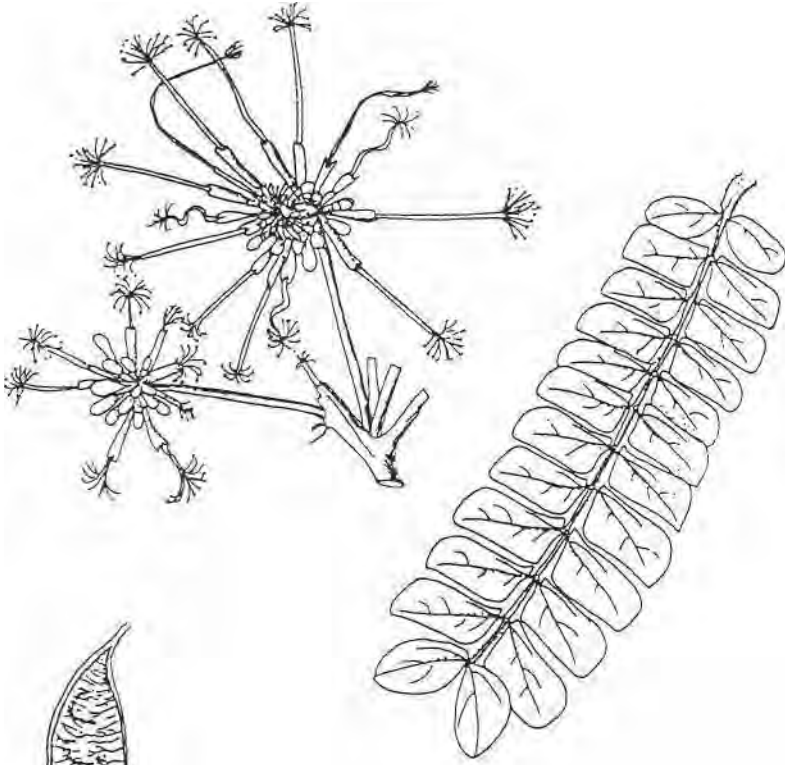
Indigenous

- Common names:** **Eng:** bitter albizia; **Fiome:** kakwol; Gogo: muhogolo; **Goro:** moitsoi, tsori; **Lugu:** mkengehovu; **Mwera:** mtanga; **Nyam:** mpogolo, mtangala; Nyir: mufoghoo; **Rangi:** msisiviri; **Suku:** mpogolo; **Zinza:** mkarasaritu.
- Ecology:** Widespread in Africa, 400-1,900 m, in wooded grassland thickets and Commiphora scrub. In Tanzania it is common in Dodoma, Shinyanga and Singida.
- Uses:** Firewood, charcoal, timber, poles, tools, medicine (bark, leaves, roots), fodder (leaves), ornamental, mulch, nitrogen fixation, soil conservation, resin.
- Description:** A deciduous tree to 15 m, often smaller, with spreading crown, fairly dense canopy, trunk often crooked, usually single stemmed. **BARK:** dark brown, cracked. **LEAVES:** **bright pale green** compound leaf with numerous small leaflets with **feathery** appearance. **Branchlets and leaves have distinctive soft, golden hairs.** **FLOWERS:** numerous small **cream-pink heads**, half spherical, about 2.5 cm across **FRUIT:** **large pods, 20 cm long, 3 cm wide**, thin, bulging over few seeds, **purple when young, later brown and papery.**
- Propagation:** Seedlings, direct sowing.
- Seed info.:** No. of seeds per kg: 10,000-13,000.
- treatment:** Immerse in hot water, allow to cool and soak for 12 hours.
- storage:** seeds can be stored for a long period if kept dry and insect free.
- Management:** Coppicing, lopping, pollarding.
- Remarks:** Can be planted in urban areas as ornamental and avenue tree. Bark and roots contain saponin so can be used as a soap for washing clothes. The wood, although hard, rots easily.



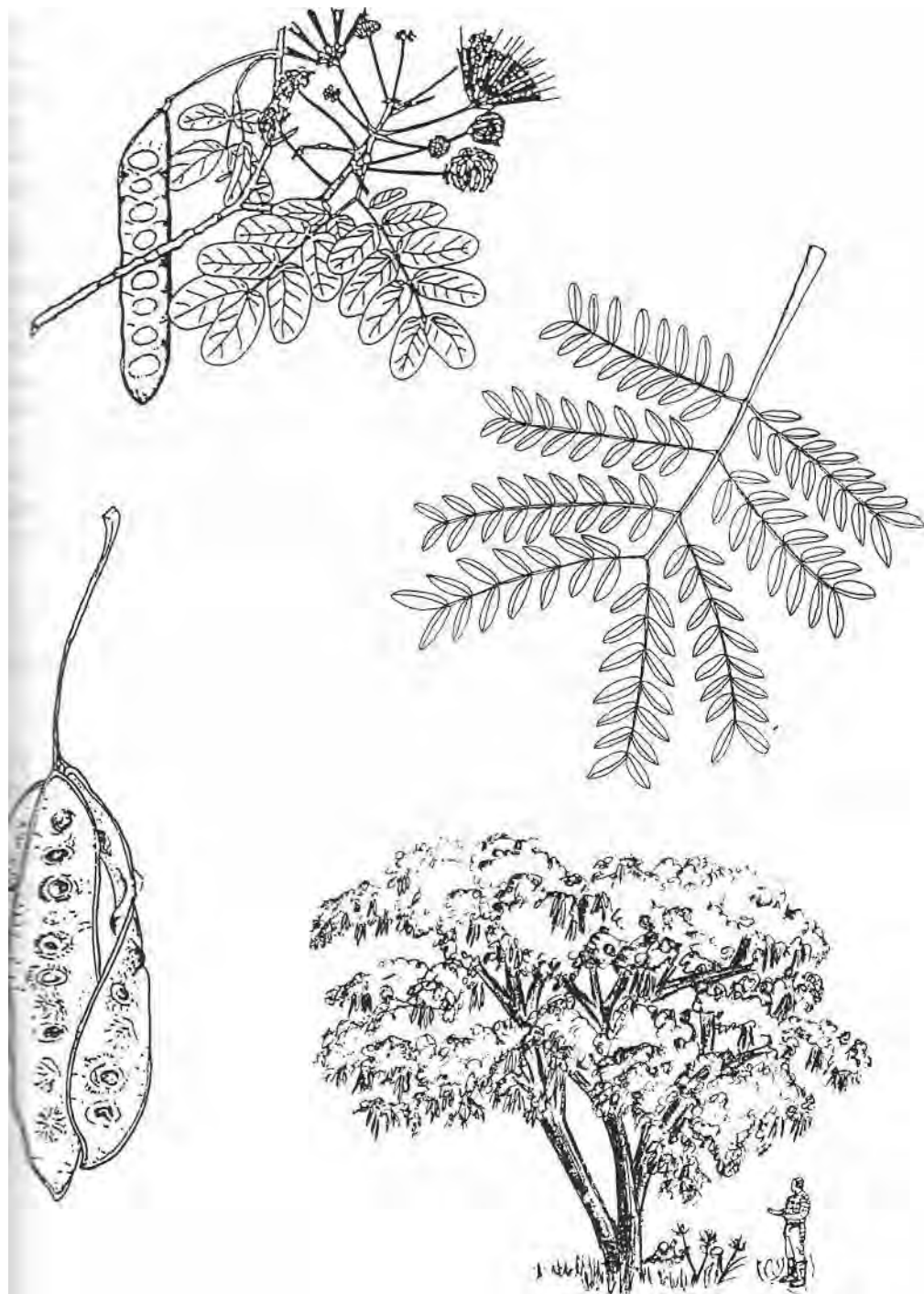
Indigenous

- Common names:** **Arusha:** asangupesi, ol sanguuwezi, sangupesi; **Bara:** masakta, tsori; **Chag:** mboromo, mduka, mfulanje, moisiranga; **Eng:** peacock flower; **Fiome:** sahati, sori; **Fipa:** mtanga; **Haya:** myenzeyenze; **Iraqw:** sarai; **Lugu:** mkenge; **Maasai:** ol geturai, osangupesi; **Mate:** mtanga; **Mbug:** mosiranga; **Nguu:** mkengemaji; **Nyiha:** malembelembe; **Pare:** mreraiambo, msame, msanga; **Rangi:** msaamaji; **Samb:** mshai; **Swah:** mkenge.
- Ecology:** Mainly found in East Africa, but also in Ethiopia, Zaire, Madagascar, and West Africa. In Tanzania it is found from the coastal hills to Kilimanjaro and Kagera, 600-2,350 m.
- Uses:** Firewood, timber (general purpose), utensils (mortars, water troughs), beehives, medicine (pods, roots, bark), fodder (leaves), bee forage, soil conservation, nitrogen fixation, ornamental, shade.
- Description:** A large deciduous tree, **branches ascending to a flat top**, about 15 m high, trunk up to 75 cm in diameter. **BARK: grey and smooth.** **LEAVES: shiny, dark green leaflets, almost rectangular, midrib diagonal, one outer corner rounded.** **FLOWERS: white-pink clusters**, long stamens hang out. **FRUIT: very many pods in bundles, shiny brown, flat with raised edges, 20 cm long, 3 cm wide**, often shorter, 8-14 flat, brown seeds.
- Propagation:** Seedlings, direct sowing, wildings.
- Seed info.:** No. of seeds per kg: 10,000-15,000. Good seed germinates within 3-10 days at optimum rates of 70-80%.
- treatment:** fresh seed requires no pre-treatment. Soak previously stored seeds in warm water and leave to cool to room temperature. The seed coat can also be nicked at the cotyledon end to hasten germination.
- storage:** seed can be stored for at least a year if kept dry and insect free.
- Management:** Fast growing; lopping, coppicing while young.
- Remarks:** Seed should be collected while still on the tree to minimize insect damage. Leaves quicken ripening in bananas when layered with unripe fruit. Despite its name the tree gives only a small amount of gum if the bark is cut. The pale brown heartwood is a medium strong timber that is easy to work.



India, Burma

- Common names:** **Eng:** East Indian walnut, siris tree, woman's tongue; **Swah:** mkingu.
- Ecology:** This tree has been widely introduced into tropical and subtropical regions, becoming naturalized in many. Plantations have been established in South-East Asia, South America, the Caribbean and North and West Africa. In Tanzania it is planted at medium and low altitudes as a shade and amenity tree; common in Morogoro and Tanga. It grows best in wetter lowlands, e.g. the coast and Zanzibar. It prefers black cotton soil, as the roots are near the surface and require a high watertable, but it will also grow on acid, alkaline, and saline soils, 0-1,500 m.
- Uses:** Firewood, charcoal, timber (furniture), flooring, poles, posts, medicine (flowers, bark, seed), fodder (leaves, flowers, pods), bee forage, shade, ornamental, mulch, nitrogen fixation, soil conservation, gum, soap (bark).
- Description:** Usually a deciduous tree 8-14 m but may reach 25 m. The trunk is often short and large branches support a heavy crown. **BARK:** grey-violet with rusty brown breathing pores, rough and fissured. **LEAVES:** compound **feathery** with 3-11 pairs of leaflets, **tip rounded, usually 2-3 cm**. Branchlets and leaves bear **distinctive soft golden hairs**. **FLOWERS:** numerous **cream-yellow-pink, half spherical, about 2-5 cm across, stalked, lasting only a few days**. **FRUIT:** **shiny yellow-brown pods in clusters, decorate the tree a long time**, each 20-30 cm long, bulging over a few seeds, the seeds and pods "chatter" in the wind.
- Propagation:** Seedlings, direct sowing, cuttings, root suckers.
- Seed info.:** No. of seeds per kg: 7,000-12,000. Seed collection is done from the tree or on the ground and seeds are completely dried. Germination is good,
- treatment:** nicking improves germination; alternatively immerse in hot water, allow to cool and soak for 12 hours,
- storage:** seed can be stored for a long time if kept dry and insect free.
- Management:** Fast growing on good sites; lopping, pollarding, coppicing, pruning. Protect from browsing animals.
- Remarks:** Hard and heavy wood which has a good grain suitable for furniture. As in most Albizia, saponin in the bark can be used as soap. It is shallow rooted so should not be planted near houses.



Central and South America

- Common names:** **Eng:** cow tamarind, monkey pod, rain tree, saman tree.
- Ecology:** Occurs most commonly in open country and along streams in forests in Central America and northern parts of South America. It requires no particular soil type and will grow equally well in sandy soils and heavy clays, and even in waterlogged places by rivers, in all areas below 1,300 m. Commonly grown at the coast.
- Uses:** Firewood, timber, tools, carving, food (sweet pulp of pods), fodder (pods, seeds), shade, ornamental, nitrogen fixation, soil improvement, gum, resin.
- Description:** A conspicuous **semi-deciduous tree** with a short, thick trunk, up to 6-8 m tall, its **branches spread horizontally** reaching an amazing 30 m occasionally. **BARK:** distinctive yellow to cream-brown, smooth. **LEAVES:** fern-like foliage, twice **compound leaves** at the end of branches, leaflets bright green, oblong, smooth, to 6 cm long, longest pairs at the end of the stalk. **FLOWERS:** **large stalked heads**, each flower with **fluffy pink stamens** from a cream-yellow base, 3-5 cm across. **FRUIT:** **Pods to 20 x 2 cm, thick, straight, green then black, with an edible sticky pulp** around the seeds. Pods do not break open.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: 5,000-7,400.
- treatment:** immerse seed in hot water for three minutes and allow to cool and soak for 24 hours.
- storage:** seed can be stored for 6 months.
- Management:** Fast growing in good conditions; it matures in a few years.
- Remarks:** Often evergreen and has attractive pink flowers which appear during the dry season. It provides excellent shade. In some countries the well-figured timber is valued for furniture and carvings. The leaves fold inward at night, in cool weather and in rain—hence the name "rain tree"—and during the day they unfold to a horizontal position.



Albizia schimperiana subsp. *schimperiana*

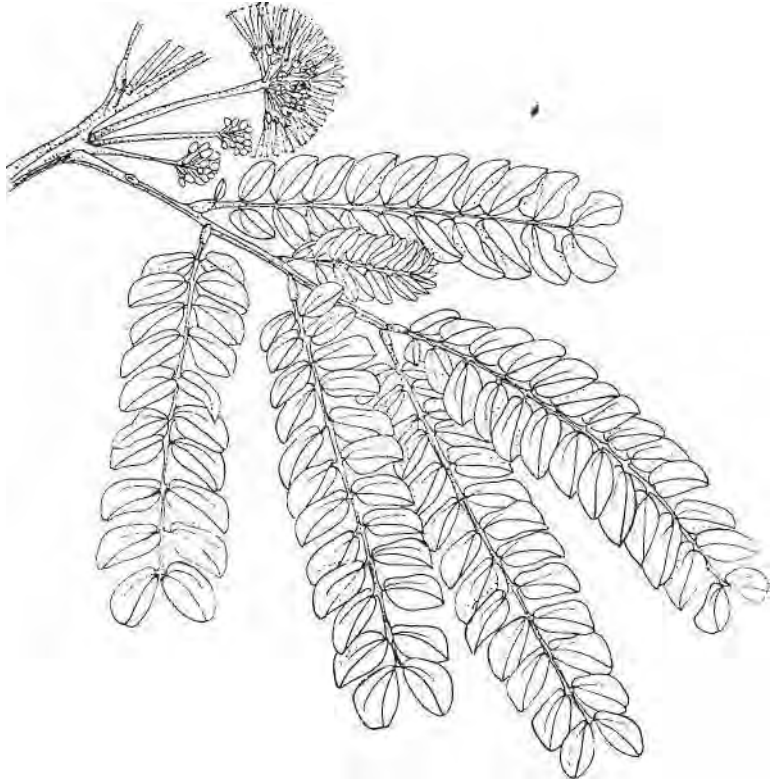
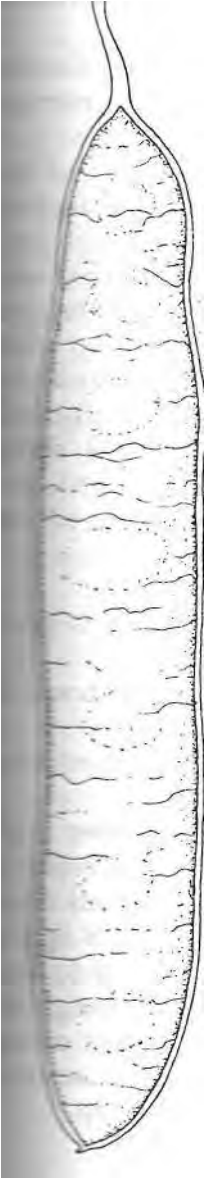
Mimosoidead

Indigenous

- Common names:** **Arusha:** olsanguwesi; **Chag:** mfulanje, mfuluanga, mruka
Eng: long-podded albizia; **Gogo:** mchenje, mkenge-maji;
Lugu: mkenge; **Meru:** nduruka, nruka; **Pare:** mreraiambo;
mririgwi; **Samb:** mshai, mshaimawe.
- Ecology:** Its natural range is eastern Africa from Mozambique to the Sudan and Ethiopia. In Tanzania it is widespread except in the west and south. It is a well-known tree in the Usambara mountains and Kilimanjaro. It grows well in the cool conditions of mountain areas up to about 2,000 m. However, it will also survive in lowland areas which are not too hot.
- Uses:** Firewood, charcoal, timber, tool handles, medicine, bee forage, shade, soil conservation, nitrogen fixation.
- Description:** A semi-deciduous tree to 20 m, very similar to *Albizia gummifera* but the crown usually more umbrella shaped than flat. **BARK:** smooth, pale grey to brownish, branchlets bear velvety brown hairs. **LEAVES:** compound, 4–7 pinnae on a stalk about 25 cm long, leaflets less than 2 cm, **usually hairy, paler below**, shiny above, variable in shape but midrib diagonal, **tips rounded**. **FLOWERS:** **white or creamy**, in loose, conspicuous heads, **flower stalks hair**. **FRUIT:** numerous, persistent, **dull brown pods** with a thick edge, to 30 x 6 cm but often smaller, containing many large seeds.
- Propagation:** Seedlings and wildings.
- Seed info.:** No. of seeds per kg: 13,000-15,000. Collect from trees soon as fruits mature to prevent insect damage. Germination is fair but sporadic.
- treatment:** soak in hot water to hasten germination but this is not essential for fresh seeds.
- storage:** seed can be stored for a long time if kept cool, dry and insect free.
- Management:** Trees raised from seeds perform better than those from wildings. Young seedlings are very susceptible to pests, thus long retention in a nursery should be avoided. Performs better when planted under other trees.
- Remarks:** In Tanzania the tree is recommended for highland areas with mean annual rainfall over 1,000 mm; grown in lines along contours together with grasses. It is being grown as a multipurpose tree in wetter areas (e.g. East Usambaras) where *Leucaena* is not acceptable.

Albizia schimperiana subsp. *schimperiana*

Mimosoideae

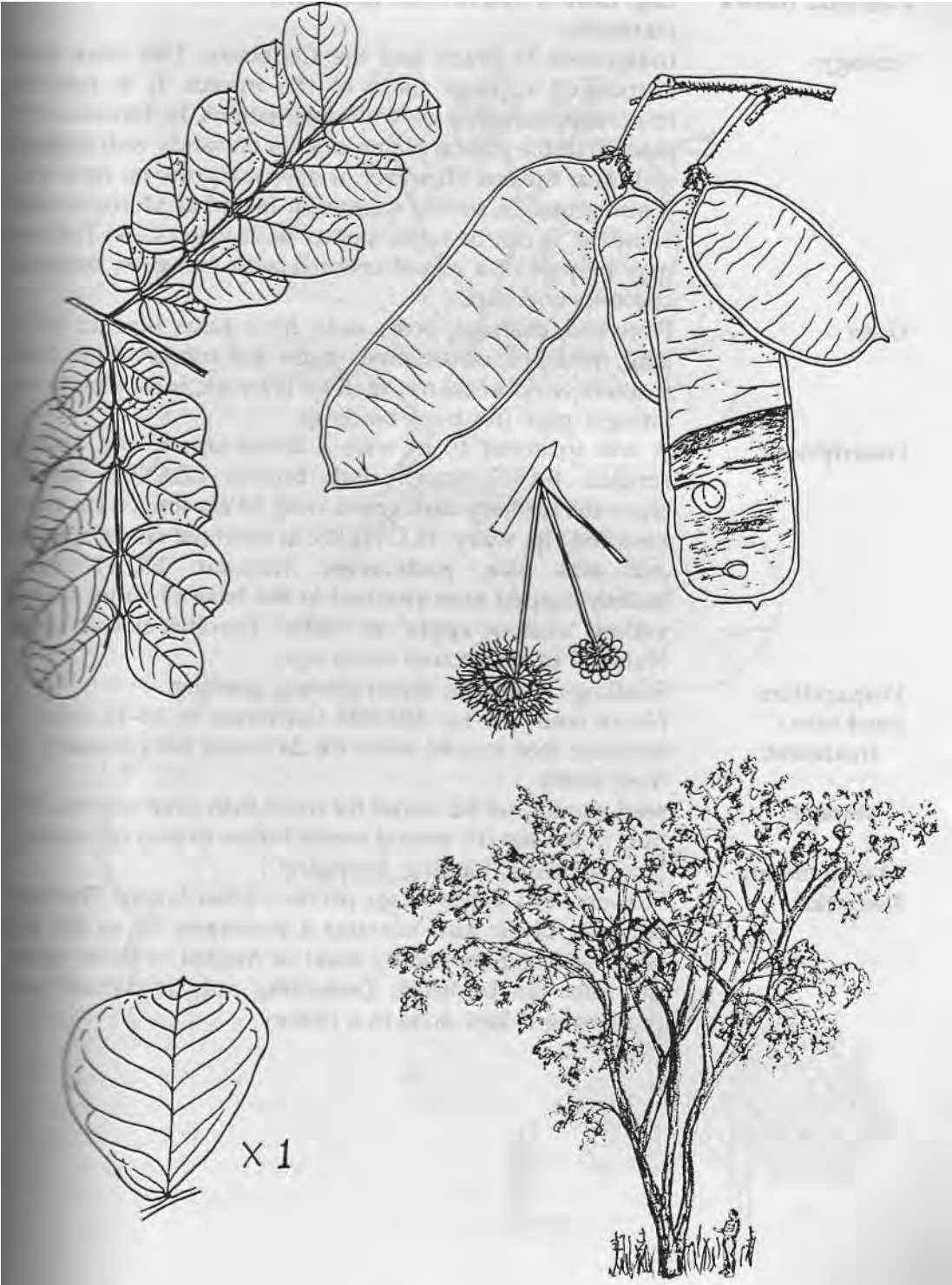


Albizia versicolor

Mimosoideae

Indigenous

- Common names: Bende: masaka; Eng: poison-pod albizia; Fipa: masaka; Goro: moi; Iraqw: moi; Lugu: mnyanza, msazawi; Mate: mtulanzila; Nyam: mkindwanzagamba; Nyat: mughanga; Nyir: munyinga; Rangi: mringa; Samb: mchano, mkinua; Suku: mkingu; Swah: mchanidovu, mkenge, mnduruasi; Zigua: mkingu.
- Ecology: It extends from Kenya and Uganda in the north to Natal in South Africa. Common in deciduous woodlands, bushlands, wooded grassland throughout the Brachystegia areas and miombo. Prefers well-drained soils and a high watertable, 150-1,700 m.
- Uses: Firewood, charcoal, timber (small boats), tool handles, utensils (mortars), medicine (roots, bark), beehives, nitrogen fixation.
- Description: A medium to large deciduous tree with a short trunk to a light spreading crown, usually 5-15 m. Young branchlets and leaf stalks have rust-brown hairs. BARK: rough grey-brown-black, deep wide fissures. LEAVES: compound, only 2-4 pairs of stalks with 3-6 pairs large stiff leaflets, each 2-6 cm long and 1-4 cm across, wider at the tip which is usually flattened with a small, sharp point; hairs above, densely hairy below, veins raised. FLOWERS: large half-spherical heads, red stamens on green-yellow stalks. FRUIT: large pods at the top of the tree, red at first, later shiny red-brown, flat and straight up to 27 x 6.5 cm, containing 4-6 flat seeds about 1 cm across.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: 6,000-8,000. Germination is good, completed after 30 days.
- treatment: fresh seed requires no treatment. Stored seeds should be soaked in cold water for 6 hours before sowing,
- storage: can be stored for long periods if kept dry and insect free
- Management: Fairly fast growing; lopping, pollarding.
- Remarks: High potential for agroforestry and a useful timber in miombo woodlands and for soil-fertility improvement maize/bean/wheat fields in the Matengo highlands. Seeds and pods are poisonous to livestock. The wood is light to moderately heavy but not very durable. It is easy to work for household utensils such as mortars, although the sawdust is irritating to the nose. Bark and roots contain saponins with medicinal uses. Roots containing saponins can be boiled with water and used instead of soap.



Brazil, Caribbean

- Common names:** **Eng:** cashew nut; **Mwera:** nkorosho; **Swah:** mbibo, mkanju, mkorosho.
- Ecology:** Indigenous to Brazil and the Caribbean. Has since been introduced to most parts of the tropics. It is now an important cash crop grown in plantations. In Tanzania it planted in the coastal plains, mainly on sandy well-drained soils near the sea. However, it does not grow on coral soil. It also grows on similar soils as far inland as Morogoro and Handeni. It can be intercropped with vegetables. The tree may be part of a mixed orchard with mangoes, bananas, coconuts and citrus.
- Uses:** Firewood, charcoal, posts, nuts, fruit (juice, liqueur, wine, jam), medicine, ornamental, shade, soil conservation, dune fixation, windbreak, nut shell oil (varnish, inks, tiles, brake linings), gum (for book binding).
- Description:** A tree to about 10 m with a dense crown, but usually smaller. **BARK:** rough dark brown. **LEAVES:** simple alternate, leathery dark green, oval, **15 cm long, 8 cm wide, rounded tip, wavy.** **FLOWERS:** in terminal clusters, **small and star like, pink-cream,** fragrant. **FRUIT:** hard, **kidney-shaped nuts attached to the base of shiny orange yellow "cashew apple" or "bibo"** (swollen flower stalk). Nuts fall to the ground when ripe.
- Propagation:** Seedlings, wildings, direct sowing, grafting.
- Seed info.:** No. of seeds per kg: 150-300. Germinate in 10-12 days.
- treatment:** immerse seed in cold water for 24 hours; not necessary for fresh seeds.
- storage:** seed should not be stored for more than nine months. nuts in the sun for several weeks before storing or planting
- Management:** Slow growing; lopping, coppicing.
- Remarks:** Flowers used as bee forage produce bitter honey. The outer covering of the nuts contains a poisonous oil so the thin skin must be removed by hand or roasted or burnt before the nuts can be eaten. Deshelling nuts is difficult processing is best done in a factory.



$\times \frac{1}{2}$



Annona cherimola

Annonaceae

Ecuador, Peru

Common names: **Eng:** cherimola, cherimoya, custard apple; Swa: mtomoke mtopetope.

Ecology: A small tree growing at 800 m or higher in the Andes. The well-flavoured refreshing fruit was known to the ancient people of the area. It cannot tolerate a hot lowland climate and is grown commercially in Chile, Spain, USA and New Zealand. In East Africa the name "custard apple" has been used loosely for *Annona* species and hybrids. They grow best in cooler tropical uplands over 1,000 m, as in Lushoto, in sandy loam soils with a dry season. They tolerate lower temperatures for growth and fruiting than *A. squamosa*.

Uses: Food (fruit).

Description: A deciduous tree 3-10 m, often branched from the base. **LEAVES:** Alternate, light green, oval and pointed, sometimes narrow, 12-20 cm long with few hairs above but characteristic **golden-brown hairs below**. (Young leaves and veins on mature leaves.) **FLOWERS:** fragrant, usually solitary (or 2-3) hang down on short hairy stalks, 3 outside **petals narrow to 3 cm, pale yellow** with a purple spot at the base, 3 inner petals red-purple, tiny. **FRUIT: Green and compound, 8-15 cm across**, variable, heart-shaped, round or oval with regular **overlapping fleshy scales** or the surface patterned with U-shaped depressions, spirally arranged like fingerprints. The ripe soft flesh is **cream-white, granular**, acid-sweet, easily separated from numerous seeds, each one brown, about 1.5 cm long.

Propagation: All *Annonas* can be grown from seed and cuttings, but budding and grafting are more successful—with *A. cherimoya* or *A. squamosa* as rootstock.

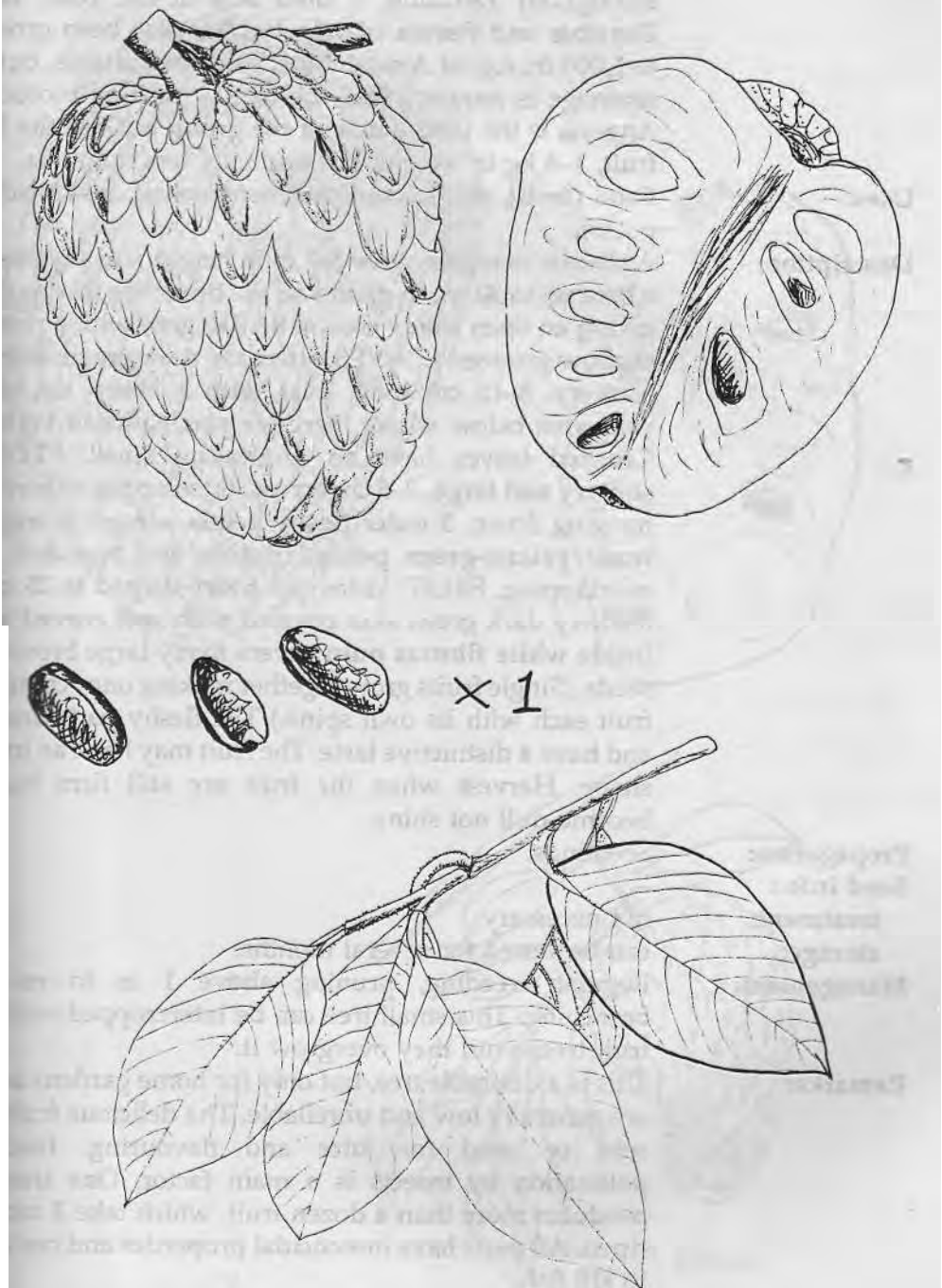
Seed info.: Similar to *A. squamosa*.

treatment:

storage:

Management: Small beetles usually pollinate the flowers. Hand pollination improves fruit set and the fruit ripens 4-5 months later.

Remarks: Green fruit, seed and leaves of *Annona* spp. are reported to have insecticidal properties. Fruit and seed are effective against worms. Fruit are eaten fresh and the pulp can be used to flavour ice cream. The hybrids between *A. cherimola* and *A. squamosa* are known as atemoya or custard apple and are grown all over Africa and the sub-tropics. The word "annonna" means yearly production and indicates a good annual yield of fruit.



West Indies, Tropical America

Common names: Eng: soursop; Swah: mstafeli.

Ecology: An exotic fruit tree planted throughout the warm tropical lowlands and requiring high humidity. Commonly planted throughout Tanzania, it does best at the coast and on Zanzibar and Pemba islands, but has also been grown up to 1,000 m, e.g. at Amani. Most soils are suitable, but good drainage is required and the tree is shallow rooted. This Annona is the least hardy of the group but has the largest fruit, \-A kg in weight, but normally less than this.

Uses: Food (fruit), **drink**, medicine, ornamental, insecticide, **fish** poison.

Description: A slender evergreen tree 5-7 m in height, usually less, with a bole up to 30 cm in diameter, the **branches low** and wide, giving an open shady crown. **BARK:** grey with a pattern of shallow grooves. **LEAVES:** alternate, **dark green, shiny** and leathery, 8-15 cm long, **oval with a sharp tip**, dull or yellowish below where there are **small pits in vein** axils. Crushed leaves have an unpleasant smell. **FLOWERS:** **solitary and large**, 2-5 cm across, often opposite leaves and hanging down, **3 outer fleshy petals**, almost triangular, **3 inner yellow-green petals**, **thinner** and rounded, edges overlapping. **FRUIT:** kidney or **heart-shaped** to 25 cm, the leathery dark green skin covered with soft **curved** spines. Inside **white** fibrous **pulp** covers many large brown-black seeds. (Single fruits grow together making one "compound" fruit each with its own spine.) The fleshy parts are edible and have a distinctive taste. The fruit may have an irregular shape. Harvest when the fruit are still firm but have become dull not shiny.

Propagation: Seedlings.

Seed info.:

treatment: not necessary.

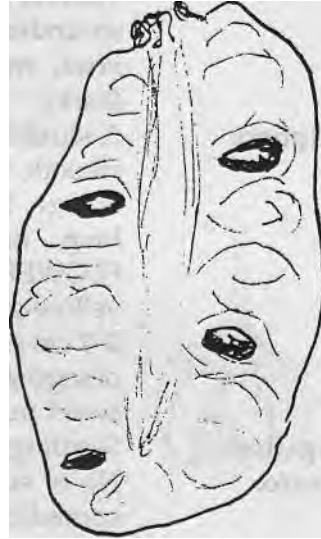
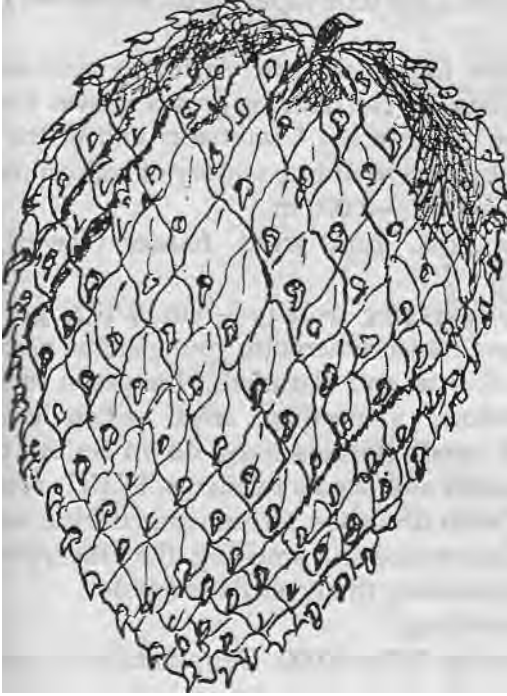
storage: can be stored for several months.

Management: Regular weeding, pruning above 1 m to encourage branching. This small tree can be intercropped with larger fruit trees until they overgrow it.

Remarks: This is a desirable tree, but only for home gardens as yields are generally low and unreliable. The delicious fruit can be sold or used for juice and flavouring. Inadequate pollination by insects is a main factor. One tree rarely produces more than a dozen fruit, which take 3 months to ripen. All parts have insecticidal properties and can be used to kill fish.

Annona muricata

Annonaceae



Annona senegalensis (A. chrysohylla)

Annonaceae

Indigenous

Common names: **Bende:** mfila; **Bond:** mtonkwe; **Chag:** mrisirisi, mtomoko; **Eng:** wild custard apple; **Nyam:** mfila, mkonola, mtopetope; **Samb:** mbokue, mtonkwe; **Swah:** mchekwa, mtomoko mwtu, mtopetope; **Zara:** tope-tope; **Zigua:** mtonkwe; **Zinza:** mkonyo.

Ecology: A wild fruit tree found all over Africa in semi-arid to sub-humid regions. In Tanzania, it grows in wet lowland savannah at the coast, in the Usambaras and in the Lake Victoria basin. It grows well in a variety of soils, mostly as an understory shrub, 0-2,000 m.

Uses: Fruit, medicine (root, gum, fruit), fodder (leaves), dye (bark).

Description: A shrubby deciduous tree, usually 2-6 m. **BARK:** grey and smooth, thick and folded when old, young stems hairy and orange. **LEAVES:** oval and rounded, blue-green to 18 cm long, hairy below, a peculiar smell when crushed. **FLOWERS:** 1-3 small flowers hang down below twigs, yellow-green petals and sepals in threes. **FRUIT:** rounded 2-7 cm smooth with divisions. Green when unripe, turning orange-yellow when ripe and smelling like pineapple. The sweet pulp surrounding many seeds is edible.

Propagation: Seedlings and wildings.

Seed info.: No of seeds per kg: 2,500-3,000. Germination is good but sporadic.

treatment: no treatment required.

storage: seeds susceptible to insect damage and lose viability within 6 months.

Management: Very susceptible to fire and weeds. Needs shade from other trees.

Remarks:



Annona squamosa

Annonacea

West Indies, South America

Common names: **Eng:** custard apple, sugar apple, sweetsop; **Swah:** mtopetope, mtomoko.

Ecology: A tree growing from the West Indies to tropical South America, now cultivated throughout the lowland tropics. In Tanzania widely grown along the coast and semi-wild in Zanzibar. It grows in areas with over 1,000 mm rainfall on Pare, Uluguru and Usambara, Meru and Kilimanjaro mountains, 500-1,200 m. It tolerates most well-drained soils, doing better in slightly acid ones. It can survive drought, but to bear well it needs uniform soil moisture from flowering until harvest time.

Uses: Firewood, food (fruit), ornamental, windbreak.

Description: A small semi-deciduous tree 3-6 m, the bole short, up to cm diameter. Branches spread widely and the tips bend over or touch the ground. **BARK:** grey with an **interlace pattern of shallow fissures**. **LEAVES:** alternate, thin, dull green, **oval and narrow in shape 7-17 cm** a few hairs below, often held at one level. The tree may shed its leaves in drought. **FLOWERS:** inconspicuous, **usually in groups of 2-4**, sometimes solitary, on a stalk, 3 outer petals fleshy, oblong to 2.5 cm long, green, purple at base; inner 3 petals minute or absent. **FRUIT:** compound, round to heart shaped, **5-10 cm across**, surface green-yellow with a powdery bloom, the **loose rounded sections projecting**. Inside a **yellow-white pulp**, aromatic but sugary, surrounds **shiny dark brown-black seeds**.

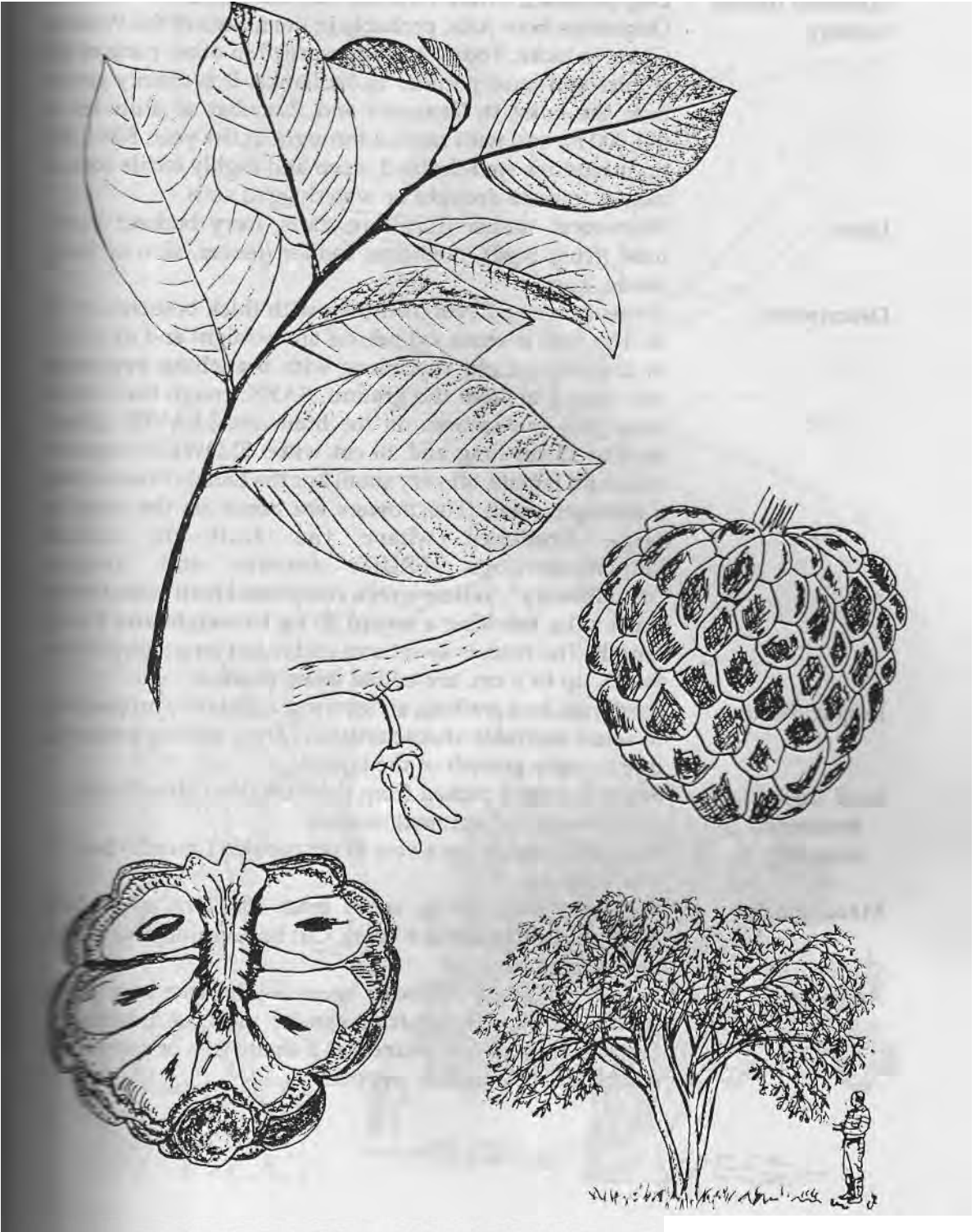
Propagation: Seedlings.

Seed info.: Extracted by hand after macerating ripe fruits collected from and below existing trees. Germination in 2-4 weeks. not necessary.

treatment: the seed can retain viability for 6-12 months.

Management: Plant the trees 5-6 m apart; when combined with mango 10-12 m. Weed until the canopy suppresses weed growth. Prune to 1 m above the ground to encourage secondary branching and to maintain quality.

Remarks: The fruit is 50-80% edible and the pulp contains more vitamin C than grapefruit. The tree is affected by root rot and several insect pests. Ripe fruit are cut from the tree when a cream colour develops between the fruit sections. The sugar apple bears more fruit than cherimoya or atemoya—10-15 tonnes per hectare—grown in the Philippines and Thailand.

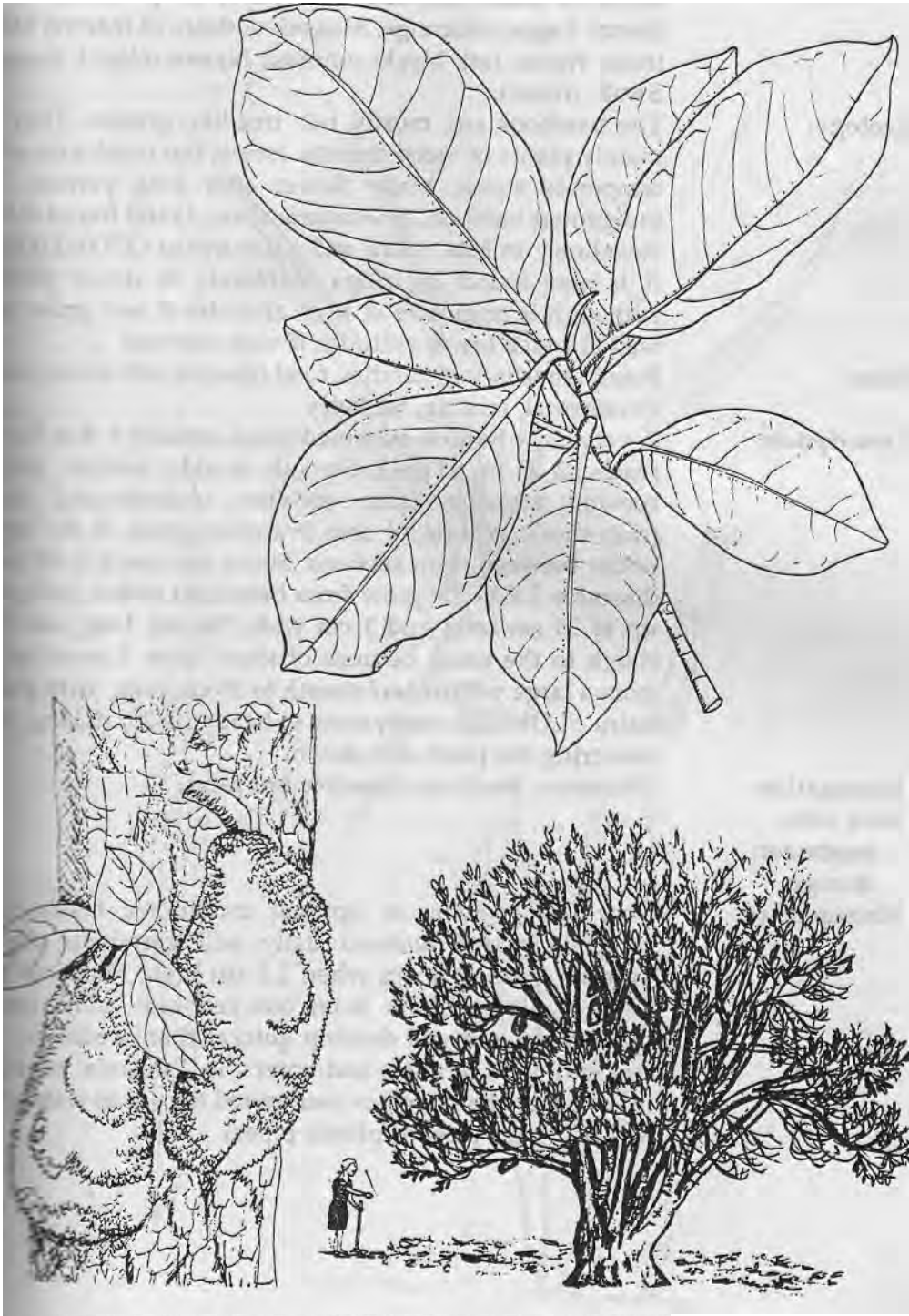


Artocarpus heterophyllus (A. Integrifolius)

Moraceae

Asia

- Common names:** **Eng:** jackfruit; **Swah:** mfenesi, mfenesi mfuu.
- Ecology:** Originates from Asia, probably in the forests of the Western Ghats in India. Today it is widespread in other parts of the tropics and most popular in Sri Lanka. It is mainly grown near the coast in Tanzania and Zanzibar at altitudes of 0-1,000 m, and with rainfall throughout the year, 850-1,500 m. It requires well-drained, deep and highly fertile soils. It cannot tolerate drought or waterlogged soils.
- Uses:** Firewood, timber (furniture, carts, lorry bodies, doors);, food (fruit, seed), medicine, fodder (leaves, skin of fruit), shade, gum.
- Description:** A medium-sized evergreen tree with thick branches, to 25 m. The **bole is short**, cylindrical and straight and up to 1 m in diameter in old specimens with **branching beginning less than 2 m from the ground**. **BARK:** rough bark on the bole, grey but smooth on the branches. **LEAVES:** glossy, **oval to 15 cm long and 10 cm wide**. **FLOWERS:** separate male and female, all very small but the female flowers have a stronger smell. The flowers are borne on the trunk or large branches where the fruit—the largest] known—develops. **FRUIT:** massive and irregular "cauliflowery", **yellow-green compound fruit with a spi" thick skin, reaching a record 20 kg in weight and 1 m length**. The flesh is sweet and edible but has an acquired taste. Seeds, up to 5 cm, are edible when roasted.
- Propagation:** Seedlings, bud grafting, air layering; vegetative propagation to select desirable characteristics. Direct sowing preferable due to early growth of the taproot.
- Seed info.:** Seeds are hand-picked from the fruit flesh after drying.
- treatment:** no pre-sowing treatment needed.
- storage:** the seed is viable for a very short period (1 month) because it is very oily.
- Management:** For good fruit yields, space trees 10-12 m apart. Most cultivars fruit in about 8 years. Cut back fruiting twigs after harvesting.
- Remarks:** Avoid planting in flooded areas as the tree may fail to produce fruit. Unripe fruit can be used as a vegetable. Suitable around compounds as a shade tree or support for climbing crops such as peppers.



Arundinaria alpina

Gramine

Indigenous

Common names: Arusha: ol moloi; Chag: kiwale, marere; Eng: mountain bamboo; Goro: dai; Hehe: mulansi; Iraqw: Dar; Kinga lilanzi; Lugu: mtoronge; Maasai: ol dean, ol marere; Meru: ireko; Nguu: lasi; Nyak: umulasi; Nyam: mlanzi, mwanzi; Swah: mianzi.

Ecology: The bamboos are, mostly tall, tree-like grasses. They are mainly plants of moist tropical forests but reach into warm temperate zones. Many flower after long periods. The indigenous bamboo, *Arundinaria alpina*, is still found at high elevations on Mts. Meru and Kilimanjaro (2,700-3,000 m). It is also found in Iringa highlands in dense thickets. Although it originates at high altitudes it will grow quite well at much lower altitudes if well watered.

Uses: Poles, utensils, tool handles, food (shoots), soil conservation, ornamental, fencing, basketry.

Description: A very large hollow-stemmed grass, usually 6-8 m but can reach 12-25 m. **STEMS:** Smooth, woody, hollow, yellow-brown, growing from swollen underground stems (rhizomes). Whorls of thin branches grow at the upper nodes between stem sections. Stems can reach 7-10 cm in diameter. **LEAVES:** grow from branchlet nodes, pale green up to 20 cm long and 1 cm wide, the tip long and thin rough to the touch because of short hairs. Leaves appear from a large yellow leaf sheath to 50 cm long, with purple hairs. **FLOWERS:** rarely seen, in heads 10-20 cm long. After flowering the plant dies down.

Propagation: Rhizomes, seedlings (possible but rare).

Seed info.:

treatment:

storage:

Management:

Very fast growing in optimal conditions; needs to be controlled. Seed watered daily will germinate readily; Transfer to seed boxes when 2.5 cm high. Plant out after 8-12 months. Offsets from one-year-old culms can be planted out and will develop quicker than seedlings.

Remarks: Susceptible to termites and borers. In Tanzania, especially in Iringa, the bamboo has been tested for use as water pipes (replacing the steel or plastic pipes).

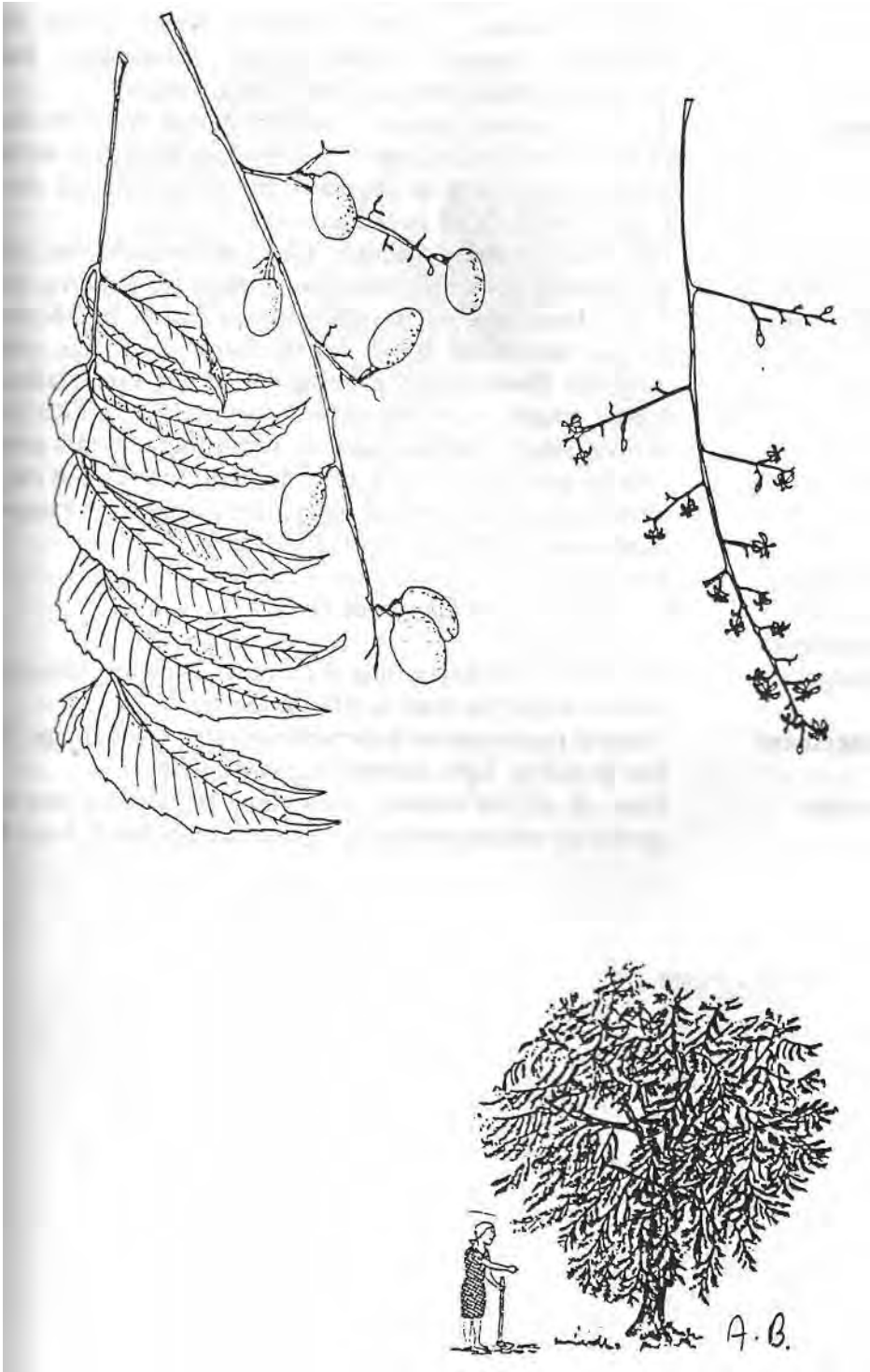


Azadirachta indica

Meliaceae

North-East India, Burma

- Common names:** Eng: margosa tree; neem tree; Swah: mkilifi, mwarubaini kamili.
- Ecology:** A well-known tree in its natural range (India) and today widely planted in Africa. Pan-tropical in semi-arid and arid regions, withstanding drought. In Tanzania it has been recommended for very dry areas and poor soils, 0-1,500 m. Roots grow deep and spread over a wide area; does not stand waterlogging.
- Uses:** Fodder (leaves, oil-seed cake), bee forage, soil conservation, ornamental, shade, windbreak, insecticide (azadirachtin in leaves, etc.), oil (seeds), soap (seed oil).
- Description:** A fast-growing, medium-sized tree which may reach 20 m, with a dense, leafy, oval-shaped canopy, evergreen. **BARK:** pale grey-brown, grooved and rough at maturity. **LEAVES:** glossy green, crowded at the ends of branches, compound to 40 cm long, each leaflet curved and long pointed, the edge roughly saw toothed, leaf blades unequal, a small leaflet at the leaf tip. **FLOWERS:** small, fragrant, creamy white, hanging in long graceful sprays. **FRUIT:** oval yellow berries when ripe, 2 cm long, thin skinned with oily pulp around 1-2 seeds.
- Propagation:** Seedlings, wildings, stumps, direct sowing.
- Seed info.:** No. of seeds per kg: about 5,000.
- treatment:** not necessary; sow seed immediately after collection and extraction. Germination can be improved by nicking the seed coat at the round end.
- storage:** seed can be stored only for a very short period under field conditions. Use fresh seed for best results.
- Management:** Fast growing; lopping, pollarding.
- Remarks:** The wood is tough and resistant to decay and termites. Highly valued almost throughout Tanzania for its medicinal uses (reputed to cure 40 different diseases). It spreads easily and may become a weed in some areas.

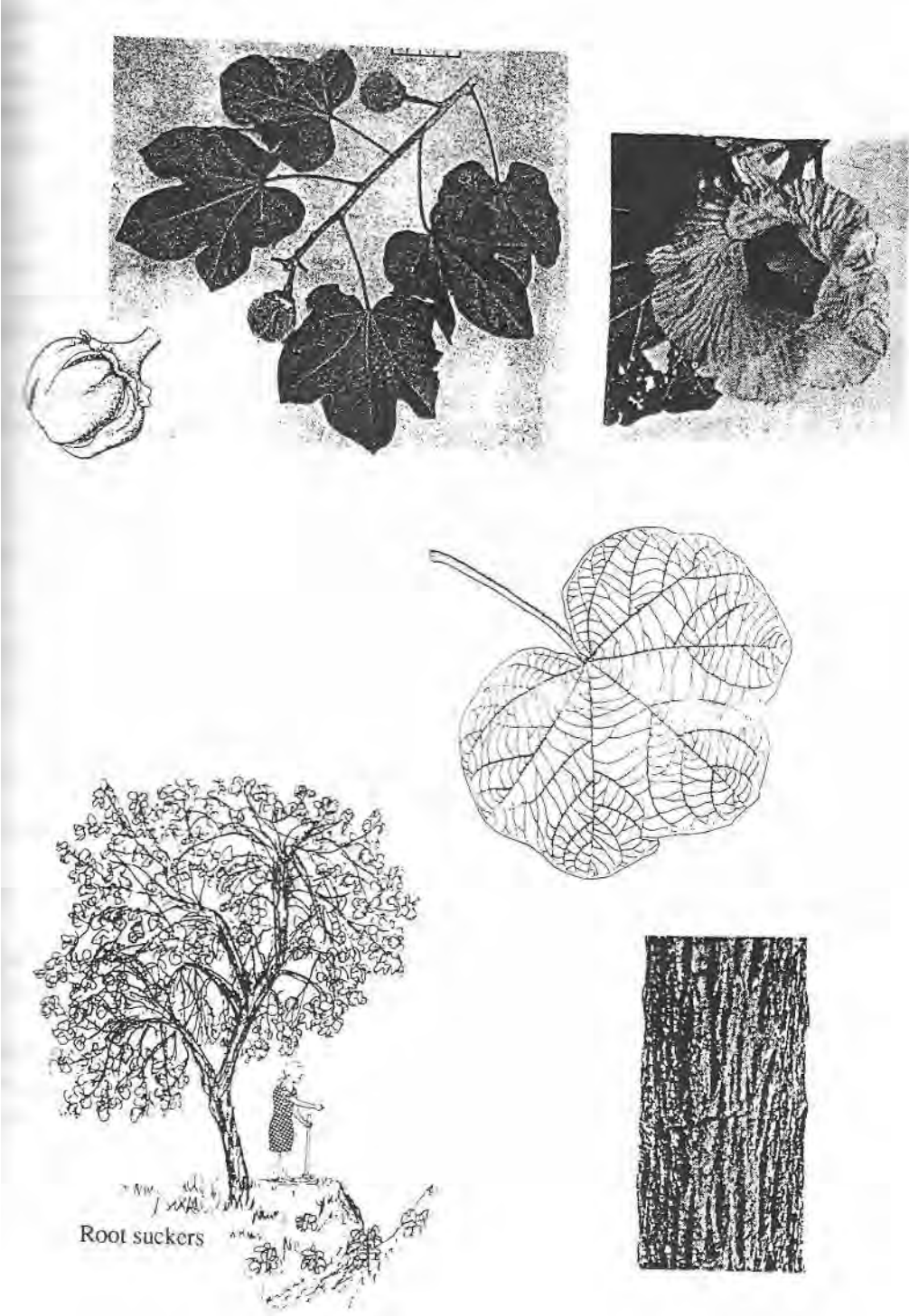


Azanza garckeana

Malvaceae

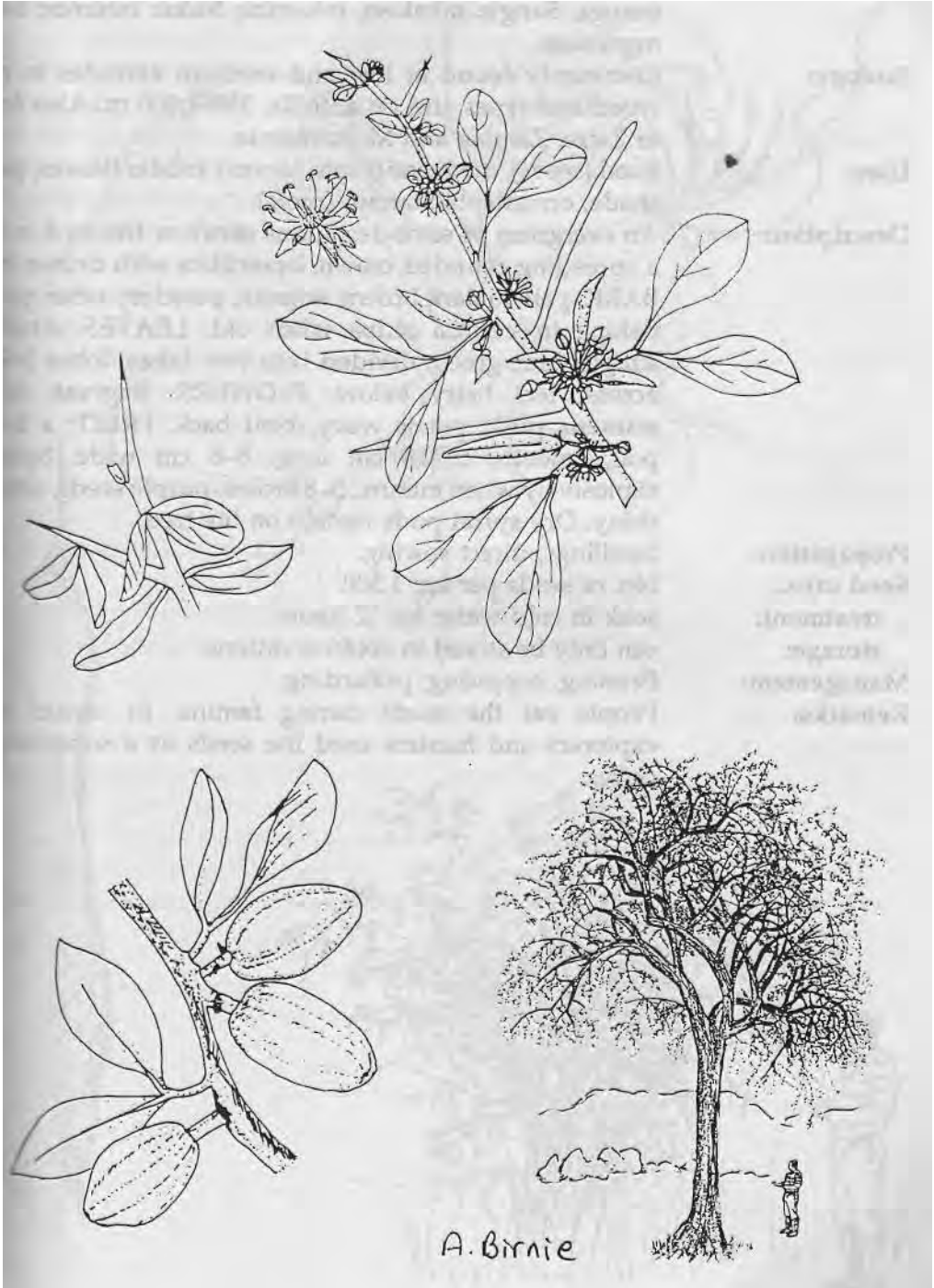
Indigenous

- Common names: Arusha: emotoo; Bende: mtobo; Eng: snot apple; Gogoc mtoyo; Goro: thogi, tlaghay; Hehe: mtowo; Mbug: mutogo; Nyam: mutobo, mtovo, mutovo; Nyas: mtoo; Nyat: mutrogho; Nyir: mtogho; Pare: mtakataka; Rangi: msembere, mtula, mtwa; Sand: dong, xaxabo.
- Ecology: The only *Azanza* species found in Africa, from the Sudan to southern Africa. Common from low to higher altitudes as a scattered tree in several types of woodland, also on termite mounds all over Tanzania.
- Uses: Firewood, charcoal, timber, tool handles, utensils, yokes, food (fruit), fodder (leaves), bee forage, fibre (bark), shade.
- Description: A deciduous tree 3-8 m with rounded crown. BARK: brown rough, branchlets have woolly hairs. LEAVES: simple, alternate, distinctively rounded 8 x 12 cm, long stalks, 3-5 lobes, rough hairs above, soft below. FLOWERS: large, showy, single, yellow, turning red-orange, petals overlap and do not open. FRUIT: rounded and woody 2-8 cm, 4-5 parts, yellow-brown and hairy, the whole fruit except the seed eaten for the sweet sticky flesh.
- Propagation: Seedlings, direct sowing, root suckers.
- Seed info.: No. of seeds per kg: about 4,000.
- treatment: not necessary.
- storage: seeds lose viability within 6 months. They are attacked by insects while the fruit is still on the tree.
- Management: Natural regeneration is better than raising seedlings. Fairly fast growing, light demanding; coppicing.
- Remarks: Host of cotton stainers and other bugs, thus not to be grown in cotton-producing areas. Susceptible to bush fires.



Indigenous

- Common names:** **Bara:** hawi, ganyamda; **Chag:** mohoromo; **Eng:** desert date; **Fiome:** mjirya; **Gogo:** mduguyu; **Goro:** hawi; **Iraqw:** hawi, hotlimo; Lugu: mkongo; **Mbug:** modori; **Nguu:** mkonga; Nyam: mduguyu, myuguyu, muvambang'oma; Nyaf: mfughuyu; Nyir: mudugunga; **Pare:** iteru, mkisingo, mkonga; **Rangi:** kivambang'ombe, nyijiva; Suku: myuguyugu, nyuguyu; **Zigua:** muwambangoma; Zinza mruguhu.
- Ecology:** An important tree found all over Africa from arid and semi-arid regions to sub-humid savannah, 200-800 mm rainfall, 0-2,000 m. Prefers valley soils, but will grow in sand, clay, black cotton, alluvial, and stony soils. In Tanzania common in Shinyanga, Nzega, Singida, Dodoma, and Babati.
- Uses:** Firewood, charcoal, poles, timber (furniture), utensils, tool handles, food (fruit), medicine (roots, bark, fruit), mulch. shade, windbreak, gum, fencing (branches), oil (fruit).
- Description:** A small evergreen tree about 6 m, **crown rounded in a tangled mass of thorny branches.** BARK: dark, cracked and corky with age. THORNS: to 8 cm, soft at first, then woody. LEAVES: distinctive pairs of grey-green leaflets, ovate. FLOWERS: fragrant, **yellow-green** clusters. FRUIT: date-like about **5 cm long**, both ends rounded, **yellow when ripe, a hard pointed seed 4 x 2 cm within surrounded by yellow-brown, bitter-sweet flesh**, seed easily separated.
- Propagation:** Seedlings, direct sowing, root suckers.
- Seed info.:** No. of seeds per kg: 600-1,000. Germinates in 1-4 weeks. Seeds very susceptible to attack by insects.
- treatment:** Soak seeds in cold water for two days and change it after 24 hours.
- storage:** store dry and insect free; seed removed from fruit can be stored for up to a year.
- Management:** Seedlings are slow growing, root suckers faster. Protect young seedlings from browsing and fire. Coppicing, pollarding.
- Remarks:** An important species for dry areas as it produces fruit in very dry seasons. The wood is termite resistant. Extracts of fruit and bark can be used to kill the snail hosts of bilharzia.



Bauhinia petersiana

Caesalpinioideae

Indigenous

Common names: **Eng:** white bauhinia; **Hehe:** mkomba; **Lugu:** mzunguzungu; **Mate:** mtimbi; **Mwera:** nng'ekee; **Nyam:** kiteмба, mfumbi, mnoga; **Sangu:** mhakwe, mkomba; **Suku:** mfumbi; **Swah:** mgobwali.

Ecology: Commonly found at low and medium altitudes in moso woodland types and on anthills, 150-1,800 m. Also found in Zaire, Zambia and Mozambique.

Uses: Food (seeds), medicine (roots, leaves), fodder (leaves, pods), shade, ornamental, tannin (roots).

Description: An evergreen or semi-deciduous shrub or tree to 8 m with a spreading rounded crown, branchlets with brown hairs. **BARK:** pale to dark brown, smooth, powdery when young, flaking in vertical strips when old. **LEAVES:** alternate, simple, blue-green, **divided into two lobes**, lobes 3-9 cm across, feel hairy below. **FLOWERS:** fragrant, **white, stamens pink**, petals wavy, bent back. **FRUIT:** a brown pod, smooth, to 18 cm long, 8-6 cm wide. Splitting explosively when mature, 5-8 brown-purple seeds, oily and shiny. Dry **spiral pods** remain on the tree.

Propagation: Seedlings, direct sowing.

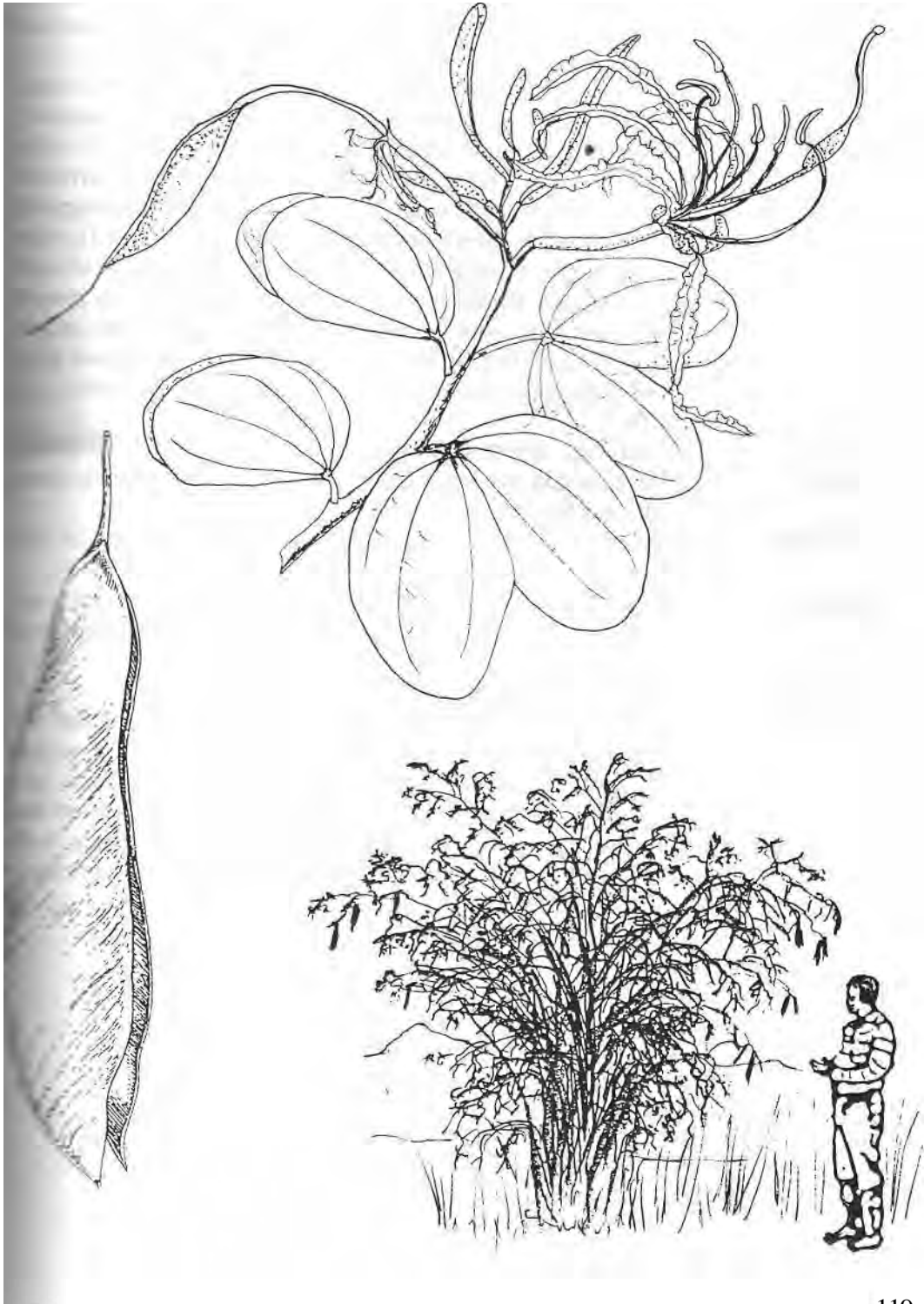
Seed info;: No. of seeds per kg: 1,500.

treatment: soak in cold water for 12 hours.

storage: can only be stored in cold conditions.

Management: Pruning, coppicing, pollarding.

Remarks: People eat the seeds during famine. In earlier times explorers and hunters used the seeds as a substitute for coffee.



Bauhinia variegata

Caesalpinioideae

India, Tropical Asia, China

- Common names:** Eng: bauhinia, camel's foot, orchid tree.
- Ecology:** A tree grown throughout the tropics, and in Tanzania grown up to 1,500 m. Commonly planted in gardens and avenues in most towns throughout the country.
- Uses:** Firewood, tools, food (shoots as vegetables), fodder, shade, ornamental, soil conservation, soil improvement, tannin.
- Description:** An attractive small semi-deciduous tree, usually to 6 m but sometimes much taller. **BARK:** grey and smooth, furrowed and flaking with age. **LEAVES:** alternate, **dull blue-green, the two lobes 10-15 cm across** (camel-foot shaped), veins radiating from the leaf base. **FLOWERS:** pink-white in short sprays, each flower with **five petals marked with rose or yellow-green, one petal different in shape and colour** (orchid like), five arched stamens. **FRUIT:** flat brown pods **to 20 cm long, twist open** to release round flat seeds 1 cm across.
- Propagation:** Seedlings, direct sowing.
- Seed info.:** No. of seeds per kg: 4,200-5,700. Germination rate is about 70%, completed after three weeks.
- treatment:** not necessary for fresh seeds. Soak stored seeds in cold water for 24 hours.
- storage:** If sun dried and stored at room temperature seed can retain viability for some months. Best germination from fresh seeds.
- Management:** Coppicing, lopping, pollarding.
- Remarks:** In India and Nepal flowers are used for vegetables and pickles. The heavy, hard wood makes good tools. *B. galpinii* (*B. punctata*), the red bauhinia, from South Africa, is a vigorous shrub or climber with flame-coloured flowers and is grown in lowland Tanzania. *Bauhinia acuminata*, with white flowers, is from tropical Asia and is commonly grown.

Bauhinia variegata

Caesalpinioideae



Berchemia discolor

Rhamnaceae

Indigenous

Common names: **Eng:** bird plum, wild almond; **Gogo:** mgandu; **Nyam:** mkuni; **Lugu:** nyahumbu; **Sand:** okoo; **Swah:** mnago.

Ecology: Widespread from the Sudan to South Africa, scattered, growing in semi-desert grassland, open woodland or **at** lower altitudes, along river valleys, especially on termite mounds. Common in miombo woodlands in Tanzania. 0-2,000 m.

Uses: Poles, timber (construction, furniture), food (fruit), drink (tea from leaves), medicine (roots), bee forage, fodder (fruit, leaves), shade, ornamental, windbreak, resin, black dye (heartwood, roots), whitewash (ash).

Description: A semi-deciduous shrub or tall tree to 18 m with erect spreading branches making a heavy rounded crown. **BARK:** grey-black, cracking and scaly, corky spots on young greenish branches. **LEAVES:** simple, alternate, **shiny dark green, sticky when young, oval to 11 cm, lateral nerves making a clear pattern.** **FLOWERS:** small yellow-green, stalked, in loose clusters attracting bees. **FRUIT:** date-like, **yellow, about 2 cm long** with 1-2 flat seeds in sweet edible flesh.

Propagation: Seedlings, direct sowing, root suckers.

Seed info.: No. of seeds per kg: 3,000-3,500. Germination is very good and fast.

treatment: soak in cold water for 12 hours.

storage: stores well at room temperature if kept dry.

Management: Coppicing, lopping, pollarding.

Remarks: This tree produces one of the hardest woods in East and Central Africa. It has light and yellow sapwood and yellow-brown resinous heartwood. Fruit may be eaten boiled with sorghum. The black dye, prepared from powdered heartwood and roots, is used by basket makers. Whitewash for painting houses can be made from the ash.

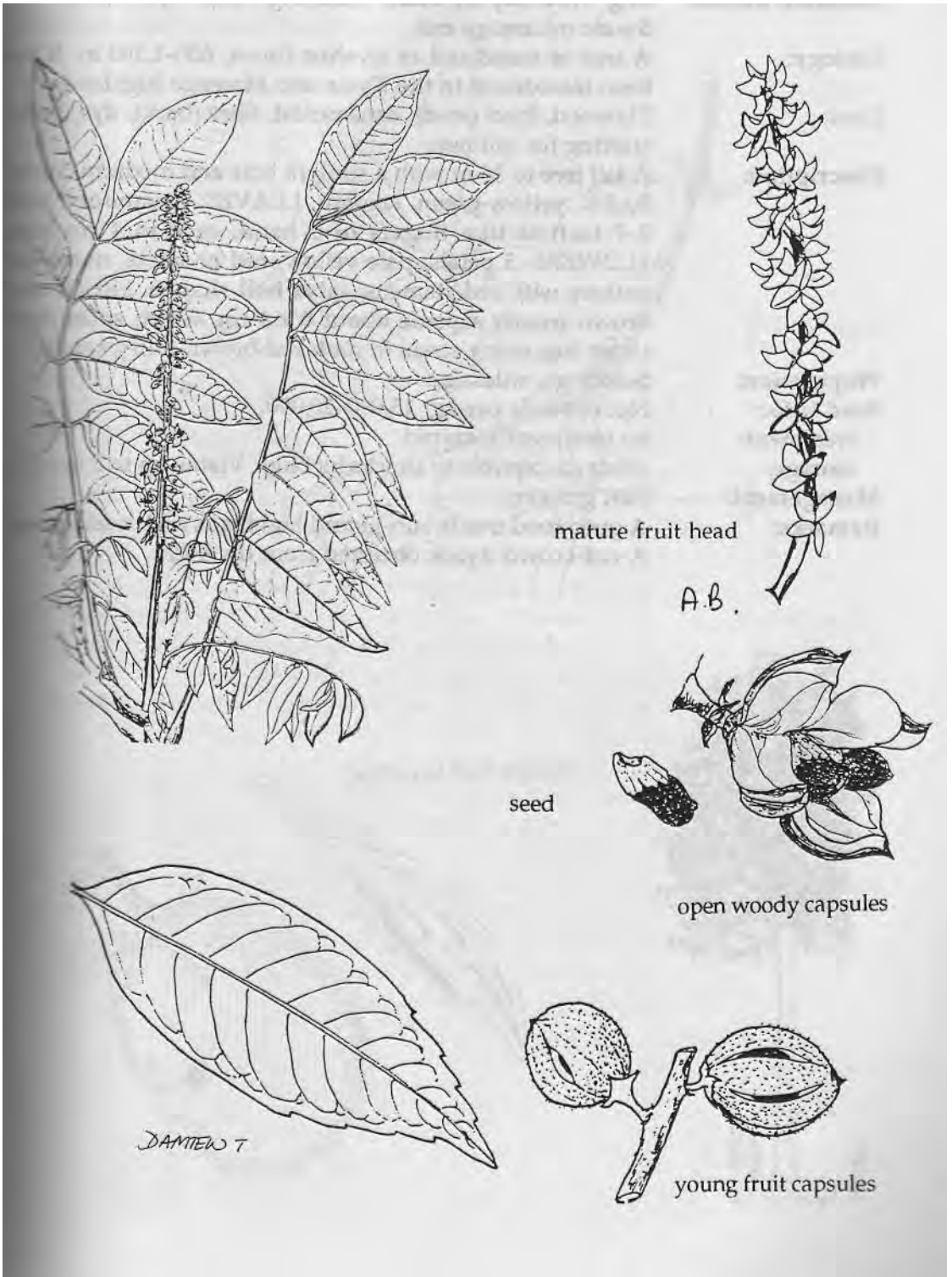


Indigenous

- Common names:** **Arusha:** iranguwe; **Bara:** besbesjan; **Eng:** winged bersama, **Haya:** muyungula; **Chag:** moosa, manguwe; **Hehe:** mpeme, mnyatoma, mbasamono; **Iraqw:** waamisi; **Maasai:** alasoki, engoisiki; **Meru:** iranguwe; **Mwera:** mbonika; **Range** ikochokocho; **Samb:** mtumlati, mbamba, mgonono, monko, mtata; **Swah:** mwangwakwao.
- Ecology:** Occurring along banks in wooded river valleys at the edges of evergreen forest and also in open woodlands. In Tanzania, common in highland forest margins in Kill manjaro, Arusha, Usambara, Iringa and Mbeya. A high-altitude tree, 2-2,400 m.
- Uses:** Firewood, timber, carving, utensils (stools, waterpots), medicine, beehives, shade, ornamental.
- Description:** A handsome, well-foliaged tree, 7-15 m high in forest **BARK:** light-brown, smooth at first becoming rough with old age. **LEAVES:** compound with **5-10 pairs of opposite leaflets plus one** and a **winged leaf stalk**, very clear in young leaves, leaflets to 10 cm. **FLOWERS:** grow from **thick upright spikes to 35 cm**, like candles, and hairy, opening to **green-cream flowers**, buds, slightly pink, up to 2 cm across. **FRUIT:** **thick woody capsules, rounded to 2.5 cm** across, golden hairs at first, open into 3-5 sections, each with a **bright orange seed, 1 cm, half covered by a waxy yellow aril.**
- Propagation:** Seedlings, root suckers, wildings.
- Seed info.:** No. of seeds per kg: 1,100-1,300. Germination may reach 70% but is sporadic, 5-10 weeks.
- treatment:** the seed coat is thin but the aril has to be removed. Sensitive to freezing.
- storage:** can retain viability for two months at room temperature.
- Management:** A fast-growing tree; coppicing, lopping, pollarding.
- Remarks:** Very common in highlands and can be planted in farmlands with different crops.

tersama abyssinica

Melanthaceae

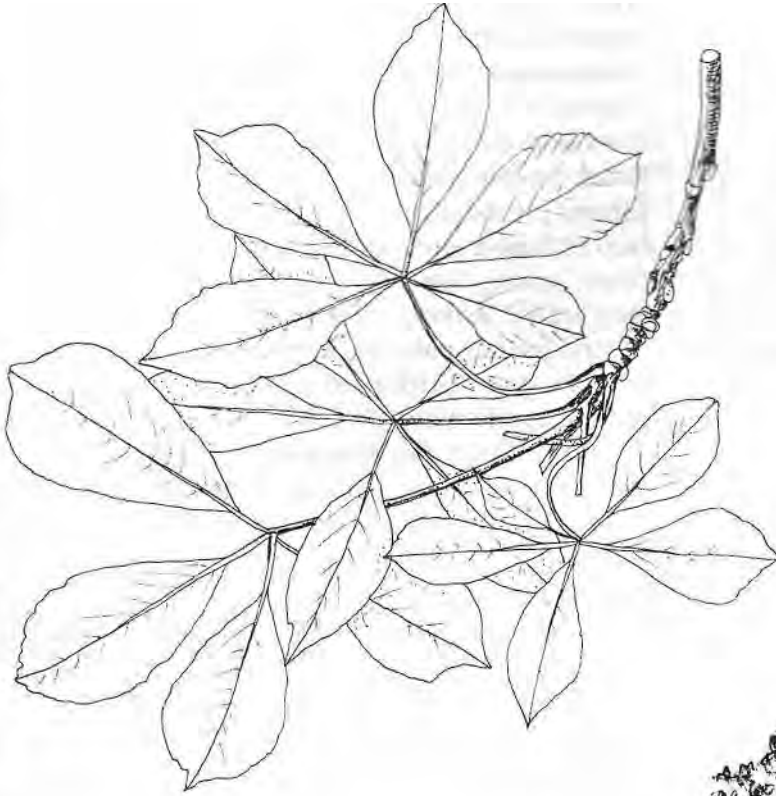


Bombax rhodognaphalon var. *tomentosa*

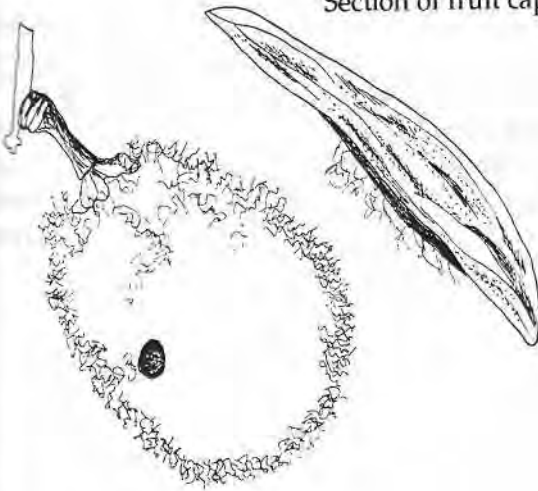
Bombacace

Indigenous

- Common names:** **Eng:** wild kapok; **Mate:** mkaranga mti; **Nyak:** msyavala; **Swah:** mkaranga mti.
- Ecology:** A tree of woodland or riverine forest, 600-1,100 m. It has been introduced in the Kyela and Matengo highlands.
- Uses:** Plywood, food (seed), ornamental, fibre (bark), dye (bark), stuffing for pillows.
- Description:** A tall tree to 36 m with a straight bole and medium crown
BARK: **yellow-green, smooth.** **LEAVES:** **compound with 3-7 leaflets like fingers of a hand,** each to 4 cm long
FLOWERS: 5 petals, pale yellow, red or white, numerous anthers with red stamens; **calyx bell shaped.** **FRUIT:** oval brown **woody capsule about 6 x 3 cm,** which **splits open** to set free many seeds in dark red-brown fluffy kapok, i
- Propagation:** Seedlings, wildings.
- Seed info.:** No. of seeds per kg: 15,000-20,000.
- treatment:** no treatment required
- storage:** seeds susceptible to attacks by bugs. Viable up to 3 months
- Management:** Fast growing.
- Remarks:** A good food tree in sub-humid highlands and coastal areas
A red-brown dye is obtained from the bark.



Section of fruit capsule



Borassus aethiopum

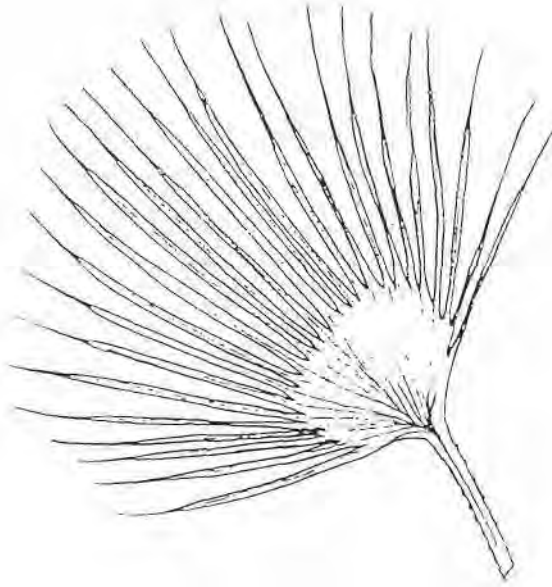
Palm

Indigenous

- Common names:** Eng: African fan palm, borassus palm; Nyam: mhama; Nyat: mfama; Nyir: mpama; Samb: vumo; Suku: muhama; Swah: mvumo.
- Ecology:** Widespread throughout the less dry areas of tropical Africa. It needs a high watertable. In Tanzania it is found along the coast and along water courses.
- Uses:** Poles, timber (roofing, door frames), tool handles, carving (drums), food (fruit, seeds, young seedlings), palm wiru (sap of flower shoots), medicine (roots, flowers, oil), fodder (fruit, young leaves), thatch, fibre (leaves), baskets, mats (leaf stalks, leaves), oil (fruit), brooms.
- Description:** A straight tall palm to 20 m with a swollen bole. TRUNK smooth grey, thickened above the middle, dead leaves remain on the young trunk, old trunks up to 80 cm across. LEAVES: large fan shaped to 4 m long by 3 m across, deeply divided into leaflets, thorny at the base. FLOWERS: male and female on different trees, male producing branched spikes up to 2 m carrying the pollen. FRLT: large, in bunches, round up to 15 cm diameter orange-brown, cupped in the enlarged calyx, fibrous oily pulp around 3 seeds, each 8 cm brown, woody.
- Propagation:** Direct sowing, seedlings.
- Seed info.:** No. of seeds per kg: 2-3. Seeds should be dried in tin shade to avoid scorching. The seed can be sown without removing the pulp surrounding it. Germination takes one month.
- treatment:** not necessary.
- storage:** seeds dried in the shade remain viable up to 6 months.
- Management:** Slow growing. Rotation period depends on site but can be 60-140 years.
- Remarks:** Elephants eat the fruits, thus distributing the tree. The wood is hard and resistant to termites and fungi. However, overlapping of the tree for its sap (palm wine) has made the tree rare. It is the tallest indigenous palm in Tanzania. The wood is hard and heavy.



fruit



Boscia salicifolia

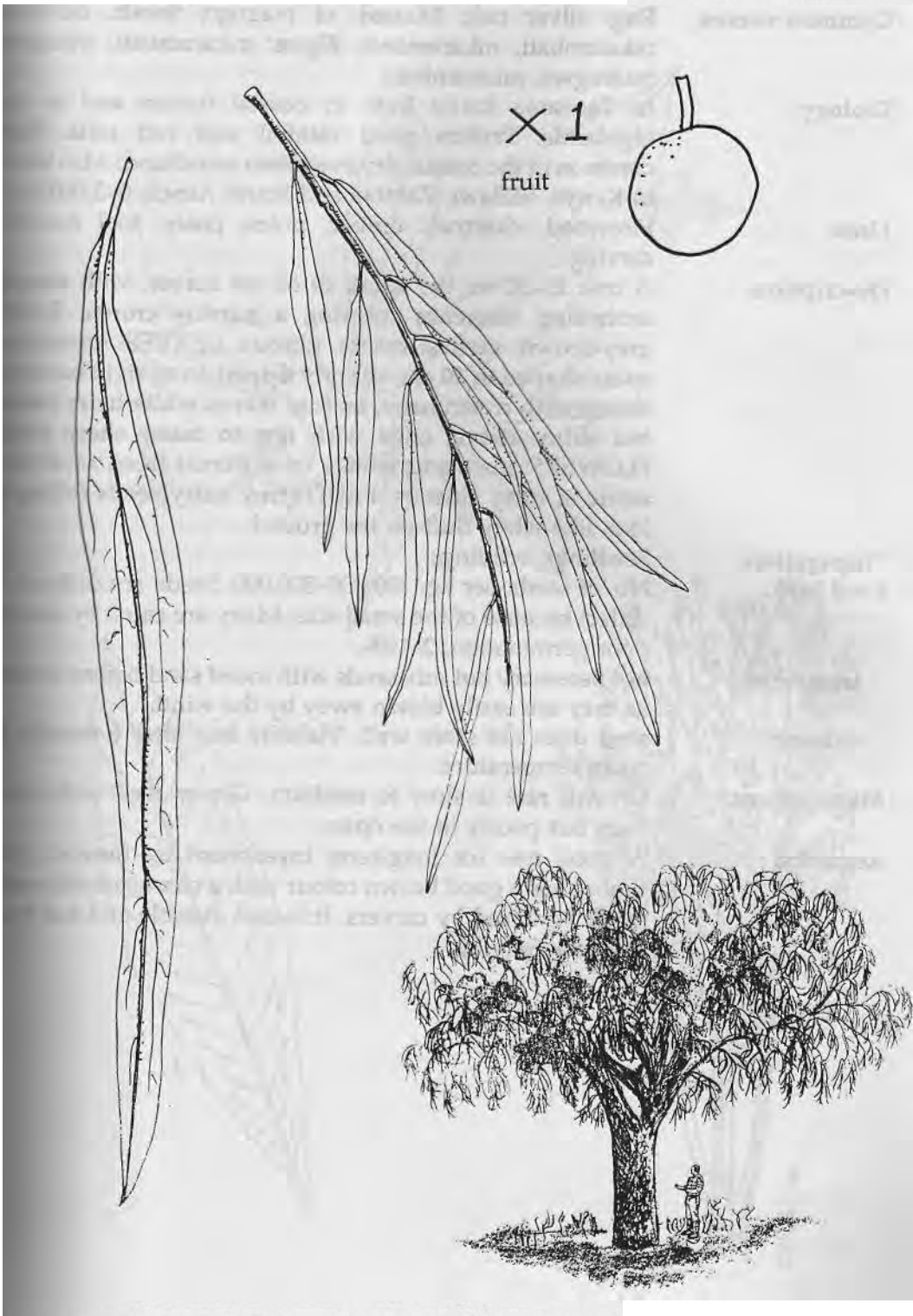
Capparidacea

Indigenous

- Common names:** Eng: willow-leaved boscia; Gogo: mtumba; Lugu: mguruka; Mwera: mtukuli; Nyam: mvuti, muguluka; Zara: mguruka.
- Ecology:** A tree that grows in Brachystegia woodlands, bushland and savannah, especially on termite mounds, 300-1,800 m. Also occurs in Mozambique, Malawi, Zambia and Kenya north to Ethiopia.
- Uses:** Firewood, poles (building), medicine (young leaves, bark), fodder (leaves), shade, ornamental.
- Description:** A small to medium deciduous tree, to 15 m, crown rounded but flattened, branches drooping. **BARK:** grey or dark grey, rough, grooved, flaking. **LEAVES:** long and narrow to 15 cm by 3 cm, dull green, hair-tipped, base narrowed to a short stalk. **FLOWERS:** small, in dense heads to 7 cm long, usually beside the leaves; no petals but 4 small green sepals and yellow-green stamens, less than 16. **FRUIT:** round to 2 cm across, smooth and yellow when ripe.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: 4,000-5,000. Germination is good and fast.
- treatment:** no treatment required.
- storage:** seeds are perishable so they should be sown soon after harvesting.
- Management:** A fairly fast-growing tree.
- Remarks:** Suitable for planting in avenues and for shade. Fruits much favoured by birds and the fodder by goats. Young leaves are used to treat both tooth and stomach ache.

Boscia salicifolia

Capparidaceae



Indigenous

- Common names:** **Eng:** silver oak; **Maasai:** ol magogo; **Swah:** muhuhu, mkalambati, mkarambati; **Zigua:** mkarambati, mhugwe, muhugwe, mkarambaki.
- Ecology:** In Tanzania found both in coastal forests and in dry highlands. Prefers good rainfall and red soils. Very common in the coastal dry evergreen woodland. Also found in Kenya, Malawi, Zambia and South Africa, 0-2,000 m.
- Uses:** Firewood, charcoal, timber, poles, posts, tool handles, carving.
- Description:** A tree 15-30 m, the trunk to 60 cm across, with **steeply ascending branches forming a narrow crown**. BARK grey-brown, vertical cracks, fibrous. LEAVES: distinctive, spear-shaped to **10 cm, sharply tipped**, in upright bunches, shoots with cream hairs, **mature leaves white hairy below but shiny above, edge with few to many sharp teeth** FLOWERS: male and female on different trees, small and white in furry clusters. FRUIT: **tiny hairy seeds** falling to look like white fluff on the ground.
- Propagation:** Seedlings, wildings.
- Seed info.:** No. of seeds per kg: 300,000-500,000. Seeds are difficult to collect because of the small size. Many are eaten by insects. Poor germination, 2-10%.
- treatment:** not necessary but mix seeds with moist sand before sowing as they are easily blown away by the wind.
- storage:** seed does not store well. Viability lost after 6 months at room temperature.
- Management:** Growth rate is slow to medium. Grows well with other trees but poorly in the open.
- Remarks:** A good tree for long-term investment by farmers. The timber has a good brown colour with a characteristic smell, much favoured by carvers. It is also durable and has been used for flooring.



Indigenous

Common names: **Eng:** large-leaved brachystegia; **Gogo:** msani; **Hehe:** mtelela; **Mate:** mgelegele, mtindiyombo; **Mwera:** mjerijeri; **Nyiha:** msane; **Nyam:** mkongolo; **Rangi:** mhangali; **Zigua:** mhangala.

Ecology: Commonly found in the miombo woodland of Central Africa as far south as Zimbabwe. Its presence often indicates shallow or eroded soil. In Tanzania it occurs especially in hilly areas, 240-1,700 m.

Uses: Firewood, charcoal, timber (joinery, roofing beams), handles (hoes), medicine (roots, bark), fodder (seeds), bee forage, fibre (bark), gum (resin).

Description: A slender deciduous tree to 20 m with a rounded crown, branches loose and drooping. **BARK:** grey, smooth at first then rough and flaking with age. **LEAVES:** compound, light green, **2-4 pairs of leaflets**, 4-8 cm long, 1-5 cm wide, **widely spaced, narrow oval**, longest at the tip. **FLOWERS:** green-white, appear from October to December, **in small heads** 5 x 5 cm. **FRUIT:** pale brown **woody pods** mature in July and August. **Each pod, with a sharp tip**, contains 1-3 flat brown seeds. Pod to 15 cm.

Propagation: Seedlings, wildings, root suckers.

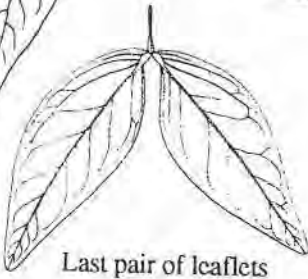
Seed info.: No. of seeds per kg: 1,500. Germination very good and uniform.

treatment: not needed.

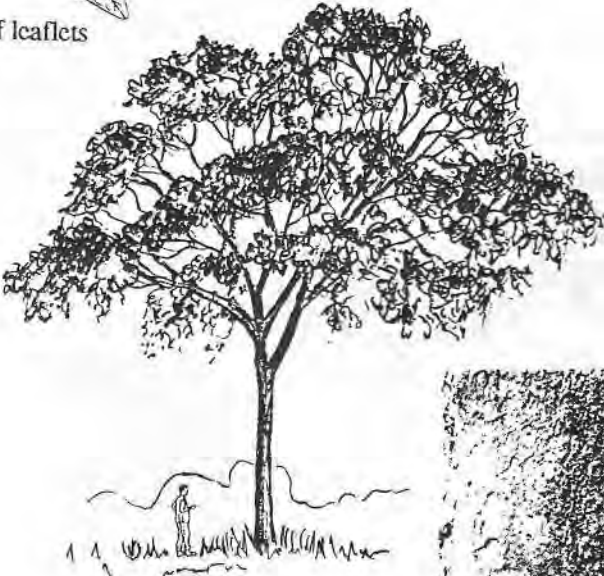
storage: can retain viability for up to a year if kept free from insects.

Management: Coppicing, pollarding.

Remarks: Barkcloth can be made from the inner bark. Among the indigenous Brachystegia this species has the largest leaflets. The timber is heavy and saws easily but it is not durable.

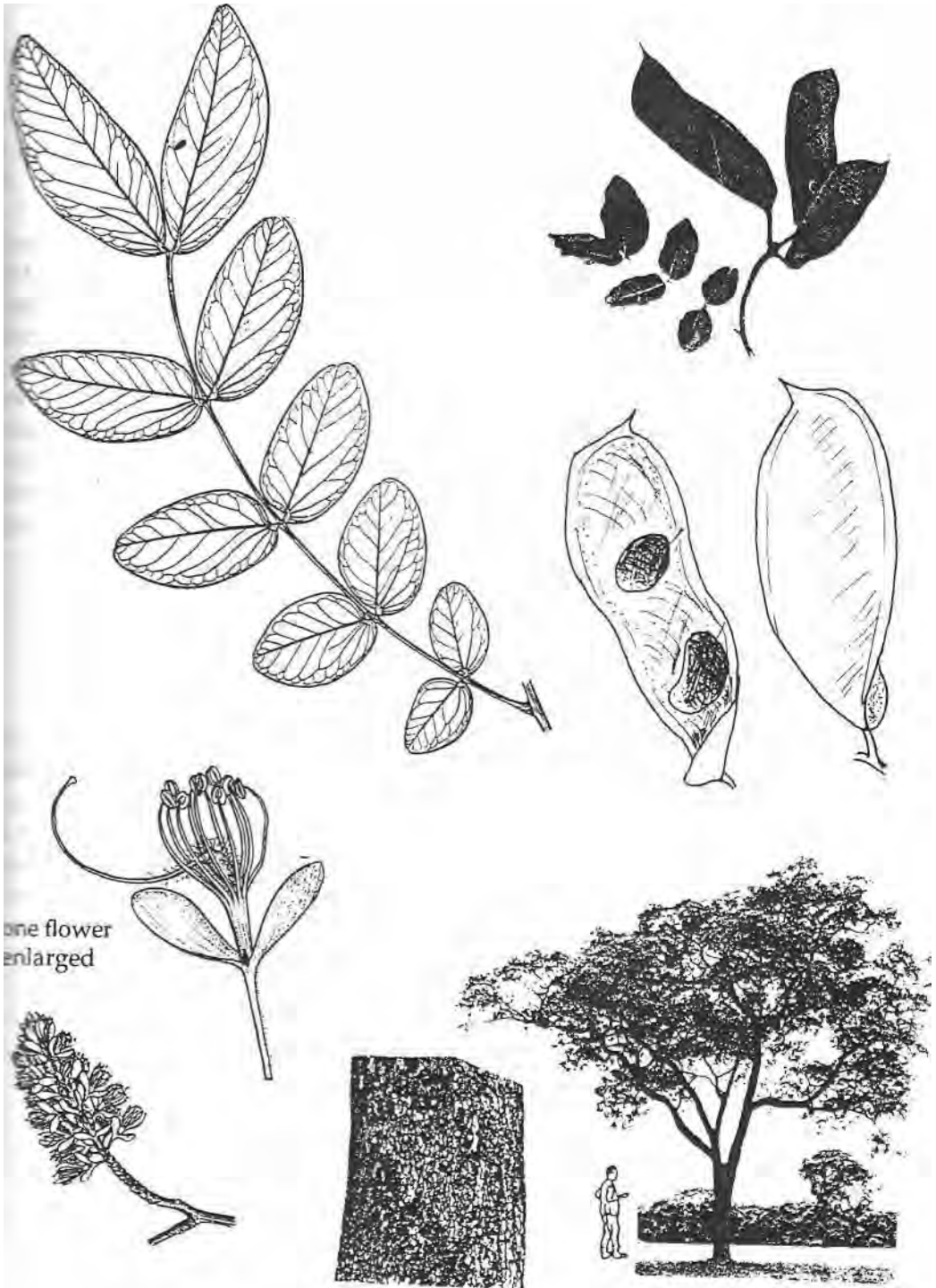


Last pair of leaflets



Indigenous

- Common names:** Eng: bean-pod tree; **Fipa:** mzombo; Gogo: mguji, mzabo; **Goro:** nafumo; **Hehe:** mkwe; **Mate:** mzombo, mpapa; Nyam: mtundu; Nyiha: msewe, mzindwi; **Nyak:** muguti, mkuti; Rangi: mhangala; **Sand:** xopi; **Suku:** muyombo; **Swah:** mriti, myombo, mrihi.
- Ecology:** A dominating tree in large areas of miombo woodland in Central Africa, north to the coastal forests of Kenya and south to South Africa, 0-2,350 m. In Tanzania it is widespread and abundant in all woodland areas.
- Uses:** Firewood, charcoal, timber, beehives, utensils (storage pots), medicine (bark, roots), fodder (seeds), bee forage, shade, fibre rope (bark), dye (bark).
- Description:** A deciduous tree 8-15 m with a rather flat crown, the main trunk producing **large branches** growing up and out, often twisting. **BARK:** smooth grey, later rough and flaking. **LEAVES:** dark green, shiny and pendulous when mature, **pink to scarlet when young**. Few pairs of leaflets, **usually 4**, unequal sided, **largest at the end**. Leaflet **narrowed to the tip** which is rounded or notched. Minute structure **at base of leaflets (stipel)**. **FLOWERS:** **short dense spikes** to 6 cm, often hanging down, greenish. **FRUIT:** flat, **dark brown pods** to 14 cm splitting open explosively to scatter **4-6** seeds.
- Propagation:** Seedlings, suckers.
- Seed info.:** No. of seeds per kg: 1,500-2,600.
- treatment:** no treatment required but germination is improved if the seed coat is nicked. Under ideal conditions germination in 21-30 days and 80% with good seed.
- storage:** can retain viability for one year if kept free from insects.
- Management:** Coppicing, pollarding.
- Remarks:** The wood has an interlocked grain, is difficult to season and not durable in the ground.

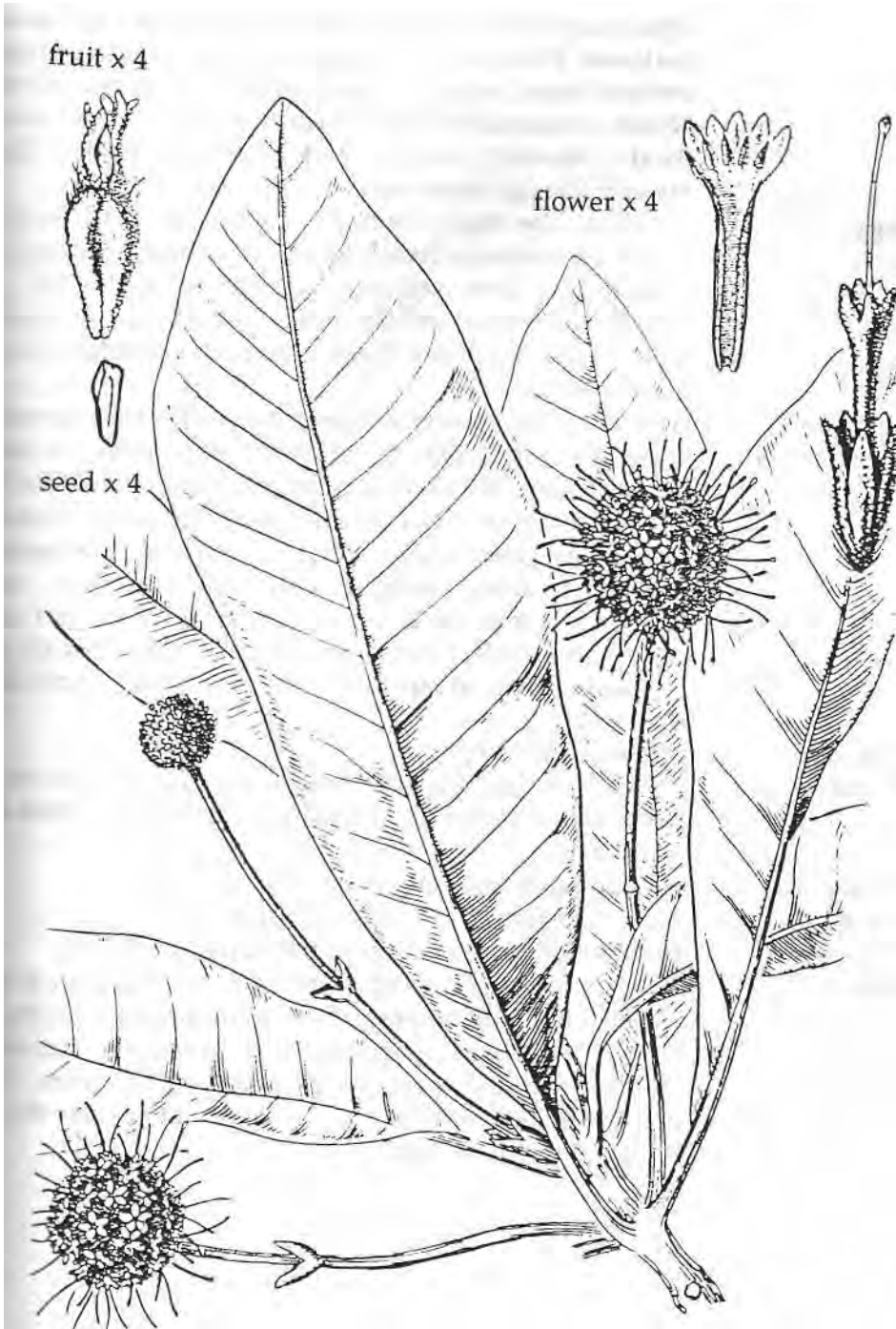


Breonadia salicina (6. microcephala)

Rubiaceae

Indigenous

- Common names:** **Mate:** mgwina; **Nyak:** mgwina; Swah: mgwina; **Zigua:** mdogowe.
- Ecology:** A tree that grows in moist valleys and along streams at low altitudes in Tanzania, including Zanzibar. It also occurs in Uganda, Kenya, Malawi, Mozambique, South Africa, the Sudan, Ethiopia and Madagascar. It often grows with its roots in water between gravel and rocks, e.g. in the Usambara Mountains, 0-1,500 m.
- Uses:** Firewood, timber (building, roofing), poles, medicine (bark).
- Description:** An evergreen tree 15-20 m with a medium crown. **BARK:** grey or grey brown, flaking. **LEAVES:** simple, crowded at the ends of branches, alternate or in whorls, dark green, shiny, **long and narrow, pale yellow veins very clear, a thick stalk to 2 cm.** **FLOWERS:** small, **pale mauve**, sweet scented, in **heads up to 4 cm diameter**, on slender stalks 6 cm long. Flowers small, tubular and white styles tipped green hanging out. **FRUIT:** Very small **brown capsules clustered in round heads.** Each capsule contains 2 winged seeds.
- Propagation:** Easily grown from seed, wildings.
- Seed info.:** Seeds very small.
- treatment:** no treatment required.
- storage:** can retain viability only for about 3 months.
- Management:** Fairly fast growing.
- Remarks:** This species grows well in valleys with coffee and other agricultural crops in southern Tanzania. It was formerly classified as *Adina microcephala*. It resembles *Rauvolfia affa* in habit and site. The excellent timber is hard, heavy and durable in the ground. It contains oil with a distinctive smell and has a dark grain on a yellow to light brown background. If the bark is soaked in water the extract is a tonic and cures stomach ailments.



Bridelia micrantha

Euphorbiaceae

Indigenous

- Common names: Bond: mwiza; Chag: mwaru, monde, marie; Eng: bridelia; Fipa: munyamaji, mlangali; Haya: mshumako, mshamako, mukuwe; Hehe: mwesa; Iraqw: intsalmo; Lugu: msumba, mwiza; Mate: myenda; Nguu: mkolakole; Nyak: mwisya; Nyiha: sengamino; Pare: mwira; Samb: muiza, mwiza; Swah: mkarati, mtutu; Zara: mkarangatanga; Zigua: mweza; Zinza: msamiko.
- Ecology: A tree of the high-potential areas in East and Southern Africa, in forests by rivers, forest edges or open woodland, 0-2,200 m. It does well in a wide variety of climates.
- Uses: Firewood, charcoal, timber, poles (granaries), tool handled food (fruit), medicine (bark and roots), fodder (leaves), mulch, shade.
- Description: a medium-sized leafy evergreen tree with dense spreading crown, to 13 m. BARK: grey-brown flaking with age, young stems zig-zag, dotted with paler breathing pores. LEAVES: appear compound but actually alternate along branched dark shiny green above, about 12 cm long, veins parallel extending along margin, leaf stalks slightly hairy. FLOWERS: small and yellowish, bunched in leaf axils, male and female flowers on different trees. FRUIT: soft, purple-black, oval up to 8 mm, sweet and edible when ripe.
- Propagation: Seedlings, wildings.
- Seed info.: Prolific seeder. No.. of seeds per kg: 19,000-19,500. Germination is very good and uniform, up to 90-100% after 20-25 days.
- treatment: not necessary, use only fresh seed.
- storage: short viability (oily seeds), do not store.
- Management: Fast growing on good sites; pollarding, coppicing.
- Remarks: The species is becoming scarce due to over-exploitation. Not planted near homesteads as it attracts caterpillars and birds. The wood is resistant to termites. Commonly intercropped and managed by small-scale farmers. Goats will eat the bark and leaves. People commonly use this tree for its fruit and to make medicine.



Burkea africana

Caesalpinoid

Indigenous

- Common names: Eng: burkea, wild syringa; Hehe: mkarati, msangala; Nyam mgando, mkalati; Rangi: kaimbi; Sangu: msangala; Yao: mkalati.
- Ecology: A common tree found throughout tropical Africa, north to the Sudan and south to Transvaal, occurring in various types of woodland in a wide variety of habitats on *lower* slopes of rocky hills and in miombo woodland, 270-1,30
- Uses: Firewood, charcoal, timber (furniture), poles, utensils (pestles), fodder (leaves, fruit), bee forage, medicine (bark roots), tannin (bark).
- Description: A medium-sized deciduous tree, usually 8-10 m but up to 20 m, the bole straight, young branches covered with rust coloured hairs. BARK: dark grey to brown, rough and scaly with age; exudes a red or yellow gum when cut LEAVES: compound, crowded at ends of branches, 5-15 papery leaflets, grey to dark green, tip rounded *and* notched, each leaflet usually 3-4 cm long with silvery hair below. FLOWERS: fragrant, cream-white or pale green each 5 mm on many long spikes to 24 cm, at ends of branchlets. FRUIT: thin flat brown pods, 4-6 cm long containing 1-2 flat green-yellow seeds. Pods remain a long time on the tree.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: 12,500-14,000. Germination is good I and fairly uniform; reaches 20-70% after 10-25 days.
- treatment: nick or immerse in hot water, allow to cool and soak for 12 hours.
- storage: can retain viability for a long period if kept dry and free from insects.
- Management: Fairly fast growing; lopping.
- Remarks: Produces very good fence posts. The wood is moderately hard and durable but difficult to nail.



One flower enlarged

Cadaba farinosa

Capparidaceae

Indigenous

Common names: Gogo: mvumvu, mwimachigulu; Haya: mkubange; Kere: mwitamunyu; Lugu: luharamira; Maasai: ngamalog; Nyam: mtundusuvuya; Suku: kaninigwa, msagwasagwa, ndumwashigulu; Zigua: mnyukapala.

Ecology: A shrub of arid and semi-arid areas in much of West Africa and India, also Zaire and Angola. In Tanzania, it is found in most arid areas. It prefers heavy soil but *can* grow in sand and has been used to hold sandy river banks. Often found on termite mounds with other shrubs or at the foot of other trees such as Balanites species, 0-1,700 m.

Uses: Firewood, food (young shoots), flavouring (dried leaves), medicine (leaves, roots, ash), fodder (leaves, flowers, fruit), toothbrushes.

Description: An evergreen twiggy shrub or, rarely, a small tree to 5 m sometimes climbing. BARK: pale or dark, strongly grooved, branches often stiff and sharp, young twigs "floury" with little white scales or hairs. LEAVES: simple, small, 2-5 cm, oblong, grey-green along hairy twigs FLOWERS: green-yellow, few in a cluster, ovary stalked, 4-5 stamens each 2 cm long. FRUIT: on a stalk to 6 cm long noticeable when ripe as the cylindrical pod up to 4 cm long breaks to show orange-red pulp around black seeds

Propagation: Seedlings.

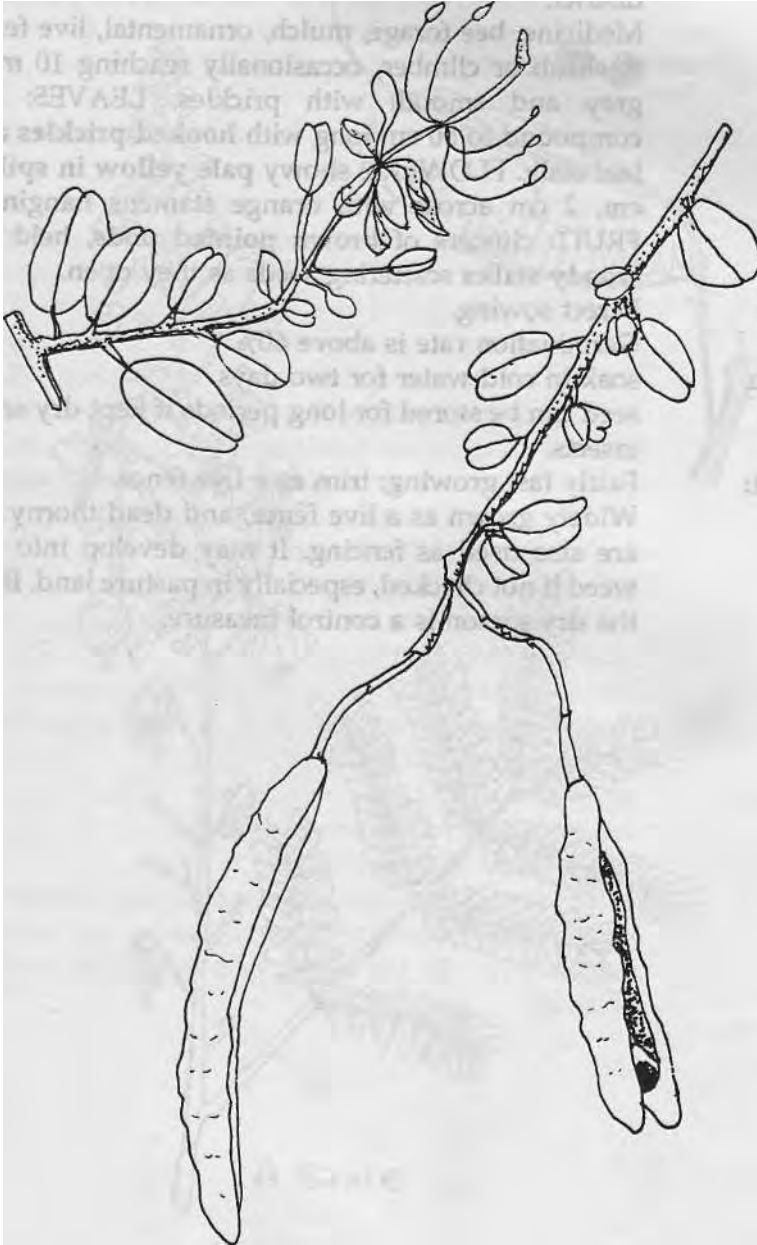
Seed info.: No. of seeds per kg: about 8,000.

treatment; **no treatment required,**

storage: seeds are perishable and therefore Should not be stored for

Management: Coppicing.

Remarks: Good fodder in the dry season. Very common in arid areas. Many medicinal uses for internal disorders. Rod and leaves are used to treat anthrax in cattle.

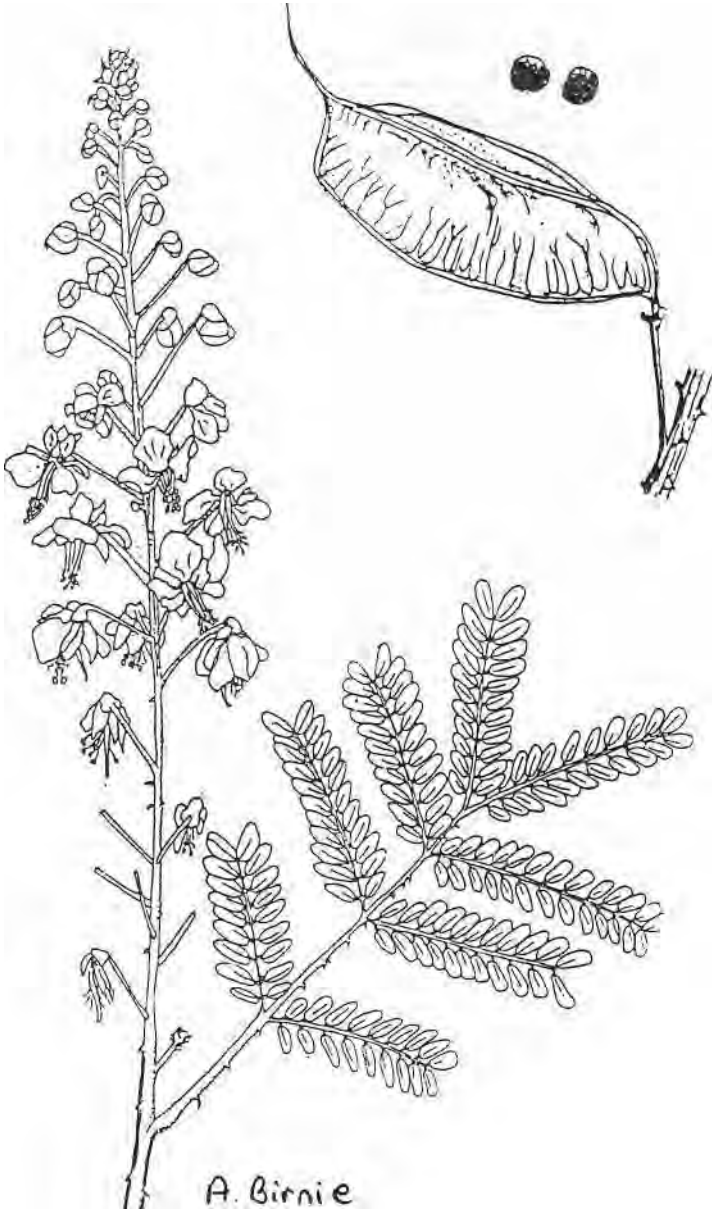


Caesalpinia decapetala

Caesalpinioide

Tropical Asia

- Common names:** Arusha: olmashinga; Eng: Mauritius thorn, Mysore thorn; Iraqw: gharengei; Samb: mshawa, urushu.
- Ecology:** A thorny shrub widely naturalized in Africa in medium- and high-rainfall areas, 900-2,100 m. Common in Meru district.
- Uses:** Medicine, bee forage, mulch, ornamental, live fence.
- Description:** A shrub or climber, occasionally reaching 10 m. **BARK:** grey and smooth with prickles. **LEAVES:** feathery, compound to 50 cm long with hooked prickles along the leaf stalk. **FLOWERS:** showy pale yellow in spikes to 30 cm, 2 cm across with orange stamens hanging down. **FRUIT:** clusters of brown pointed pods, held erect on woody stalks scattering seeds as they open.
- Propagation:** Direct sowing.
- Seed info.:** Germination rate is above 60%.
- treatment:** soak in cold water for two days.
- storage:** seed can be stored for long periods if kept dry and free of insects.
- Management:** Fairly fast growing; trim as a live fence.
- Remarks:** Widely grown as a live fence, and dead thorny branches are also used as fencing. It may develop into a serious weed if not checked, especially in pasture land. Burning in the dry season is a control measure.



Caesalpinia pulcherrima

Caesalpinioide

Tropical America, West Indies

- Common names: Eng: dwarf poinhana, peacock flower, pride of Barbados
Swah: mnyonyore.
- Ecology: Native to tropical America, now widespread all over the tropics and frequently naturalized. It is planted as a ornamental and is common in gardens on the coast of East Africa. It tolerates most soils and grows well in all area below 1,200 m.
- Uses: Medicine (roots, flowers, leaves), ornamental, live **fence** ink from charred wood.
- Description: A shrub or small tree to 6 m, sometimes armed with a **few** short paired spines at nodes, or spines absent. **BARK:** grey, smooth, with or without pairs of short spines
LEAVES: pale green, **twice compound**, up to **10 pairs of side ribs**, each bearing 6-12 pairs of leaflets, a **lean** oblong to 2 cm, **tip** rounded or notched. **FLOWERS** brilliant scarlet, yellow or rose, edge frilly **and** yellow, in axillary or terminal heads over 30 cm long, each **flower** butterfly-shaped, about 3 cm across with **5 petals** and **10 red stamen filaments to 6 cm** with 5 standing well out of the flower. **FRUIT:** flattened, hanging pods, **irregularly** oblong, to 12 cm in length, turning dark brown, **twisting** open on the tree to set free small, flat seeds.
- Propagation: Direct sowing, seedlings.
- Seed info.: No. of seeds per kg: 4,400-5,500. Germination is good **and** uniform after 7-14 days; float off bad seeds (which are usually empty) in water.
- treatment: not necessary.
- storage: can be stored for up to six months.
- Management: Slow growing; coppicing.
- Remarks: A common shrub, normally erect but sometimes **spreading** and used as a hedge. Flowers, leaves and roots said in reduce fever. (In India the pods and leaves are used as a laxative.)



Cajanus cajan

Papilionoideae

South East Asia

Common names: Eng: pigeon pea; **Mwera:** lupelemende; **Nyam:** mblazi; **Pare:** mshughu; **Samb:** mbaazi; **Swah:** mbaazi.

Ecology: The genus is now recognized to have 32 species. It reached West Africa and the West Indies early as a food crop. It is a hardy, drought resistant and widely adaptable crop growing in a variety of soils provided they are not saline or waterlogged, 0-3,000 m.

Uses: Firewood, food (fruit and seeds), fodder (foliage), bee forage, mulch, green manure, nitrogen fixation, soil conservation, soil improvement.

Description: A slender shrub 2-5 m, annual or perennial, becoming woody with age. **BARK:** brown, thick stems ribbed and densely hairy. **LEAVES:** compound with **three leaflets, leaflets hairy white below**, 2-8 cm long. **FLOWERS:** usually **yellow, in terminal groups**, the **large petal has red lines** outside, buds yellow, sticky. **FRUIT:** curved pods about 5 cm long, hairy with about **4-5 green-grey seeds**.

Propagation: Direct sowing.

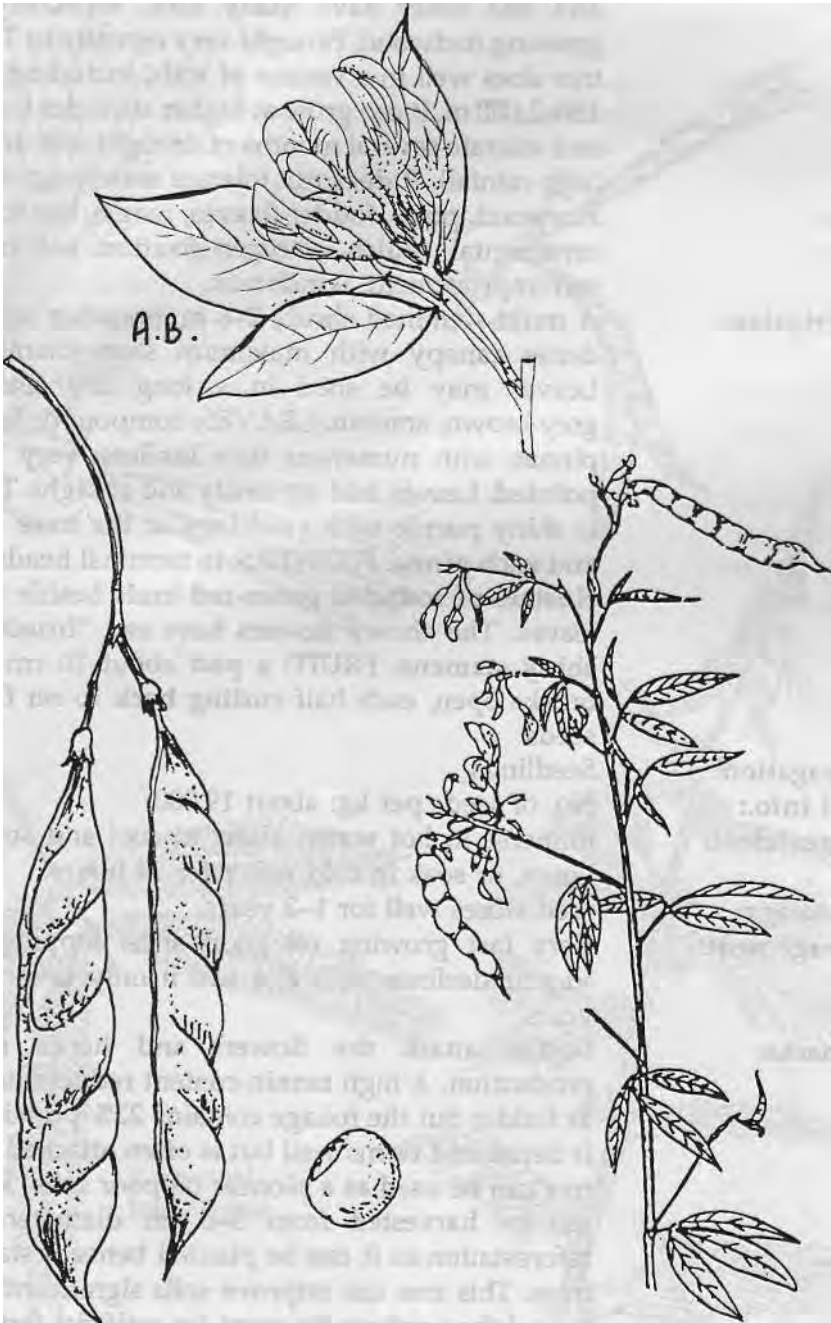
Seed info.: Seeds highly susceptible to insect attack. Germination rate very high.

treatment: soak in cold water for one day.

storage: stores well if kept dry, cool, and insect free.

Management: Fast growing; weeding is necessary.

Remarks: A useful, high-yielding crop for dry areas. Improved perennial "tree types" are available. It is, however, susceptible to pests and diseases. Root extracts are used for stomach ache and as an aphrodisiac.



Central America

Common names: **Eng:** calliandra.

Ecology: Calliandra species have long been popular in the tropics as ornamentals due to their red flower heads. This species and one other have many uses, especially as quick-growing fuelwood. Brought very recently to Tanzania, the tree does well in a variety of soils, including acidic ones, 150-2,000 m. It can grow at higher altitudes than *Leucaena* and tolerate several months of drought, but does best with high rainfall. It does not tolerate waterlogging.

Uses: Firewood, poles, fodder (leaves, twigs), bee forage, shade, ornamental, mulch, nitrogen fixation, soil conservation, soil improvement, windbreak.

Description: A multi-stemmed shrub, 2-6 m, branches spreading to a dense canopy with maximum stem diameter 20 cm. Leaves may be shed in a long dry season. BARK: grey-brown, smooth. LEAVES: compound, feathery, 5-15 pinnae with **numerous tiny leaflets, very narrow and pointed**. Leaves **fold up easily** and at night. The stiff stalk is shiny purple with **swellings at the base of each leaf and each pinna**. FLOWERS: in terminal heads with **dense clusters of rounded green-red buds** beside the alternate leaves. The showy flowers have **red "brushes" of long shiny stamens**. FRUIT: a **pod** about 10 cm long which breaks open, each half **curling back** to set free up to 15 seeds.

Propagation: Seedlings.,

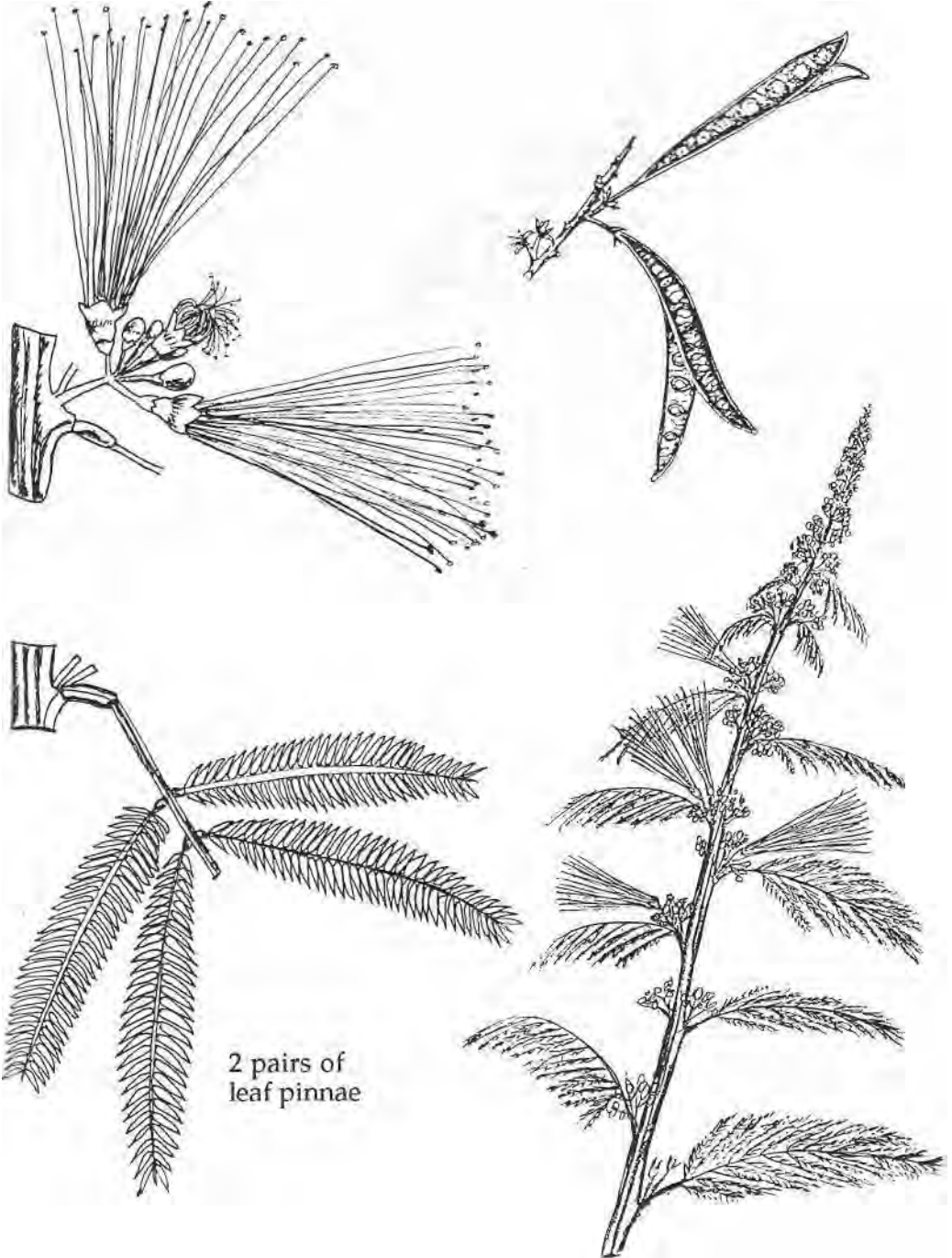
Seed info.: No. of seeds per kg: about 19,000.

treatment: immerse in hot water, allow to cool and soak for 12-24 hours, or soak in cold water for 24 hours,

storage: seed stores well for 1-2 years.

Management: Very fast growing on good sites; lopping, coppicing. Vigour declines with age and it only lasts for about 12 years.

Remarks: Beetles attack the flowers and hence reduce seed production. A high tannin content reduces its palatability as fodder but the foliage contains 22% protein. The wood is dense and burns well but is often attacked by ants. The tree can be used as a pioneer on poor soils. Woody stems can be harvested from 3-5 cm diameter. Useful for reforestation as it can be planted beneath stands of taller trees. This tree can improve soils significantly when dug in and thus reduce the need for artificial fertilizer.

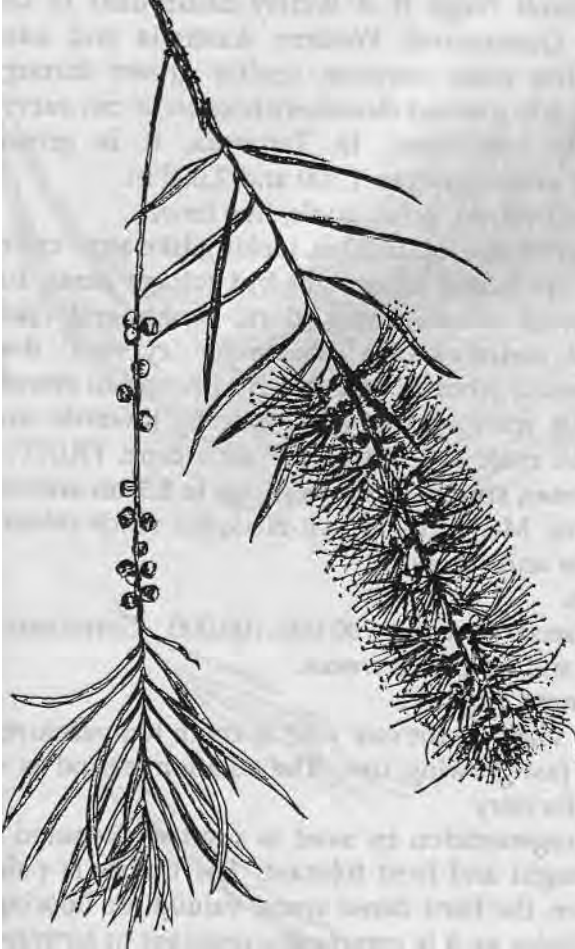


Callistemon citrinus var. splendens

Myrtaceae

Australia, New Zealand, Tasmania

Common names:	Eng: bottlebrush tree, weeping bottlebrush.
Ecology:	In Australia it is found on low-lying ground including valley bottoms, so will grow on poorly drained sites. Now widely planted in the tropics as an ornamental.
Uses:	Firewood, charcoal, bee forage, windbreak, ornamental.
Description:	A small evergreen tree, to 6 m high, with drooping foliage. BARK: grey, smooth, furrowed with age. LEAVES: narrow, tough, grey-green to 8 cm, young leaves pink-green, faintly lemon scented when crushed. FLOWERS: vivid crimson bottlebrush-like cylindrical spikes, a mass of long red stamens, nectar attracting sunbirds and bees. Leafy shoots continue to grow beyond the flower "brush". FRUIT: small woody capsules, persisting many months, contain the tiny seed.
Propagation:	Seedlings.
Seed info.:	No. of seeds per kg: about 44,000. Seed germination is uniform (two weeks).
treatment:	not necessary.
storage:	seed stores well (six months).
Management:	Fast growing on good sites.
Remarks:	Commonly planted in gardens. Another Callistemon variety has erect flowers, not drooping, otherwise it is similar.

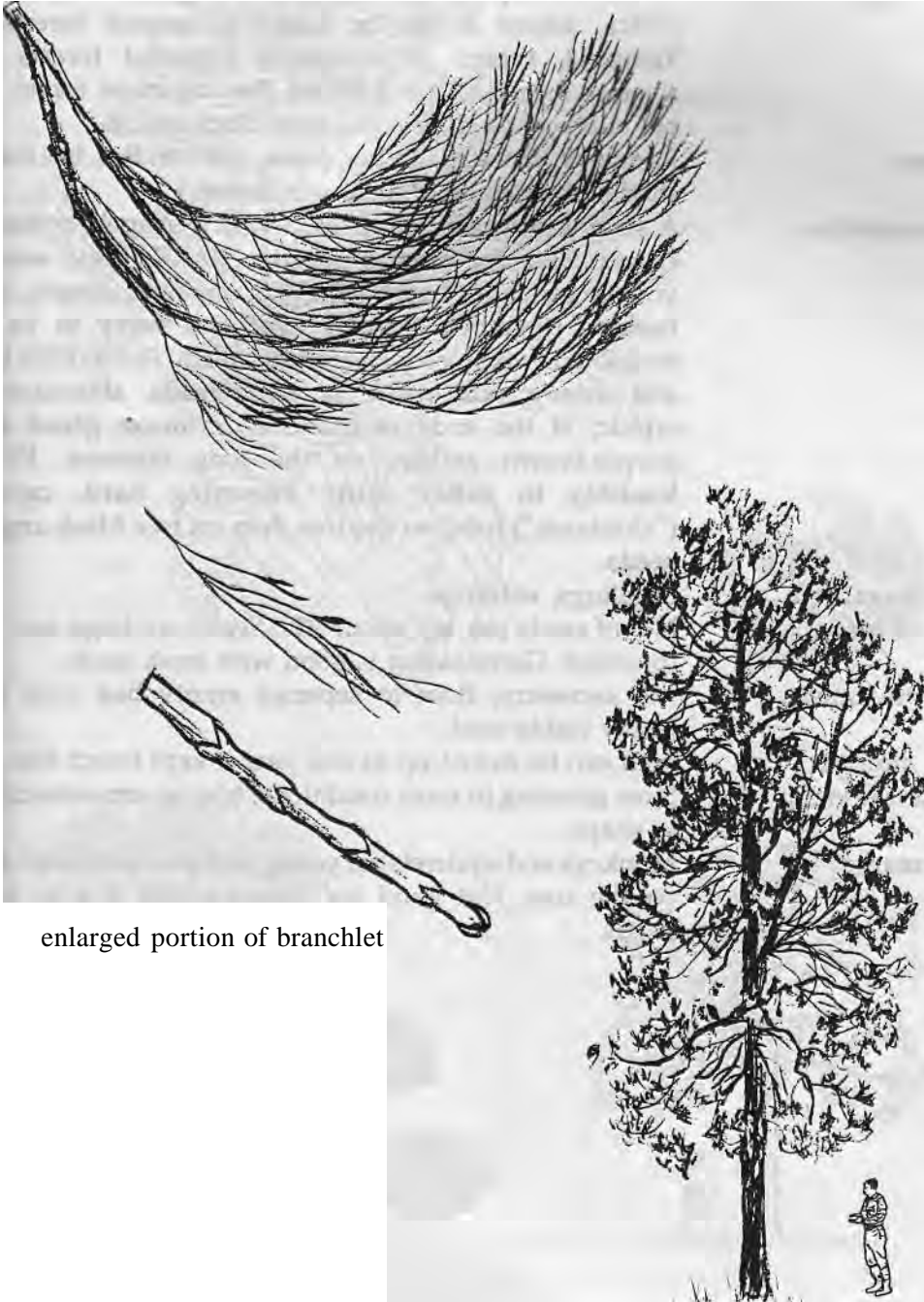


Callitris robusta (C. preissii)

Cupressaceae

Australia

- Common names:** **Eng:** common cypress pine, Moreton Bay cypress pine.
- Ecology:** In its natural range it is widely distributed in coastal sands in Queensland, Western Australia and adjacent islands. The most common conifer grown throughout Australia, it is planted elsewhere because it can survive in dry sandy conditions. In Tanzania, it is grown in mountain areas between 1,300 and 2,000 m.
- Uses:** Timber (furniture), poles, tools, live fence.
- Description:** An evergreen tree, up to 20 m, looking **like any "cypress"**, branches spreading or upright **but foliage finer**. **BARK:** grey, smooth when young, dark, **rough and cracking when old, resinous**. **LEAVES:** similar "cypress", the tiny scale leaves in whorls of three, tight pressed to branchlets. **FLOWERS:** male and female separate, towards ends of branchlets: male cylindrical, female a cone. **FRUIT: dark brown cones, single or clustered, up to 2.5 cm** across with 6 segments. Many tiny brown-black flat seeds released as cone dries and opens.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: 80,000-100,000. Germination is uniform and takes 2-3 weeks.
- treatment:** no treatment required.
- storage:** can keep viability for one year at room temperature.
- Management:** A fairly fast-growing tree. The rotation period is 45-55 years in forestry.
- Remarks:** Natural regeneration by seed is profuse. Reputed to be very drought and frost tolerant. The timber is pale and decorative, the hard dense wood valued for flooring and also for poles as it is completely resistant to termites.



enlarged portion of branchlet

Calodendrum capense

Rutact

Indigenous

Common names: Arusha: olarashi, oltyaneibor; Chag: mpisili mpisile; **Eng:** Cape chestnut; Iraqw: tumatumo; Maasai: ol arash; **Meru** isau; Nyat: munyinkanyuki.

Ecology: A tree widespread in Africa, from Uganda to southern Africa, where it can be found in coastal forests. In Tanzania, typical of evergreen highland forests **and** riverine forests, 1,200-2,200 m. Best on moist forest soils but succeeds in drier soils, even black cotton.

Uses: Firewood, charcoal, timber, poles, tool handles, bee forage. shade, ornamental, mulch, windbreak.

Description: A semi-deciduous tree to 20 m with a shapely spreading crown, bare for several months. **BARK:** grey, smooth young branchlets hairy. **LEAVES:** opposite, simple, often bunched together, broadly oval and wavy to 14 cm midrib and veins very clear underneath. **FLOWERS:** large and showy, pink-white in erect heads, abundant *but* erratic, at the ends of branches, crimson gland dots purple-brown anthers on the long stamens. **FRUIT** knobbly to softly spiny becoming hard, capsules ("chestnuts") hang on the tree then set free black angular seeds.

Propagation: Seedlings, wildings.

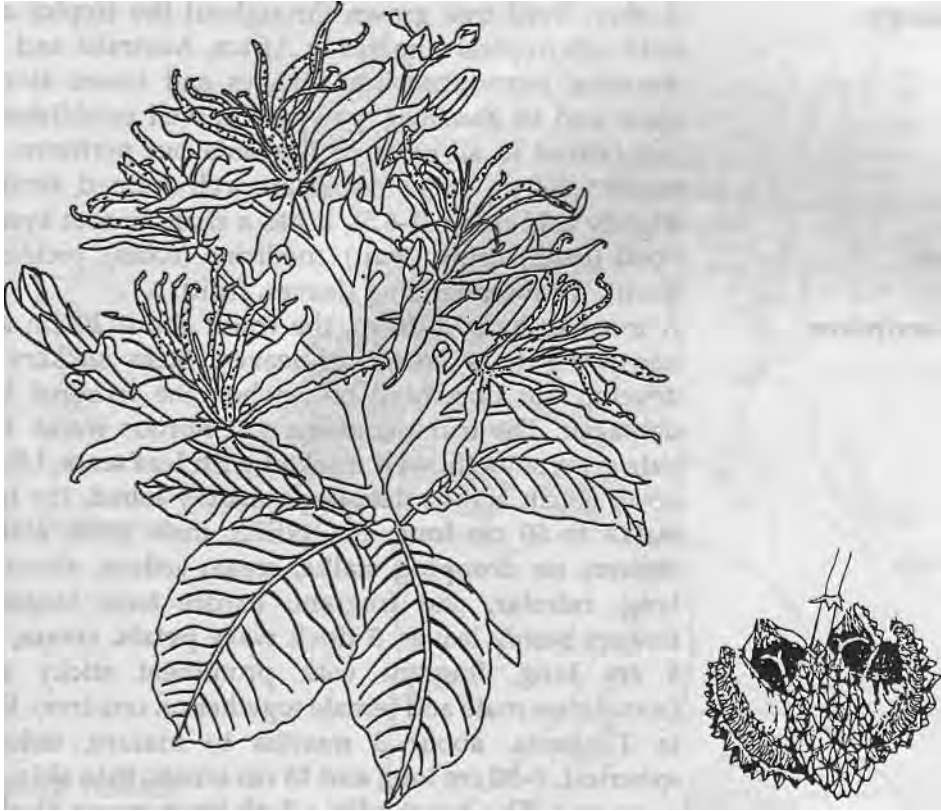
Seed info.: No. of seeds per kg: about 900. Seeds are large and easy to collect. Germination is good with fresh seeds.

treatment: not necessary; float to separate empty bad seed from heavy viable seed.

storage: **seed can be stored up to one year if kept insect free,**

Management; **Slow growing in most conditions; trim an ornamental tree to shape.**

Remarks: Monkeys and squirrels eat young capsules with seed while on the tree. Not good for intercropping due to heavy shade.



Tropical America

Common names: Eng: papaya, pawpaw; Swah: mpapai.

Ecology: A short-lived tree grown throughout the tropics and in mild sub-tropical climates in Africa, Australia and North America. Introduced into villages and towns along the coast and in Zanzibar, pawpaw is well established and naturalized in all parts of Tanzania but performs better below 1,500 m. Suitable soils are well drained, fertile and slightly acid (pH 6.0-6.5). It has a shallow root system.

Uses: Food (fruit), drink (fruit), medicine (roots), pickles, jam (fruit), meat tenderizing (leaves, fruit).

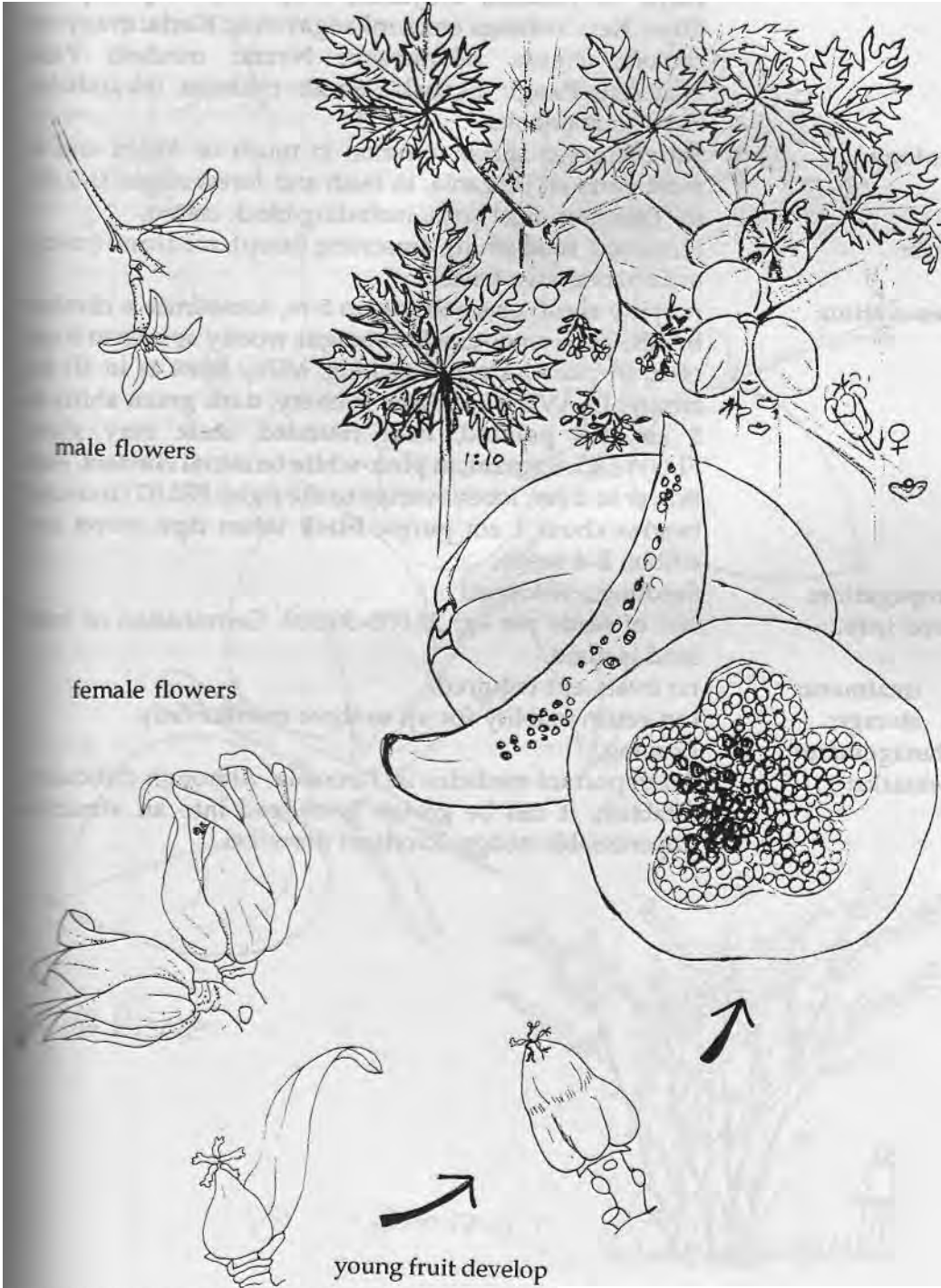
Description: A tree-like herb, 2-10 m, the trunk about 20 cm across narrowing to a crown of leaves. Stem suckers often develop but branching only when the terminal bud is damaged. The trunk contains soft fibrous wood. BARK: pale grey, smooth, well marked with leaf scars. LEAVES: up to 60 cm across, deeply palmately lobed, the hollow stalks to 60 cm long. FLOWERS: male trees, abundant flowers on drooping stalks, cream-yellow, about 2 cm long, tubular, and fragrant; female trees larger, few flowers beside leaves, 5 thick waxy petals, cream, about 5 cm long, fragrant with prominent sticky stigma (sometimes male and female together on one tree). FRUIT: in Tanzania, about 3 months to mature, oblong to spherical, 7-50 cm long and 15 cm across, thin skin, green to orange. The sweet edible flesh bears many black seed on the inside leaving the centre hollow.

Propagation: Seedlings, direct sowing.

Seed info.: No. of seed per kg: 20,000. Collected from ripe fruit, treatment: air dried.

storage: store in cool and dry conditions. Viability is up to 3 years.
Management: Direct sowing is best for fruit production—grows easily from seed. Sow 5-30 seeds; germination takes 1-4 weeks. Weeding is essential as pawpaw is sensitive to road damage. In plantations, space plants 2-4 m apart and have 1 male tree for every 25-100 female trees.

Remarks: Pawpaw is recommended for all parts of Tanzania below 1,500 m. Large-scale planting is possible in the coastal zones with higher rainfall and in the coral-rag area of Zanzibar. Meat can be tenderized by wrapping it in pawpaw leaves. Trees do well for 3-4 years then yield falls, so plant every 4 years on a fresh site. The tree is attacked by several weevils, bugs, etc.

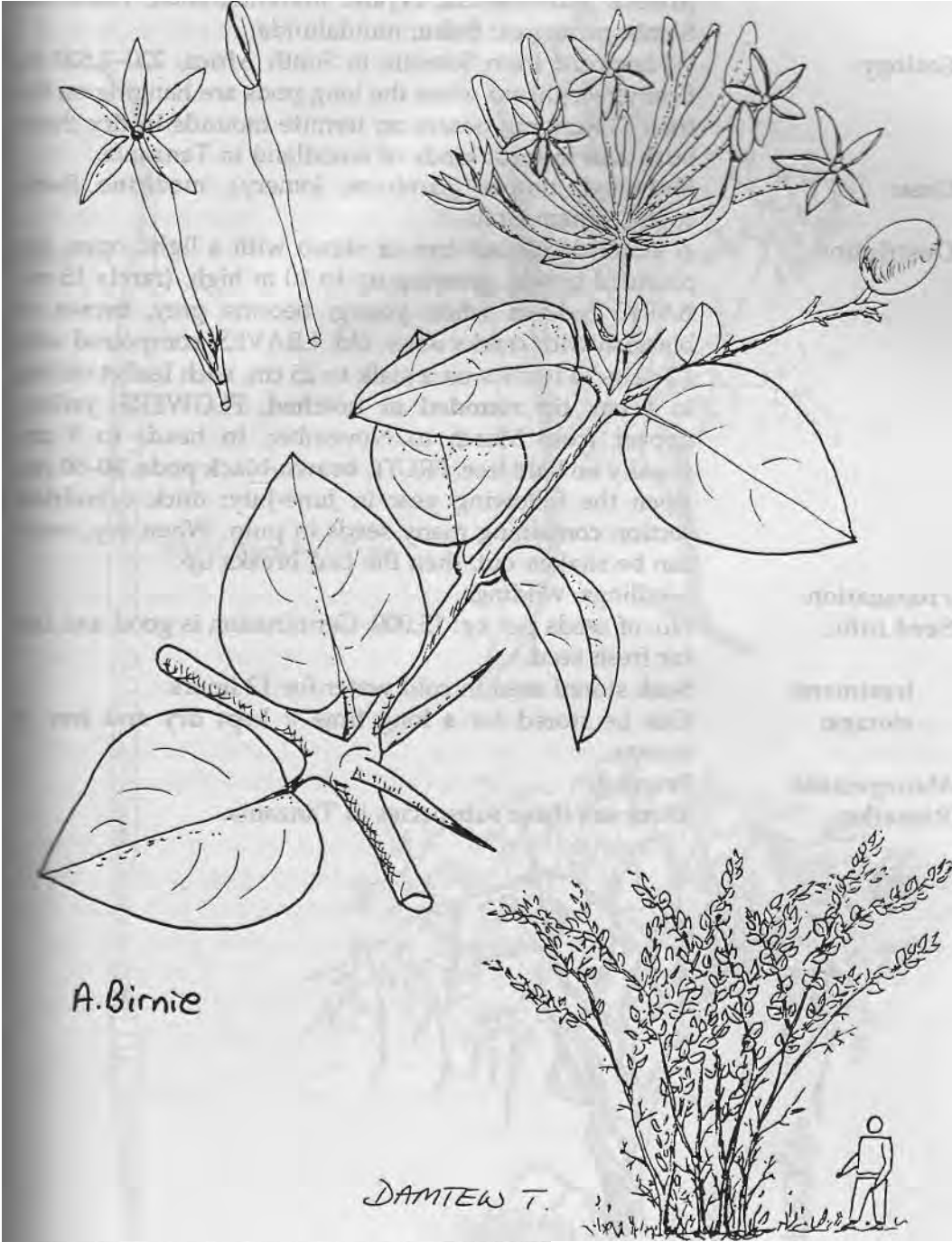


Carissa edulis

Apocynaceae

Indigenous

- Common names: **Chag:** manka; **Eng:** simple-spined carissa; **Fipa:** msuuku; **Haya:** moyonzaki, muyanaza, muyonza; **Iraqw:** quach, titiyo; **Kere:** mkanga onza, mkangayonza; **Kuria:** munyore rinyore; **Nguu:** mkumbaku; **Nyam:** mfubeli; **Pare** mchhofwe; **Rangi:** mkabaku; **Samb:** mfumba, mkumbaku; **Zara:** mukambaku.
- Ecology: An evergreen shrub common in much of Africa and in most parts of Tanzania, in bush and forest edges, **0-2,000** m. Tolerates most soils, including black cotton.
- Uses: Firewood, food (fruit), seasoning (soup), medicine (roots), ornamental, live fence.
- Description: A spiny shrub or small tree to 5 m, sometimes a climber. **BARK:** grey, smooth **with straight woody spines to 5** cm, often in pairs, rarely branching. Milky latex as in **all** the family. **LEAVES:** **opposite**, leathery, **dark green shiny to 5** cm, **tip pointed**, **base rounded**, stalk very short **FLOWERS:** fragrant, in **pink-white terminal clusters**, each flower **to 2** cm, lobes overlap to the right. **FRUIT:** rounded **berries about 1** cm **purple-black when ripe**, sweet and edible, 2-4 seeds.
- Propagation: Seedlings, wildings.
- Seed info.: No. of seeds per kg: 28,000-30,000. Germination of fresh seed is good.
- treatment: no treatment required.
- storage: can retain viability for up to three months only.
- Management: Pruning.
- Remarks: An important medicine in Tanzania. Although difficult to establish, it can be grown from seed into an attractive impenetrable hedge. Excellent firewood.

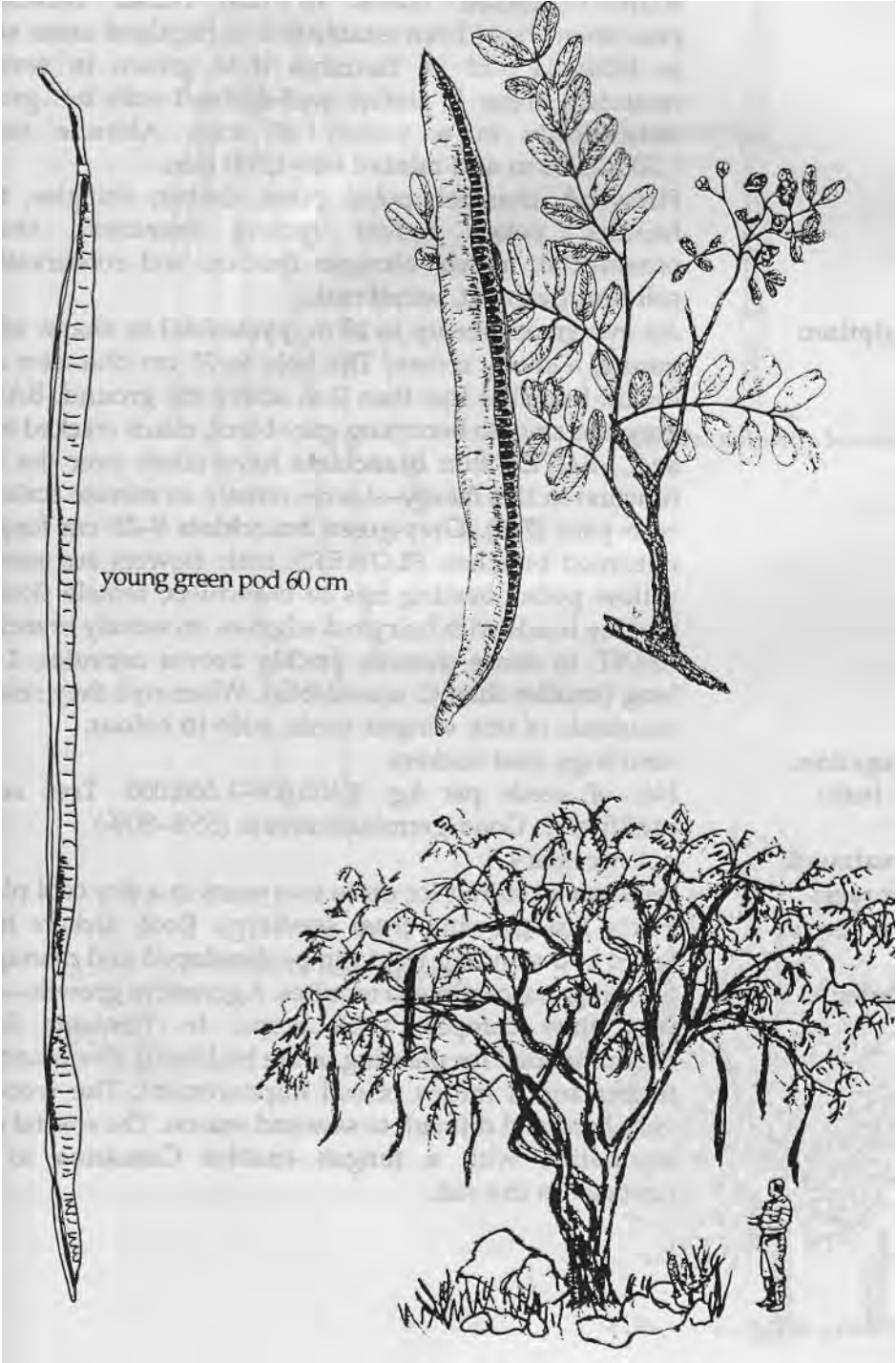


Cassia abbreviata subsp. abbreviata

Caesalpinioideae

Indigenous

- Common names: Eng: long-pod cassia; Gogo: mkakatika, muiimuli; Hehe: limulimuli, muiimuli; Kere: mkangaonza, mkangayonzd; Mwera: mchenamela; Nyam: mulundalunda, munzokaj; Samb: mzungazi; Suku: nundalunda.
- Ecology: Widespread from Somalia to South Africa, 220-1,520 mJ. Easily recognized when the long pods are hanging on **the** tree. Commonly occurs on termite mounds in dry thorn bush and in most kinds of woodland in Tanzania.
- Uses: Firewood, timber (furniture, joinery), medicine (**bark**, roots), ornamental.
- Description: A small deciduous tree or shrub with a light, open, **flat** rounded crown, growing up to 10 m high, (rarely 15 m). **BARK**: reddish when young, become grey, brown or blackish with cracks when old. **LEAVES**: compound **with** 12 pairs of leaflets on a stalk to 25 cm, each leaflet oblong to 6 cm, tip rounded or notched. **FLOWERS**: yellow, appear from March to November, in heads to 9 **end** usually on bare tree. **FRUIT**: brown-black pods, 30-90 cm. ripen the following year in June-July; thick cylindrical section containing many seeds in pulp. When dry, seeds can be shaken out, then the pod breaks up.
- Propagation: Seedlings, wildings.
- Seed info.: No. of seeds per kg: 15,000. Germination is good and fast for fresh seed.
- treatment: Soak stored seed in cold water for 12 hours.
- storage: Can be stored for a long time if kept dry and free of insects.
- Management: Pruning.
- Remarks: There are three subspecies in Tanzania.

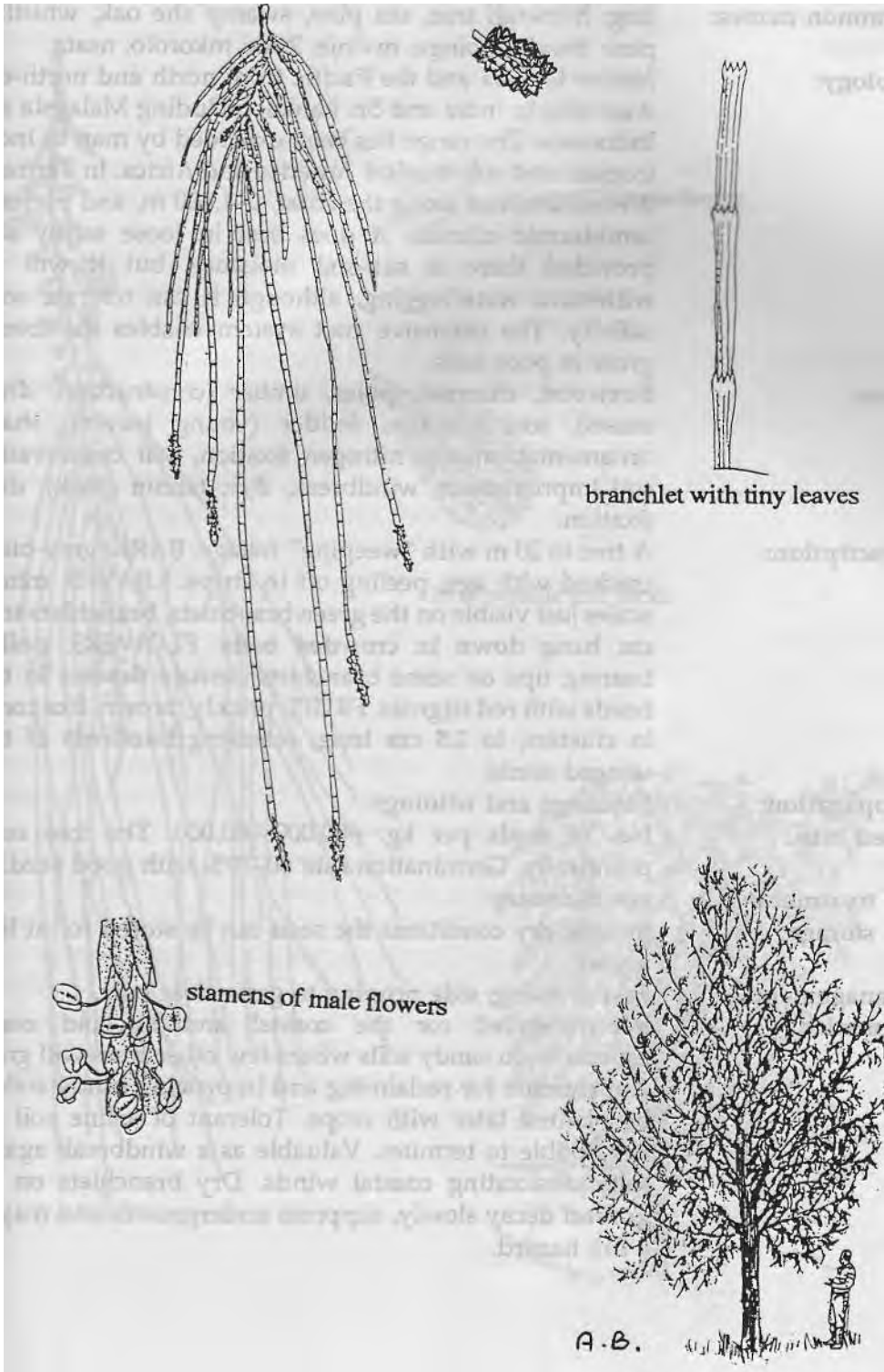


Casuarina cunninghamiana

Casuarinaceae

Australia, Pacific Islands

- Common names:** **Eng:** beefwood, creek oak, river oak; **Swah:** mvinje.
- Ecology:** Widely introduced to sub-tropical areas such as the southern United States. In East Africa successful plantations have been established in highland areas such as Ethiopia and in Tanzania it is grown in several mountain areas. It prefers well-drained soils but grows satisfactorily in a variety of soils. Altitude range 1,500-2,000 m and rainfall 600-1,500 mm.
- Uses:** Firewood, charcoal, poles, posts, timber, shingles, tool handles, yokes, fodder (young branches), shade, ornamental, mulch, nitrogen fixation, soil conservation, soil improvement, windbreak.
- Description:** An evergreen tree up to 20 m, **pyramidal in shape when young**, a shady crown. The bole to 75 cm diameter and lowest branches less than 2 m above the ground. **BARK:** grey and smooth becoming grey-black, much cracked with age. **LEAVES:** thin **branchlets** have taken over the leaf function in this family—leaves remain as minute scales at each joint (7-9). **Grey-green branchlets 9-20 cm** long in upturned **bunches**. **FLOWERS:** male flowers are seen as yellow pollen-bearing tips to branchlets; female flowers are tiny heads with hairy red stigmas, on woody branches. **FRUIT:** In dense clusters, **prickly brown capsules, 1 cm long** (smaller than *C. ecjuisetifolia*). When ripe they release hundreds of tiny winged seeds, **pale in colour**.
- Propagation:** Seedlings, root suckers.
- Seed info.:** No. of seeds per kg: 1,400,000-1,600,000. Tree seeds prolifically. Good germination rate (55%-90%).
- treatment:** not necessary.
- storage:** seed can be stored for up to two years in a **dry** cool place.
- Management:** Fairly fast growing from seedlings. Root suckers from felled and standing trees can be developed and managed.
- Remarks:** Seedlings susceptible to termites. Aggressive growth—and may thus compete with crops. In Tanzania it is recommended for planting in the highlands as a source of timber and a means of soil improvement. The wood is very hard and difficult to saw and season. The special root association with a fungus enables *Casuarina* to fix nitrogen in the soil.

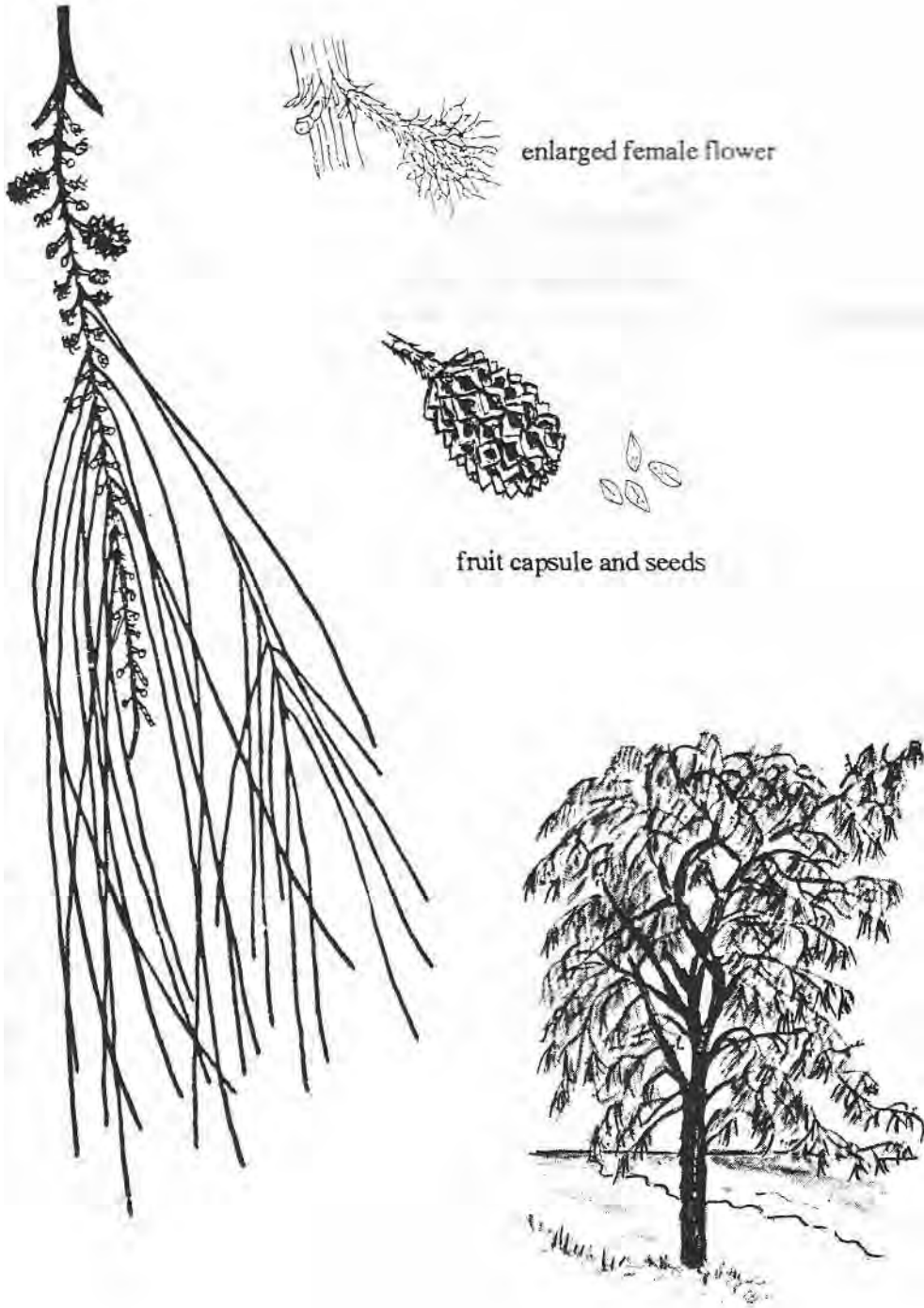


Casuarina equisetifolia (C. littoralis)

Casuarinaceae

Asia, Pacific islands

- Common names:** **Eng:** horsetail tree, sea pine, swamp she oak, whistling pine; **Swah:** moinga, mvinje; **Zara:** mkorolo, nsata.
- Ecology:** Native to Asia and the Pacific from north and north-east Australia to India and Sri Lanka, including Malaysia and Indonesia. The range has been extended by man to India, tropical and sub-tropical America and Africa. In Tanzania it is naturalized along the coast, 0-1,400 m, and prefers a semi-humid climate. It does best in loose sandy soils provided there is sub-soil moisture, but it will not withstand waterlogging, although it can tolerate some salinity. The extensive root system enables the tree to grow in poor soils.
- Uses:** Firewood, charcoal, poles, timber (construction, dhow masts), tool handles, fodder (young leaves), shade, ornamental, mulch, nitrogen fixation, soil conservation, soil improvement, windbreak, dye, tannin (bark), dune fixation.
- Description:** A tree to 20 m with "weeping" foliage. **BARK:** grey-black, cracked with age, peeling off in strips. **LEAVES:** minute scales just visible on the green branchlets, **branchlets to 30 cm hang down in crowded tufts.** **FLOWERS:** pollen-bearing tips on some branchlets; female flowers in tiny heads with red stigmas. **FRUIT:** prickly, brown, like cones, in clusters, **to 2.5 cm long**, releasing hundreds of tiny winged seeds.
- Propagation:** Seedlings and wildings.
- Seed info.:** No. of seeds per kg: 600,000-900,000. The tree seeds prolifically. Germination rate 50-70% with good seed, **treatment:** not necessary.
- storage:** in cool, dry conditions the seed can be stored for at least a year.
- Management:** Fast growing; side pruning to get a clear bole.
- Remarks:** Recommended for the coastal and lowland zones, especially on sandy soils where few other trees will grow. Appropriate for reclaiming and improving sandy soils to be planted later with crops. Tolerant of saline soil but susceptible to termites. Valuable as a windbreak against salty desiccating coastal winds. Dry branchlets on the ground decay slowly, suppress undergrowth and may be a fire hazard.



Casuarina junghuhniana (C. montana)

Casuarinaceae

Asia, Pacific islands

- Common names:** **Eng:** forest oak, she oak; **Swah:** mvinje.
- Ecology:** A native of highlands in Indonesia where it pioneers deforested lands, 1,500-3,100, but it can be grown elsewhere from sea level to 3,100 m. It grows on most types of soil from acid to alkaline and is moderately drought resistant. Roots extend sideways and there are many root suckers. It is commonly planted in the Lushoto area.
- Uses:** Firewood, charcoal, timber, poles, tool handles, fodder (green shoots), shade, ornamental, nitrogen fixation, soil conservation, soil improvement.
- Description:** A tall tree up to 35 m, the straight trunk to 1 m in diameter with dark grey-green branches to a narrow conical crown. **BARK:** dark brown to black, **rough, corky with furrows**. **LEAVES:** pale green branchlets **30-40 cm long** (bearing the tiny leaf scales) hanging down. **FLOWERS:** male and female flowers borne on separate trees in clusters. **FRUIT:** **female capsules small**, 9-12 mm diameter, become woody but not prickly when valves open to release tiny seeds.
- Propagation:** Seedlings, root suckers.
- Seed info.:** No. of seeds per kg: 80,000-100,000. Seed germination is good and uniform, completed after 10 days.
- treatment:** no treatment required.
- storage:** Can keep viability for up to one year at room temperature.
- Management:** Fairly fast growing, it can be planted in woodlots and on farm boundaries, pollarding.
- Remarks:** A potential multipurpose tree in the Tanzania highlands favoured in poor soils for fuel and poles. There is a need to identify suitable provenances for different climatic and soil conditions. The tree is popular in south China as it is adaptable to many sites and in the best conditions provides timber in 5 years. Seed propagation results in stands of great variety. Although the wood is hard and heavy, splitting and cracking as it dries, it is useful for fencing, rafters, scaffolding, etc.

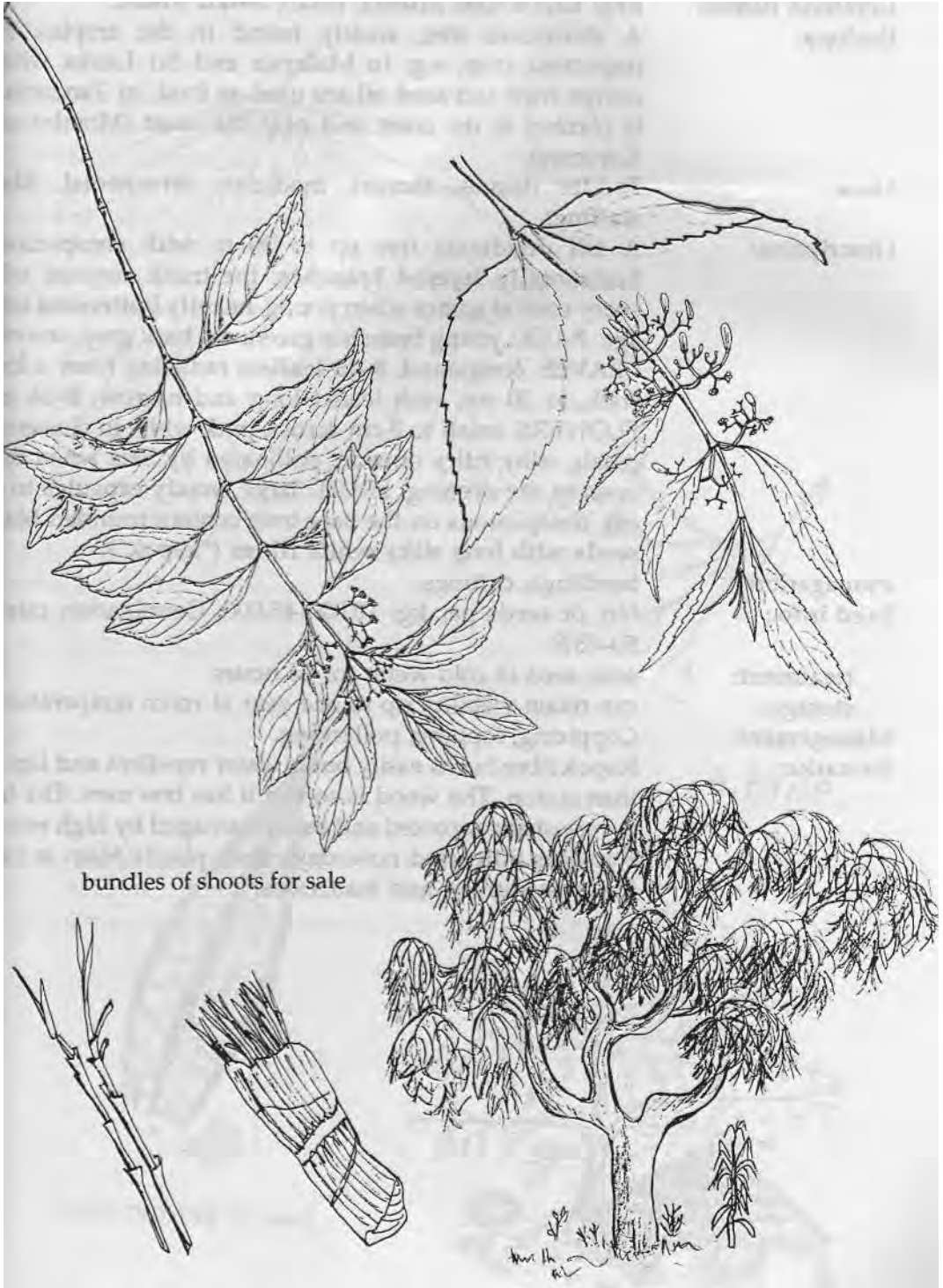


Catha edulis

Celastraceae

Indigenous

- Common names: Eng: khat, miraa; Fipa: takana; Goro: wahawi; Hehe: muhulo; Ifaqw: lagmeri, walfi; Maasai: ol meraa; Mate: mkalanga; Rangi: morungi; Samb: mwandama; Swah: mrungi.
- Ecology: Grows in highland evergreen dry forests. In Tanzania it is common in Usambara, Mbulu, Rungwe, Kilimanjaro and Iringa. It is also found in Kenya, Ethiopia, Malawi, Zambia and South Africa, 1,400-2,200 m.
- Uses: Firewood, timber, poles, tool handles, utensils (pestles and mortars), medicine (fresh leaves), stimulant (stalked leaves, shoots).
- Description: Evergreen shrub or tree up to 18 m high with a compact crown, but stunted to 2-7 m if regularly harvested. BARK grey and smooth when young, becoming dark brown and flaking at maturity. LEAVES: simple, opposite, 5-11 cm long, shiny green above and paler beneath, edge irregularly toothed; leaf stalks reddish, about 1 cm. FLOWERS: very small, pale green to yellow. Produced in small clusters up to 2 cm in diameter. FRUIT: three-lobed woody capsules about 1 cm long, reddish brown when mature, containing many small winged seeds.
- Propagation: Seedlings and suckers or root cuttings.
- Seed info.: No. of seeds per kg: 60,000-80,000. Small, narrow and winged. Germination is good, completed after two weeks.
- treatment: no treatment required.
- storage:
- Management: Fairly fast growing; coppicing, pollarding, pruning.
- Remarks: A threatened species in Tanzania due to over-exploitation so it is also a reserved tree. Said to indicate soil fertility in areas where it is found. The leaves are chewed both as a stimulant and to treat asthma, coughs, stomach ache and chest pains.



Ceiba pentandra

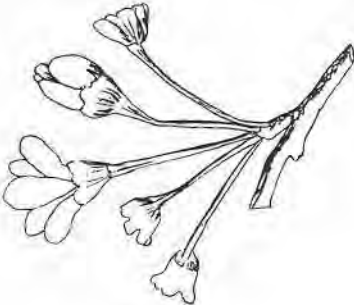
Bombacaceae

South and Central America

- Common names: **Eng:** kapok tree; Mwera: msufi; **Swah:** msufi.
- Ecology: A distinctive tree, widely found in the tropics. An important crop, e.g. in Malaysia and Sri Lanka where unripe fruit and seed oil are used as food. In Tanzania 1 is planted at the coast and near the coast (Mombo and Korogwe).
- Uses: Fodder (1^{eaves}/ shoots), medicine, ornamental, **fibre** stuffing.
- Description: A tall deciduous tree up to 30 m with **conspicuous horizontally layered branches**, the trunk covered with sharp conical spines when young, **heavily buttressed wth** age. **BARK:** young branches green, old bark grey, smooth. **LEAVES:** compound, **5-15** leaflets radiating from a **long** stalk, to 20 cm, each leaflet long and narrow, 8-16 cm. **FLOWERS:** small to 3 cm across, pink-white in clusters, 5 petals, silky hairy outside, pollinated by bats when **then** open in the evening. **FRUIT:** large woody **capsules** to 30 cm, conspicuous on the bare tree; contain rounded **black** seeds with **long silky white fibres** ("kapok").
- Propagation: Seedlings, cuttings.
- Seed info.: No. of seeds per kg: 10,000-45,000. Germination rate a 50-85%.
- treatment: soak seed in cold water for 24 hours.
- storage: can retain viability up to one year at room temperature.
- Management: Coppicing, lopping, pollarding.
- Remarks: Kapok fibre burns easily but is water repellent and lighter **than cotton. The wood is so soft it has few uses. The tree is very shallow rooted and easily damaged by high winds** **Kapok IS little USed nowadays Since plastic foam is used for most stuffing and mattresses,**

Ceiba pentandra

Bombacaceae



A. Birnie



fruit capsule & seed



Citrus aurantifolia

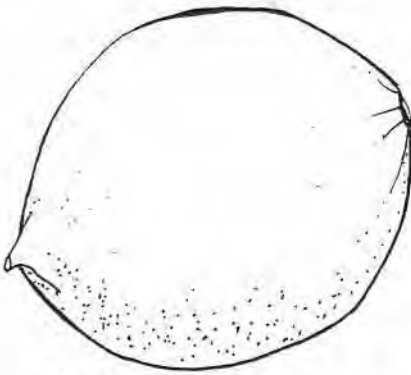
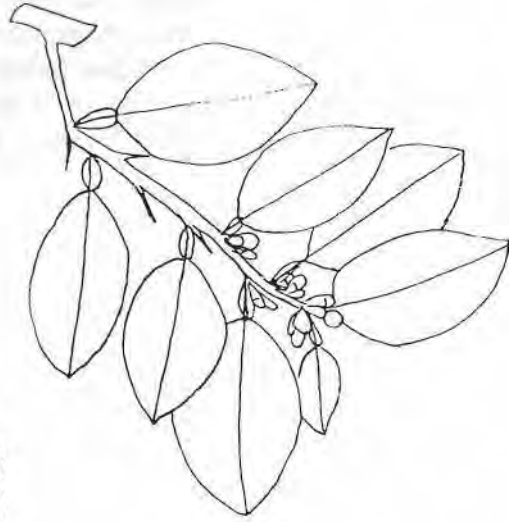
Rutaceae

Indonesia, India

- Common names: Eng: lime; Swah: mdimu.
- Ecology: All plants in the Citrus group originated in Asia and are now widely grown in the tropics and sub-tropics. Limes probably came from Indonesia or India. In Tanzania citrus trees are planted around homes in most villages but more common in the eastern areas, e.g. Morogoro, the coast and Zanzibar. All citrus prefer well-drained fairly acid soils with high fertility and organic matter. They do not tolerate wind or waterlogging but require rainfall for most of the year. Limes normally grow up to 1,800 m but can grow up to 2,500 m, e.g. in Ethiopia, but they will not grow outside the tropics.
- Uses: Food (fruit), pickle, drink (fruit).
- Description: An evergreen tree to 5 m, foliage not dense, branches with many short, sharp spines. BARK: generally smooth grey-brown, bole always short, less than 1 m to first branch, as all citrus. LEAVES: rather small, 4-8 cm, a narrow wing on the stalk, leaf "jointed" to the blade, edge smooth or round toothed. FLOWERS: 1-7 flowers together beside leaf, each 2 cm across buds and flower white, fragrant. FRUIT: the smallest citrus fruit, usually 4-5 cm across, peel thin green-yellow, difficult to remove, pulp very acid, green, juicy.
- Propagation: Can be grown from seed, grafting.
- Seed info.: Mature fruit and cut up under water to set free seeds
Germination in 3-4 weeks.
- treatment: not necessary.
- storage: use fresh seed no more than 14 days old.
- Management: Pollarding to encourage horizontal branching (this is done to keep the tree low in order to pick the fruit easily)
Hand pollination is sometimes necessary to produce good fruit.
- Remarks:

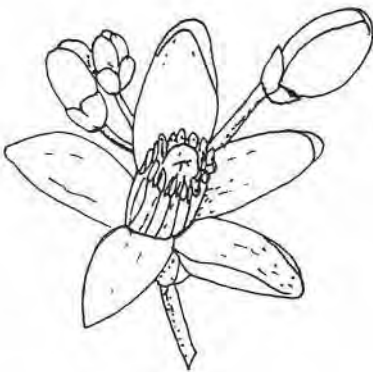
-itrus aurantifolia

Rutaceae



×1

A.B.



Citrus limon

Rutaceae

India

Common names:

Eng: lemon; Swah: mlimao.

Ecology;

A. tree found from Assam in India and suited to sandy or loamy well-drained soils. Lemon trees will grow at higher altitudes than some other citrus but like all citrus they require a high temperature to fruit well and well-distributed rainfall. High humidity increases the risk of pests and diseases.

Uses:

Firewood (twigs, dead branches), food (fruit, jam, pickle, chutney, candied peel), drink, flavouring (peel), oil (peel), medicine (juice, roots, leaves), ornamental, perfume (oil).

Description:

A tree to 8 m, rather open, branches with stout, stiff thorns. Young plants are more thorny, especially near the centre of the tree. LEAVES: **paler green than most citrus**, sharp tipped, quite large, **edge toothed**, leaf stalk very short, wing very narrow, clear joint to blade. FLOWERS: white, solitary, petals thick and fragrant, **back of petals purple-red so buds appear purple**. FRUIT: about 7-8 cm long, ovoid, **pointed both ends**, yellow or green **wheat** ripe, rough or smooth, **flesh pale yellow with much juice** which is acid to bitter. Few seeds.

Propagation:

Seedlings, grafting.

Seed info.:

treatment:

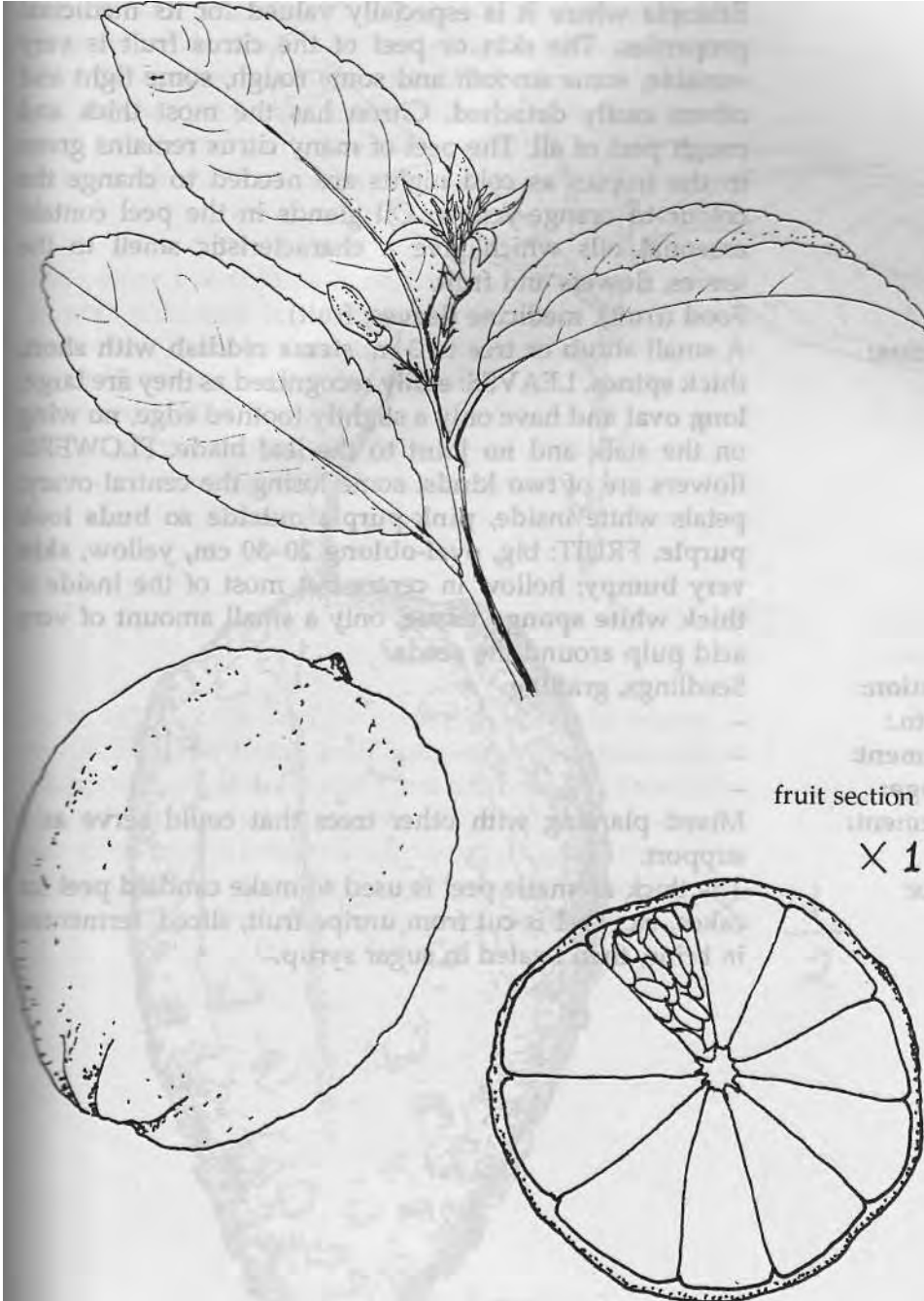
storage:

Management:

Mixed planting with other trees that could serve as a support.

Remarks:

Lemons ripen during most of the year. They grow easily, bear fruit quite quickly and withstand drought. Rough lemon provides the best rootstock for grafting lemons, limes, grapefruit and tangerines.



Citrus medica

Rutaceae

South-West Asia

Common names:

Eng: citron; Swah: mfulungu.

Ecology:

A tree brought long ago from Asia to the Middle East and Ethiopia where it is especially valued for its medicinal properties. The skin or peel of the citrus fruit is very variable, some smooth and some rough, some tight and others easily detached. Citron has the most thick and rough peel of all. The peel of many citrus remains green in the tropics as cold nights are needed to change the colour to orange-yellow. Oil glands in the peel contain essential oils which give a characteristic smell to the leaves, flowers and fruit.

Uses:

Food (fruit), medicine (leaves, fruit).

Description:

A small shrub or tree to 3 m, stems reddish with short, thick spines. LEAVES: easily recognized as they are large, long oval and have only a slightly toothed edge, no wing on the stalk and no joint to the leaf blade. FLOWERS: flowers are of two kinds, some losing the central ovary, petals white inside, pink-purple outside so buds look purple. FRUIT: big, oval-oblong 20-30 cm, yellow, skin very bumpy; hollow in centre but most of the inside is thick white spongy tissue, only a small amount of very acid pulp around the seeds.

Propagation:

Seedlings, grafting.

Seed info.:

treatment:

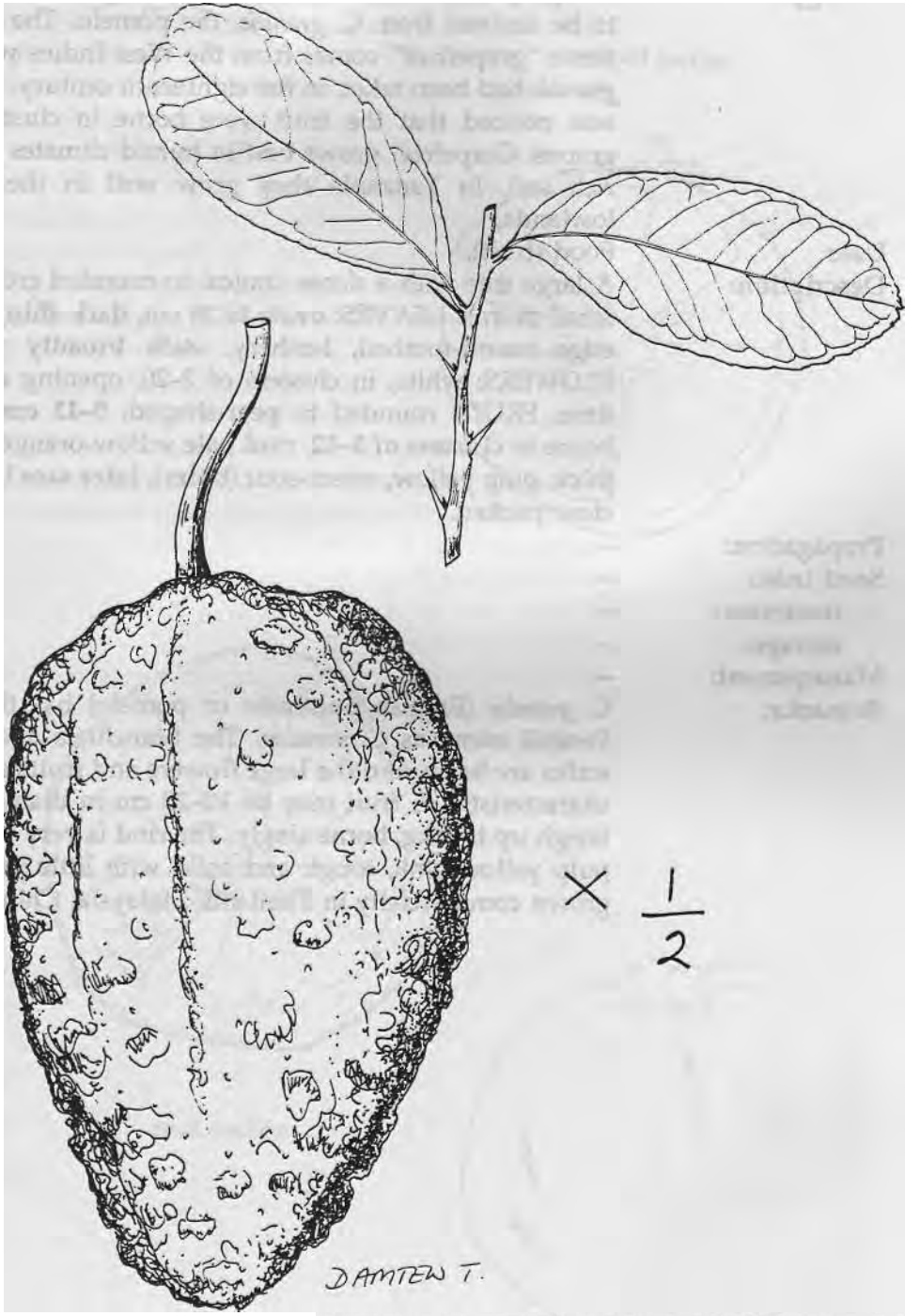
storage:

Management:

Mixed planting with other trees that could serve as a support.

Remarks:

The thick aromatic peel is used to make candied peel for cakes, etc. Peel is cut from unripe fruit, sliced, fermented in brine, then heated in sugar syrup.



Citrus paradisi

Rutaceae

Malaysia, Polynesia

Common names:

Eng: grapefruit; Swah: mbalungi.

Ecology:

The grapefruit does not occur in the wild and is thought to be derived from *C. grandis*, the pomelo. The English name "grapefruit" comes from the West Indies where *C. grandis* had been taken in the eighteenth century. There it was noticed that the fruit were borne in clusters like grapes. Grapefruit grows best in humid climates in deep rich soil. In Tanzania they grow well in the coastal lowlands.

Uses:

Food (fruit).

Description:

A large tree with a dense conical to rounded crown and small thorns. **LEAVES: ovate to 18 cm, dark shiny green, edge round-toothed, leathery, stalk broadly winged.** **FLOWERS:** white, in clusters of 2-20, opening one at a time. **FRUIT:** rounded to pear-shaped, **9-13 cm across**, borne in **clusters** of 3-12, rind pale yellow-orange, thin to thick, pulp yellow, sweet-sour (bitter), **juice sacs large** but close packed.

Propagation:

Seed info.:

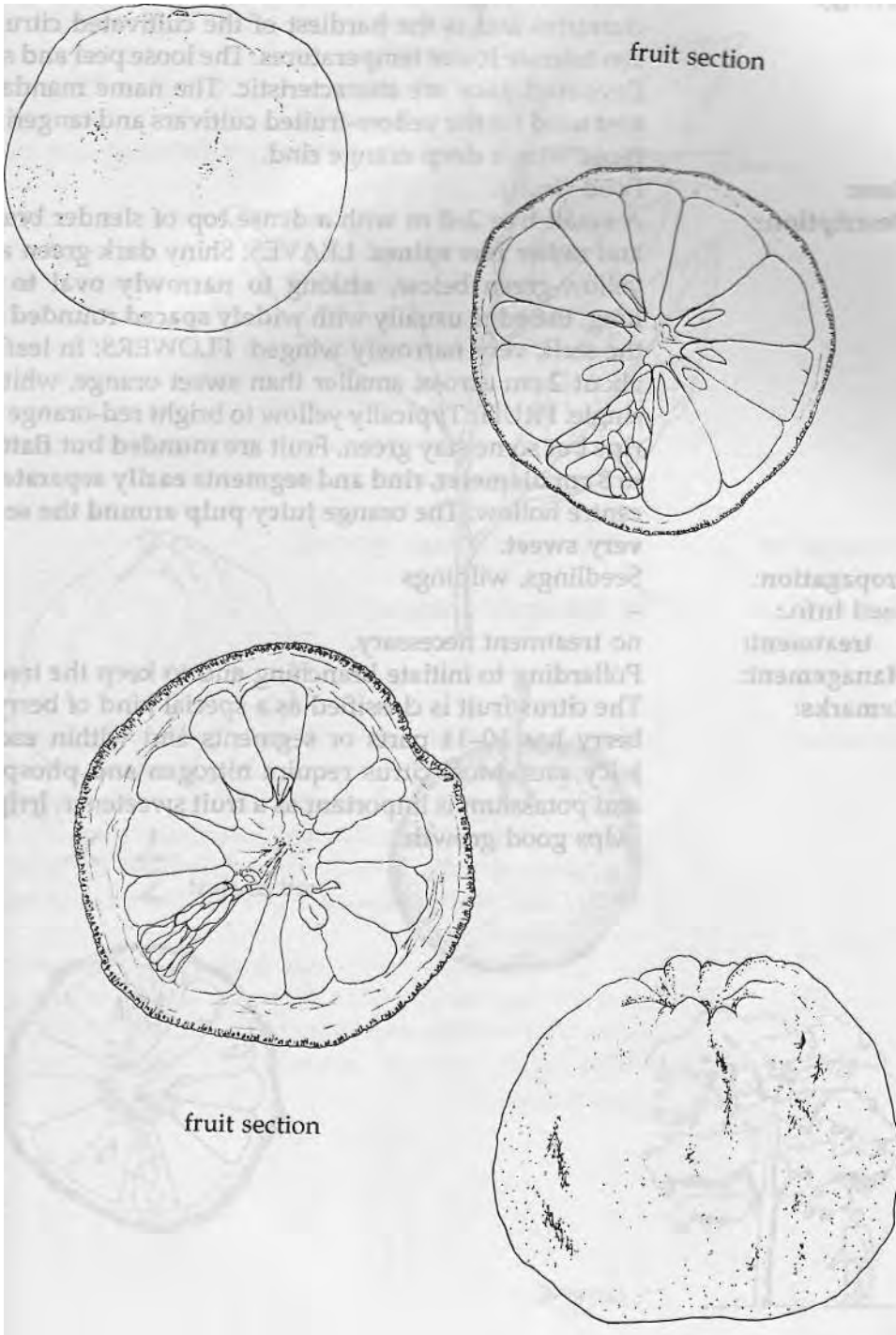
treatment:

storage:

Management:

Remarks:

C. grandis (English pummelo or pomelo) has the same Swahili name as *C. -paradisi*. The branchlets and flower stalks are hairy, and the large flowers and fruits are quite characteristic. A fruit may be 10-20 cm in diameter and weigh up to 9 kg; borne singly. The rind is very thick and pulp yellow-pink, tough and solid with little juice. It is grown commercially in Thailand, Malaysia, China, etc.



Citrus reticulata

Rutaceae

South-East Asia, Cochin China

Common names: **Eng:** tangerine; **Swah:** mchenza.

Ecology: Now it is grown in most tropical and sub-tropical countries and is the hardiest of the cultivated citrus and can tolerate lower temperatures. The loose peel and sweet-flavoured juice are characteristic. The name mandarin is best used for the yellow-fruited cultivars and tangerine for those with a deep orange rind.

Uses: Food (fruit).

Description: A small tree 2-8 m with a dense top of slender branches and rather **few spines**. LEAVES: Shiny dark green above, yellow-green below, **oblong to narrowly oval to 8 cm** long, the edge usually with **widely spaced rounded teeth**, the stalk very narrowly winged. FLOWERS: In leaf axils, about 2 cm across, smaller than sweet orange, white and single. FRUIT: Typically yellow to bright red-orange when ripe but some stay green. Fruit are **rounded but flattened, to 8 cm diameter, rind and segments easily separated**, the centre hollow. The orange juicy **pulp around the seeds is** very sweet.

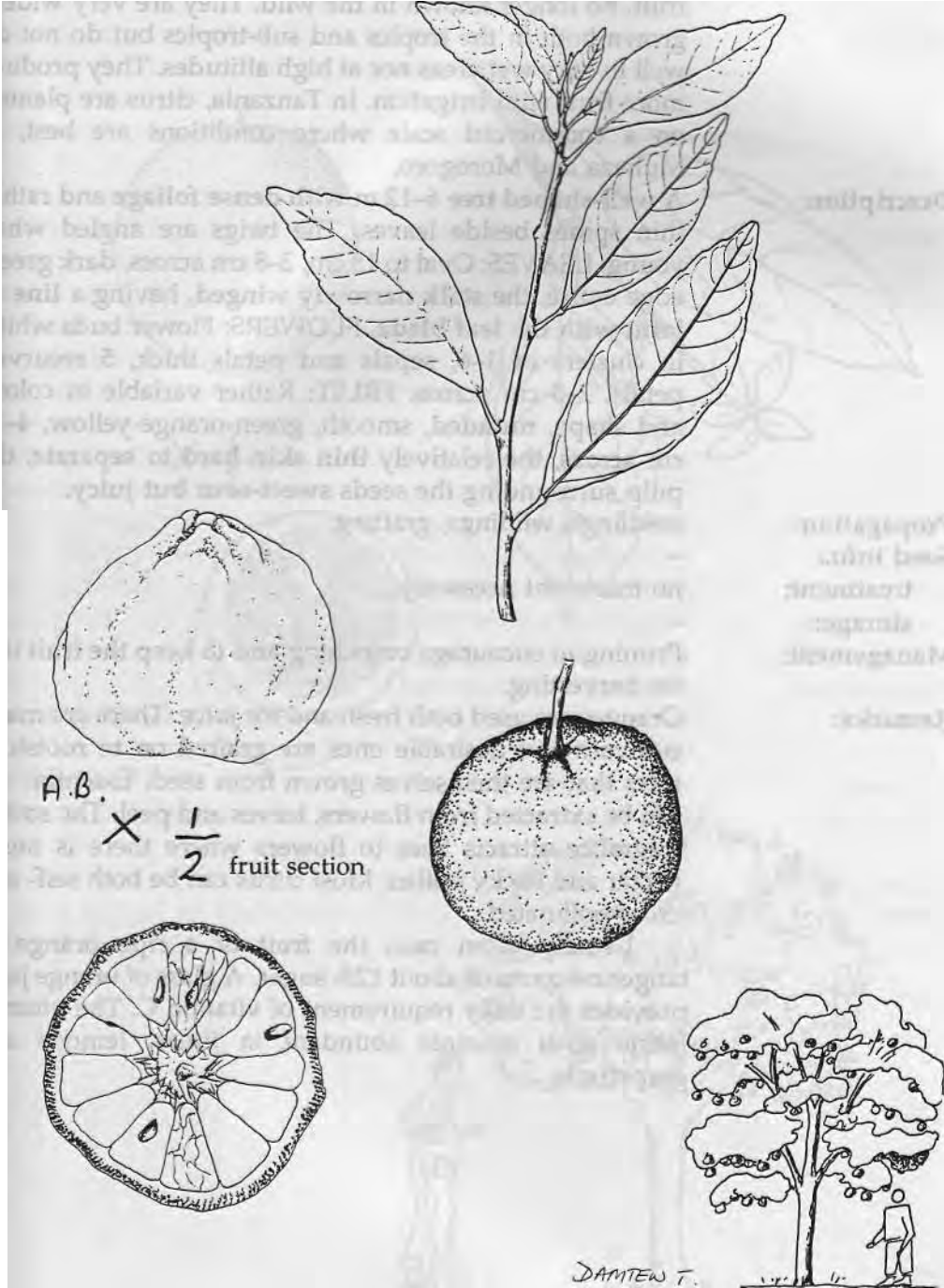
Propagation: Seedlings, wildings

Seed info.:

treatment: no treatment necessary.

Management: Pollarding to initiate branching and to keep the tree low.

Remarks: The citrus fruit is classified as a special kind of berry. The berry has 10-14 parts or segments and within each are juicy sacs. Most citrus require nitrogen and phosphorus and potassium is important as a fruit sweetener. Irrigation helps good growth.



Citrus sinensis

Rutaceae

Southern China, Vietnam

Common names: **Eng:** sweet orange; **Swah:** mchungwa.

Ecology: Oranges are the most widely grown and important citrus fruit, no longer known in the wild. They are very widely grown both in the tropics and sub-tropics but do not do well in very wet areas nor at high altitudes. They produce more fruit with irrigation. In Tanzania, citrus are planted on a commercial scale where conditions are best, at Muheza and Morogoro.

Description: A **well-shaped tree** 6-12 m **with dense foliage** and rather thin spines beside leaves. The twigs are angled when young. **LEAVES:** Oval to 15 cm, 2-8 cm across, dark green, edge entire, the **stalk narrowly winged, having a line or joint with the leaf blade.** **FLOWERS:** Flower buds white, in clusters of 1-6, sepals and petals thick, 5 recurved petals, 2-3 cm across. **FRUIT:** Rather variable in colour and shape, **rounded**, smooth, green-orange-yellow, 4-12 cm **across**, the relatively **thin skin hard to separate**, the pulp surrounding the seeds **sweet-sour but juicy.**

Propagation: seedlings, wildings, grafting

Seed info.:

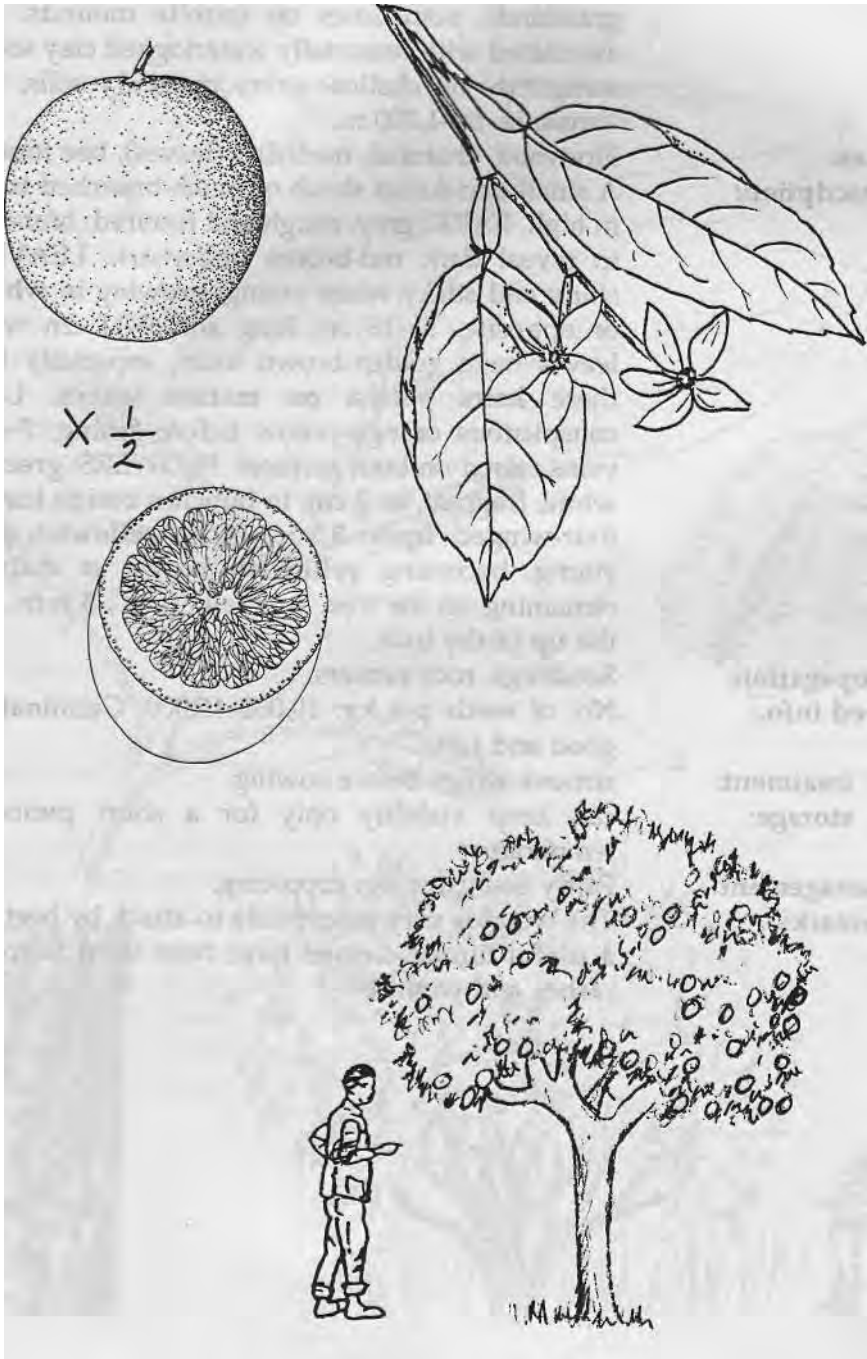
treatment: no treatment necessary.

storage:

Management: Pruning to encourage branching and to keep the fruit low for harvesting.

Remarks: Oranges are used both fresh and for juice. There are many cultivars and desirable ones are grafted on to rootstock trees that are themselves grown from seed. Essential oils can be extracted from flowers, leaves and peel. The strong fragrance attracts bees to flowers where there is much nectar and sticky pollen. Most citrus can be both self- and cross-pollinated.

Usually eaten raw, the fruit of a ripe orange or tangerine contains about 12% sugar. A glass of orange juice provides the daily requirement of vitamin C. The vitamin (citric acid) is most abundant in limes, lemons and grapefruit.



Combretum fragrans (C. adenogonium)

Combretaceae

Indigenous

Common names: Eng: four-leaved combretum; **Hehe:** mkunguni; **Mate:** mlama; Nyam: muluzyaminzi; **Sangu:** mkunguni; **Suku:** nujaminzi; Zinza: mtwalachenya.

Ecology: A tree found in deciduous woodlands and wooded grasslands, sometimes on termite mounds. It is often associated with seasonally waterlogged clay soils, but **also** sometimes on shallow stony or sandy soils, throughout Tanzania, 50-1,700 m.

Uses: Firewood, charcoal, medicine (leaves), bee forage.

Description: A small deciduous shrub or much-branched tree, up to 10 m high. **BARK:** grey, rough and fissured, branches peeling to reveal dark red-brown underbark. **LEAVES:** simple, shiny and sticky when young, growing in **whorls of 3-4**, or opposite, 11-18 cm long and 9-11 cm wide; young leaves have golden-brown hairs, especially below, and these **hairs persist on mature leaves**. Leaves turn conspicuous orange-yellow before falling, 7-10 pairs of veins raised on both surfaces. **FLOWERS:** green-yellow or white, fragrant, to 7 cm, in bunches beside leaves. **FRUIT:** four-winged, up to 3.5 x 3.0 cm, **yellowish green** when young, becoming **yellowish brown** at maturity, often remaining on the tree. A small "peg", 3 mm, is found at the tip of the fruit.

Propagation: Seedlings, root suckers.

Seed info.: No. of seeds per kg: 10,000-15,000. Germination is very good and fast.

treatment: remove wings before sowing.

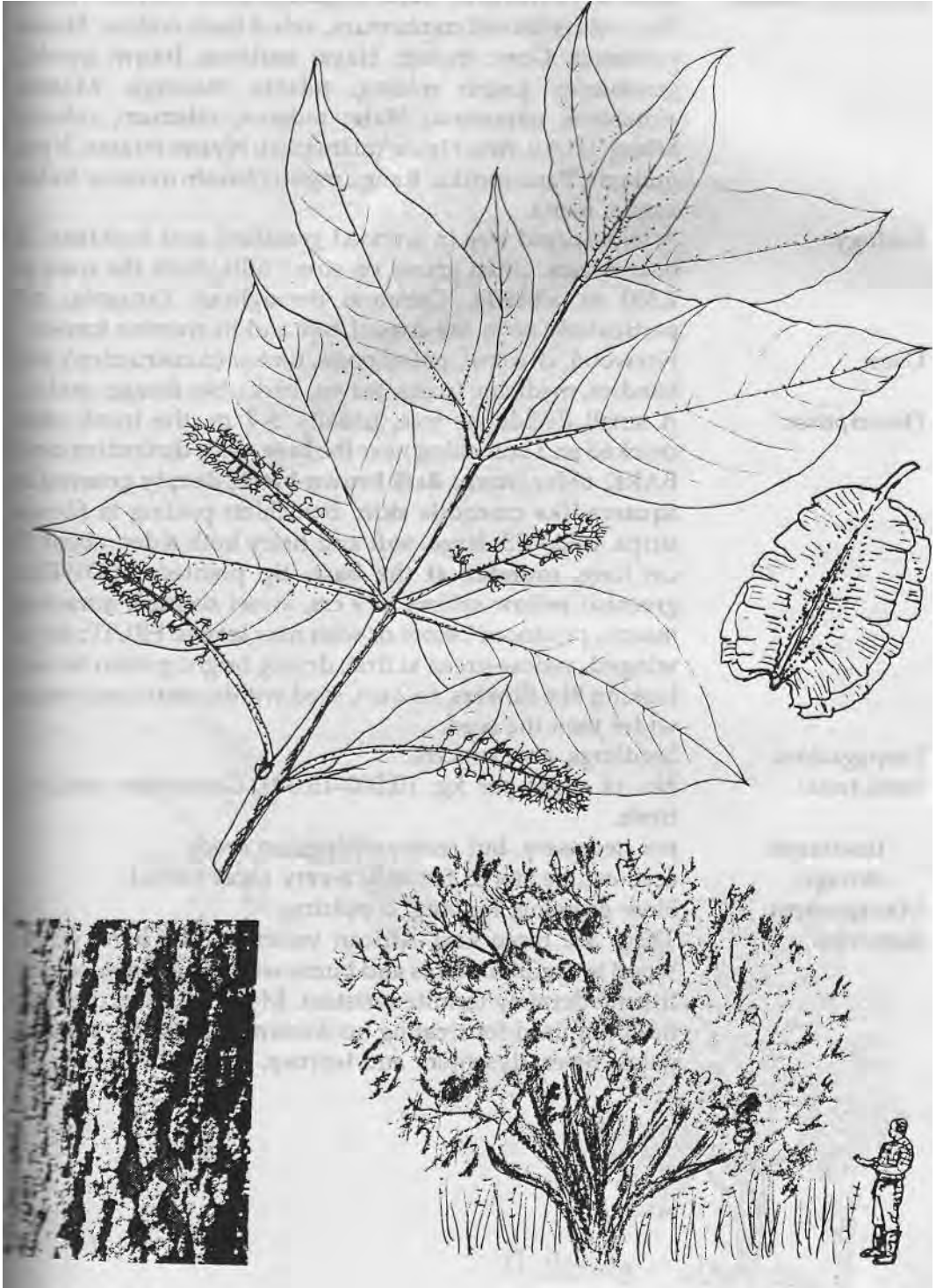
storage: can keep viability only for a short period at room temperature.

Management: Fairly fast growing; coppicing.

Remarks: The wood is very susceptible to attack by beetles so is not a useful timber. Leaves have been used to treat malaria, rashes and wounds.

Combretum fragrans (C. adenogonium)

Combretaceae

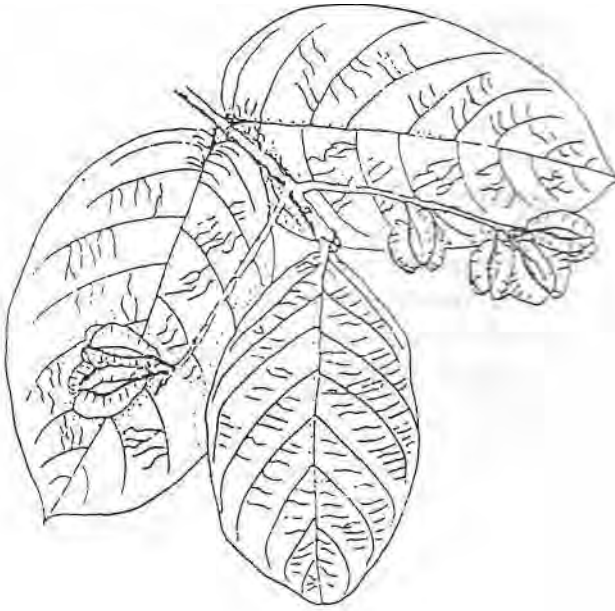


Combretum molle

Combretaceae

Indigenous

- Common names:** Arusha: ol maroroi; Bara: naganagachan; Bende: mlama
Eng: velvet-leaved combretum, velvet bush willow; Fiome
gendamo; Goro: mototi; Haya: mulama; Iraqw: gendai,
gendaumo; Lugu: mlama, mlama mwenge; Maasai:
olmaroroi, olmororoi; Mate: mdama, mlamam, ndama;
Mbug: teteku-riru; Nguu: mlamadoli; Nyam: mlama; Nyat
mulama; Pare: mruku; Rangi: mgiito; Samb: mnama; Suku:
kagua, nama.
- Ecology:** A widespread tree in wooded grassland and bushland all
over Africa. Often grows on stony hills, from the coast to
2,300 m altitude. Common throughout Tanzania, but
particularly so in the coastal belt and in riverine forests.
- Uses:** Firewood, charcoal, poles, posts, timber (construction), tool
handles, medicine (roots, leaves, bark), bee forage, mulch.
- Description:** A small deciduous tree, usually 5-7 m, the trunk often
crooked and branching near the base, with distinctive bark.
BARK: older trunks dark brown-black, deeply grooved in
squares like crocodile skin. Branchlets peeling in broad
strips. **LEAVES:** large, soft and hairy both sides, about 17
cm long, rounded at the base, tip pointed. **FLOWERS:**
greenish yellow spikes to 9 cm, sweet scented, attracting
insects, produced before or with new leaves. **FRUIT:** dry 4-
winged, yellow-green at first, drying bright golden brown,
looking like flowers, to 2 cm, seed within centre and wings
wider than the seed.
- Propagation:** Seedlings, root suckers.
- Seed info.:** No. of seeds per kg: 10,000-15,000. Germinates easily if
fresh.
- treatment:** not necessary, but remove wings on seeds,
- storage:** seed can be stored for only a very short period.
- Management:** Slow growing; lopping, coppicing.
- Remarks:** There are three East African varieties. The hard yellow
wood is useful for tools and burns well giving intense heat
It is moderately termite resistant. Medicine from the roots
has been used for treating hookworm, snake bite, stomach
pains, fever, dysentery and leprosy.



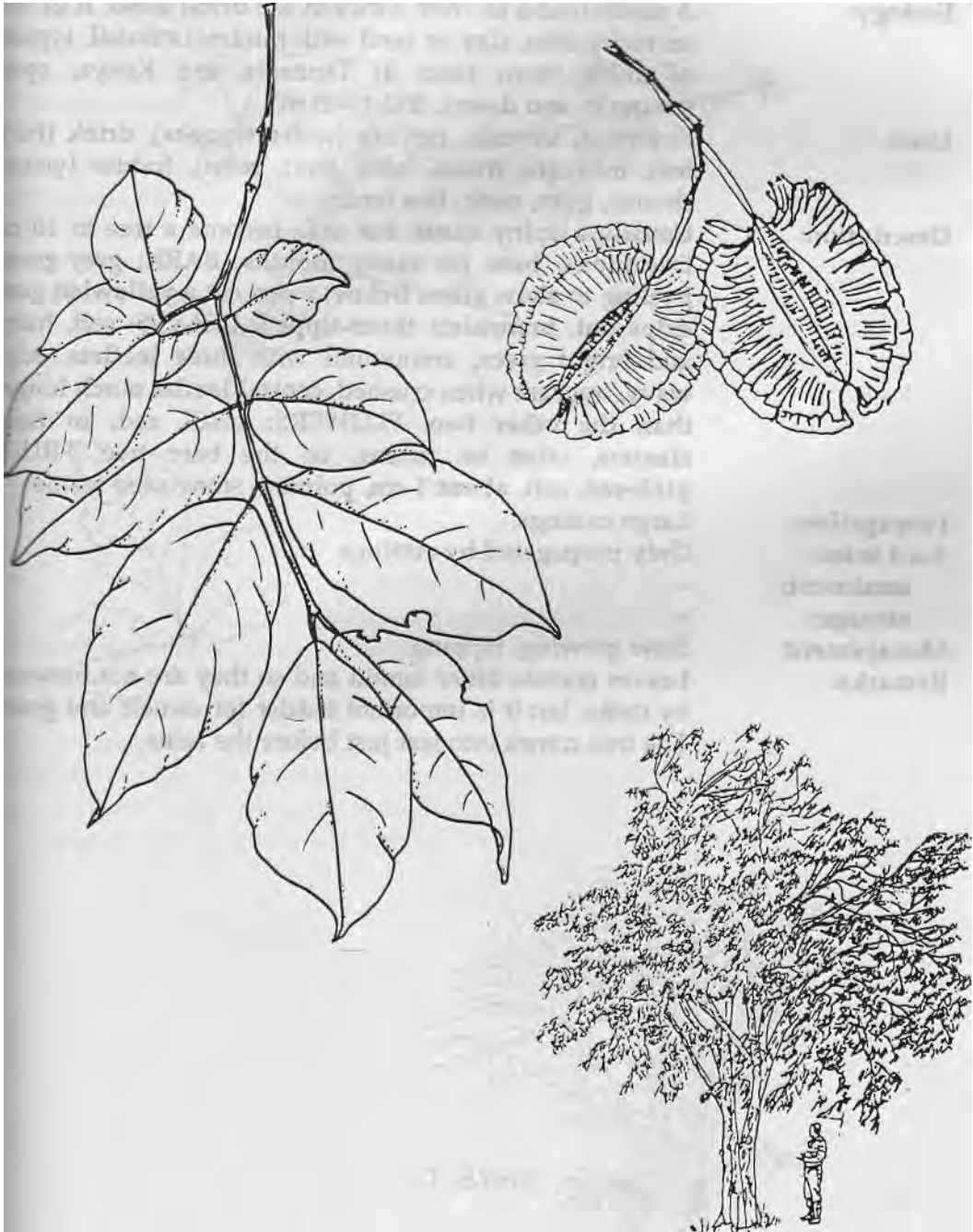
A. Birnie

Combretum schumannii

Combretaceae

Indigenous

- Common names: Eng: forest tree combretum; **Lugu:** mlama; Nguu: msimbankolongo; **Pare:** muama mjewa; Samb: lundolundo, mkongolo, mwankaa; **Swah:** mgurure, mpera mwitu.
- Ecology: The largest Combretum species which extends south to Malawi and Mozambique. This is an important coastal tree from lowland rain forest, riverine forest and Brachystegi2 woodland to valley grassland, 0-1,200 m.
- Uses: Firewood, charcoal, timber (furniture, construction), posts, tool handles, carving, medicine (roots), bee forage, mulch.
- Description: A tall tree to 20 m, leaves dense, drooping, crown narrow, trunk often fluted at the base. BARK: smooth **pale brown** to cream with large patchy scales. LEAVES: shiny **pale green**, thin and wavy, opposite, on thin stalks, clear **midrib below, tip pointed**. FLOWERS: **pale yellow and fragrant, in spikes**. FRUIT: very **many hanging on the** tree, yellow-green then pale brown, four wings, about 4 cm long, sticky when young, on a stalk to 1.5 cm long.
- Propagation: Seedlings, root suckers (slow growth).
- Seed info.: Remove seed wings before sowing the seeds. **Germination** is very good and fast.
- treatment: not necessary.
- storage: seed can be stored only for a very short period.
- Management: Slow growing; lopping, coppicing.
- Remarks: The very durable black heartwood is termite resistant. A very useful tree that farmers should be encouraged to grow more.

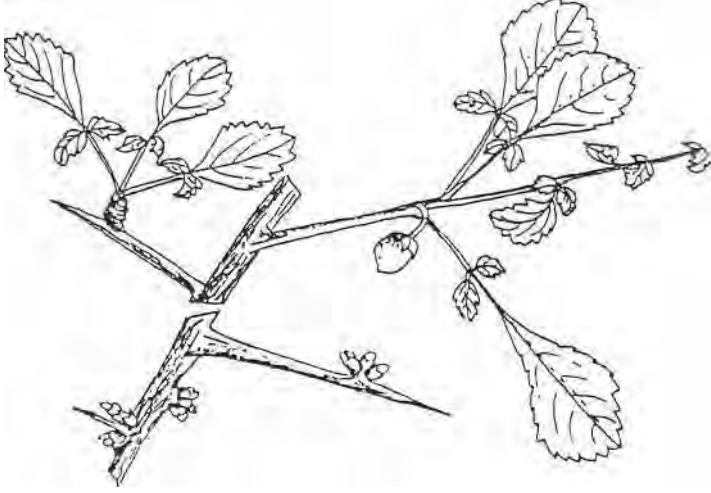


Commiphora africana

Burseraceae

Indigenous

- Common names:** **Arusha:** osilalei; **Bara:** naamo; **Bende:** siponda; **Eng:** poison-grub commiphora; **Gogo:** msomvugo; **Goro:** niimo; **Iraqw:** niimo; **Nyam:** msagasi; **Nyat:** muhuju; **Rangi:** idakL ijovya; **Swah:** mturituri; **Zinza:** mawezi.
- Ecology:** A shrub found all over Africa in the driest areas. It grows on rocky sites, clay or sand with minimal rainfall, typical of much thorn bush in Tanzania and Kenya, open savannah and desert, 500-1,900 m.
- Uses:** Firewood, utensils, carving (water troughs), drink (**bark** tea), medicine (roots* bark, fruit, resin), fodder (**young** shoots), gum, resin, live fence.
- Description:** **Usually a spiny shrub** but may become a tree to 10 m. Deciduous, **bare for many months.** **BARK:** **grey-greea peeling to show green below**, when cut a **yellowish gum drips out, branchlets thorn-tipped.** **LEAVES:** soft, hairy and bright green, compound with **three leaflets**, edge wavy, fragrant when crushed, **central leaflet much longer than the other two.** **FLOWERS:** small, **red, in tight clusters**, often on thorns, on the bare tree. **FRUIT:** **pink-red**, soft, **about 1 cm, pointed**, stony seed inside.
- Propagation:** Large cuttings.
- Seed info.:** Only propagated by cuttings.
- treatment:**
- storage:**
- Management:** Slow growing; lopping.
- Remarks:** Leaves contain bitter tannin and so they are not browse! by cattle, but it is important fodder for camels and goats. The tree comes into leaf just before the rains.



A. Birnie

Commiphora emmii subsp. *zimmermannii*

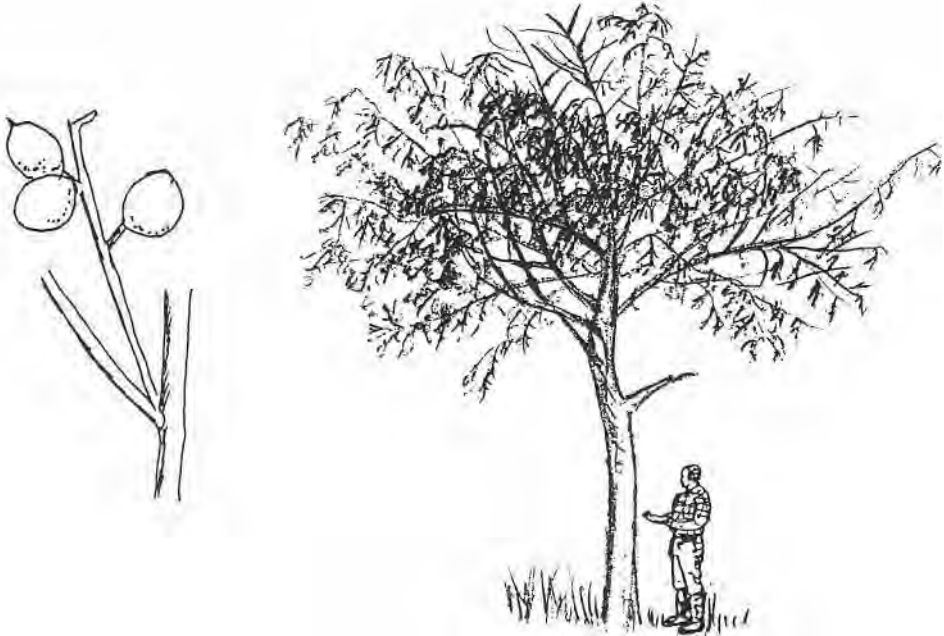
Burseraceae

Indigenous

- Common names: Gogo: mgombogombo; Goro: hlahumo, mandawiri; Iraqw: bakchandi; Pare: isume; Rangi: itonto; Suku: ng'ongong'ongo.
- Ecology: A drought-resistant tree found all over Africa on rocky sites, clay or sand. In Tanzania commonly found in semi-evergreen forest and forest margins, especially in rocky places along streams at 900-1,800 m altitude such as at Morogoro, South Pare and Lushoto. It is also found in Zambia, Malawi, Mozambique and Kenya.
- Uses: Firewood, timber (furniture), medicine (roots, leaves, bark), fodder (emergency), shade, soil conservation, resin, live fence, boundary marking, mole traps (trunk wood).
- Description: An unarmed tree, 5-18 m, branches spreading and leafy. BARK: smooth and grey. LEAVES: light green, compound, 5-7 pointed leaflets, edge finely toothed, 6-9 cm long, resinous when crushed. FLOWERS: small, green-yellow. FRUIT: yellowish-brown, mature from June to October. Each fruit rounded and stalked, about 1.5 cm, containing 2 or 3 dark grey or black seeds.
- Propagation: Large cuttings.
- Seed info.: Only propagated by cuttings.
- treatment:
- storage:
- Management: Fairly fast growing; pollarding.
- Remarks: Due to its less extensive root system and relatively small canopy it can be grown with crops and leaves are good fodder. Used in some areas as a quick-growing hedge. It grows fast at the coast and is cultivated in gardens and around homesteads because it is easy to establish. (Used in some areas of central Kenya as green sticks, easily taking root, to support yams, etc.) The wood is easy to work.

Commiphora eminii subsp. zimmermannii

Burseraceae



Conocarpus lancifolius

Combretaceae

Somalia

Common names:

Ecology:

A tall tree often very common in dry river valleys (wadis) in Somalia. It is now cultivated as it is one of the fastest growing local trees, 0-1,000 m. It tolerates sandy, saline and coral soils. Planted at the coast in Tanzania **where** its growth is fair.

Uses:

Firewood, charcoal, timber, boats, poles, posts, carving fodder (leaves), bee forage, shade, ornamental, **mulch, soil** conservation, windbreak.

Description:

A shady evergreen to 20 m, with upward spreading branches, short bole and **dense, fresh green foliage**. **BARK:** grey-brown, fissured. **LEAVES:** smooth and shiny, **to 10 cm long, narrowing towards the base, in** dense spirals. **FLOWERS:** **yellow-green, in round heads** on **branched** stalks, slightly fragrant. **FRUIT:** in **dry, round, greenish heads**, cone like, containing tiny, scale-like hard seeds.

Propagation:

Seedlings, cuttings.

Seed info.:

No. of seeds per kg: 400,000-1,700,000. Very small and difficult to extract.

treatment:

not necessary. Seeds are difficult to germinate. They should be floated in a tilted tray with soil at one end. The seeds will germinate and root in the soil. (This method is used at Baobab Farm, Bamburi, near Mombasa, Kenya.)

storage:

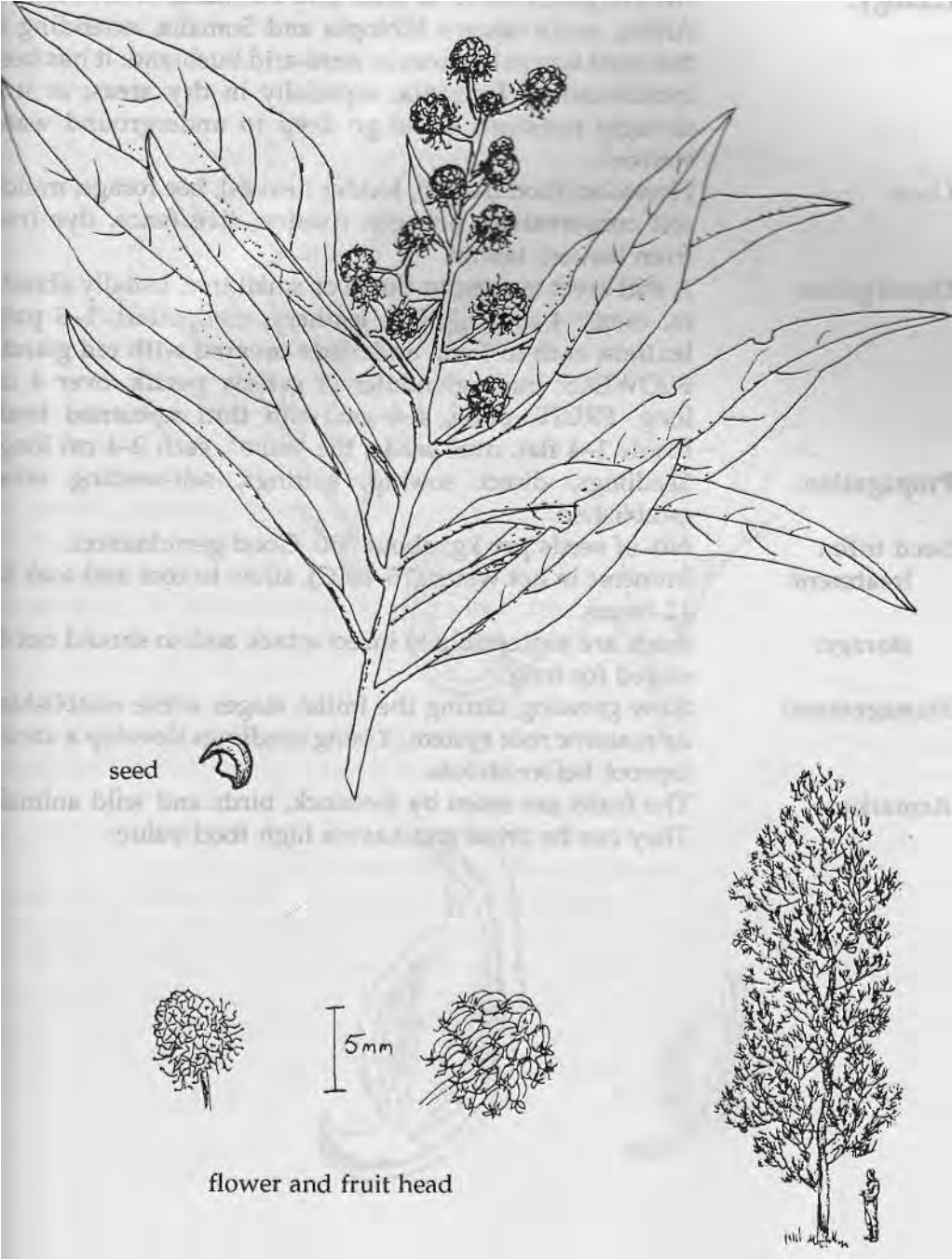
seed does not store; fresh seed should **be** used.

Management:

Very fast growing; can be coppiced.

Remarks:

The tree is planted in Sudan for reforestation, shelter and green belts. The wood is **light coloured and medium** heavy. Heavily browsed by antelopes, hence difficult to establish in certain areas.

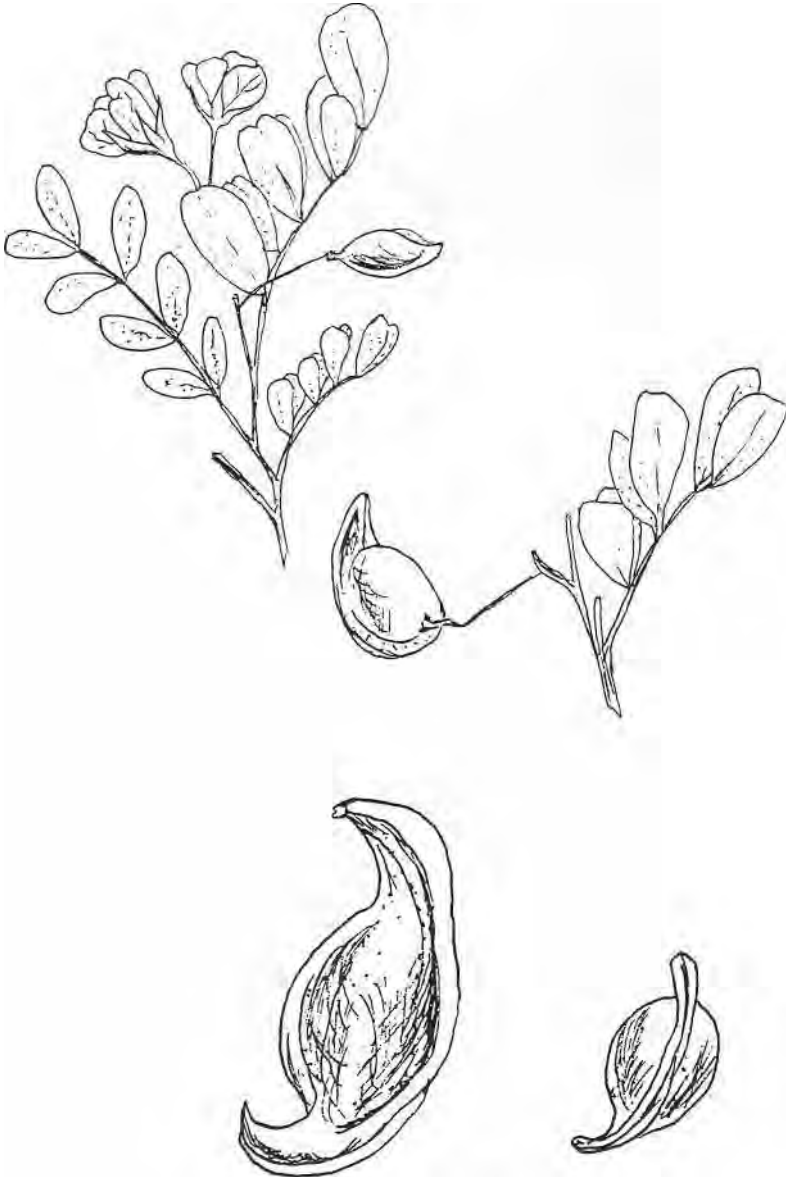


Somalia

- Common names:** **Eng:** yeheb nut.
- Ecology:** An evergreen shrub of semi-arid bushland in the Horn of Africa, south-eastern Ethiopia and Somalia, extending to the coast where it grows in semi-arid bushland. **It has been** introduced in Tanzania, especially in dry areas, as it is drought resistant. Roots go deep to underground water sources.
- Uses:** Firewood, food (seeds), fodder (leaves), bee forage, mulch, soil conservation, nitrogen fixation, live fence, dye (red, from leaves), tannin.
- Description:** A stiff erect evergreen shrub or small tree, usually about 2 m, rarely 4 m. **LEAVES:** leathery, compound, **1-6 pairs leaflets**, each to 3 cm, underside **covered with red glands**. **FLOWERS:** buds glandular, **5 yellow petals**, over 4 cm long. **FRUIT:** **Pods, 4-6 cm with thin upturned beak**. Inside **1-4 flat, oval seeds**, the "nuts", each 2-4 cm long.
- Propagation:** Seedlings, direct sowing, cuttings, self-seeding when established.
- Seed info.:** No. of seeds per kg: about 300. Good germination.
- treatment:** Immerse in hot water (75-80°C), allow to cool and soak for 12 hours.
- storage:** seeds are susceptible to insect attack and so should not be stored for long.
- Management:** Slow growing during the initial stages while establishing its massive root system. Young seedlings develop a strong taproot before shoots.
- Remarks:** The fruits are eaten by livestock, birds and wild animals. They can be dried and have a high food value.

Cordeauxia edulis

Caesalpinioideae



Cordia africana (C. abyssinica)

Boragtnaceae

Indigenous

- Common names: Bende: mkibu; Chag: mringaringa; Eng: East African cordia; **Goro:** sei; **Iraqw:** sei; **Pare:** mrungurya; **Lugu:** mbapu, msinzizi; **Meru:** mringaringa; **Nyiha:** msingati; **Samb:** mfufu, mzingazinga; **Swah:** mringamringa.
- Ecology: A large forest tree of moist warm areas, woodland and bush. It is common in pastureland 1,200-2,000 m, particularly in Arusha and Kilimanjaro regions, **but** also grows elsewhere in scattered areas around Tanzania. Tolerates a wide variety of soils.
- Uses: Firewood, timber (furniture); roof shingles, beehives, utensils (boxes, mortars), medicine (bark, roots), fodder (leaves in dry season), bee forage, shade (coffee), mulch-soil conservation, boundary demarcation.
- Description: A much-branched deciduous tree with rounded crown **and** often crooked trunk, 4-15 m. **BARK:** pale brown, finely grooved but rough with age. **LEAVES:** large, **oval to 16 cm, base rounded**, veins prominent below; young shoots, leaf stalks, underside of leaves **covered with soft brown hairs**. **FLOWERS:** showy, **funnel shaped, thin white petals**, sweetly scented and attractive to bees. **FRUIT:** **yellowish**, 1 cm in **hairy** cups. Flesh sticky, each fruit containing 4-6 seeds.
- Propagation: Wildings, seedlings.
- Seed info.: No. of seeds (strictly fruits) per kg: 2,500-4,500. Germination rate 50%-80%. Slow germination (40-60 days). Produces seed from August to September.
- treatment: No treatment or soak in cold water for 6 hours,
- storage: properly dried seed stores well up to 1 year.
- Management: Moderate to slow growing; pollarding, lopping, coppicing. Requires over 6 months in a nursery before planting out
- Remarks: The heartwood is hard and takes a good polish so **the** timber is prized for furniture, but it can be twisted **and** difficult to saw. The tree is often found in cropland where it is managed to reduce shade. It provides very **good** mulch.



Cordia monoica (C. ovalis)

Boraginaceae

Indigenous

Common names: **Arusha:** oseki; **Eng:** sandpaper cordia; **Gogo:** mdawi, msena, msenha; **Goro:** bagharimo; **Iraqw:** bagalmo, bagarumo; **Kuria:** mushenhu; **Mbug:** mwerema, mtoasi-mwerema; **Nyam:** mlembu; **Nyat:** mongoongo; **Pare** mshasha; **Rangi:** msasa, msasha; **Samb:** mshasa, magamosi; **Suku:** nembu.

Ecology: This *Cordia* species grows from Ethiopia to Central and Southern Africa. It is found in many habitats from wet or riverine forest to woodland and bush with *Acacia-Euphorbia* or grassland, from the coast to 1,800 m and in all districts except the cool highlands of Tanzania.

Uses: Firewood, timber (construction), tool handles, food (fruit), bee forage, medicine (leaves), sandpaper (leaf).

Description: A multi-stemmed shrub or tree to 6 m, occasionally to 12 m. **BARK:** blue-grey, thin and fibrous, peeling in strips, resembling the bark of *Eucalyptus*. **LEAVES:** broadly oval to almost round, 5-8 cm long, margin lightly toothed, surface above like sandpaper to the touch but softly hairy below with prominent veins, on a stalk to 2 cm. Branchlets, leaf and flower stalks densely covered with rusty hairs. **FLOWERS:** pale yellow, sharply fragrant, in dense terminal clusters, each flower tubular, about 1 cm across, calyx hairy and persistent. **FRUIT:** oval, pointed, yellow to orange and soft when ripe, about 2 cm long, held in a hairy, cup-shaped calyx which loosely covers one-third of the fruit. The single seed is covered by jelly-like edible pulp. Seedlings.

Propagation:

Seed info.: No. of seeds per kg: about 3,500. Germination is slow, treatment: soak in cold water for 6 hours, storage: seeds store well if kept dry and cool.

Management: Moderate to slow growing; pollarding, lopping, coppicing.

Remarks: A useful tree to grow in dry areas. The wood has been used for fence droppers and for walking sticks.

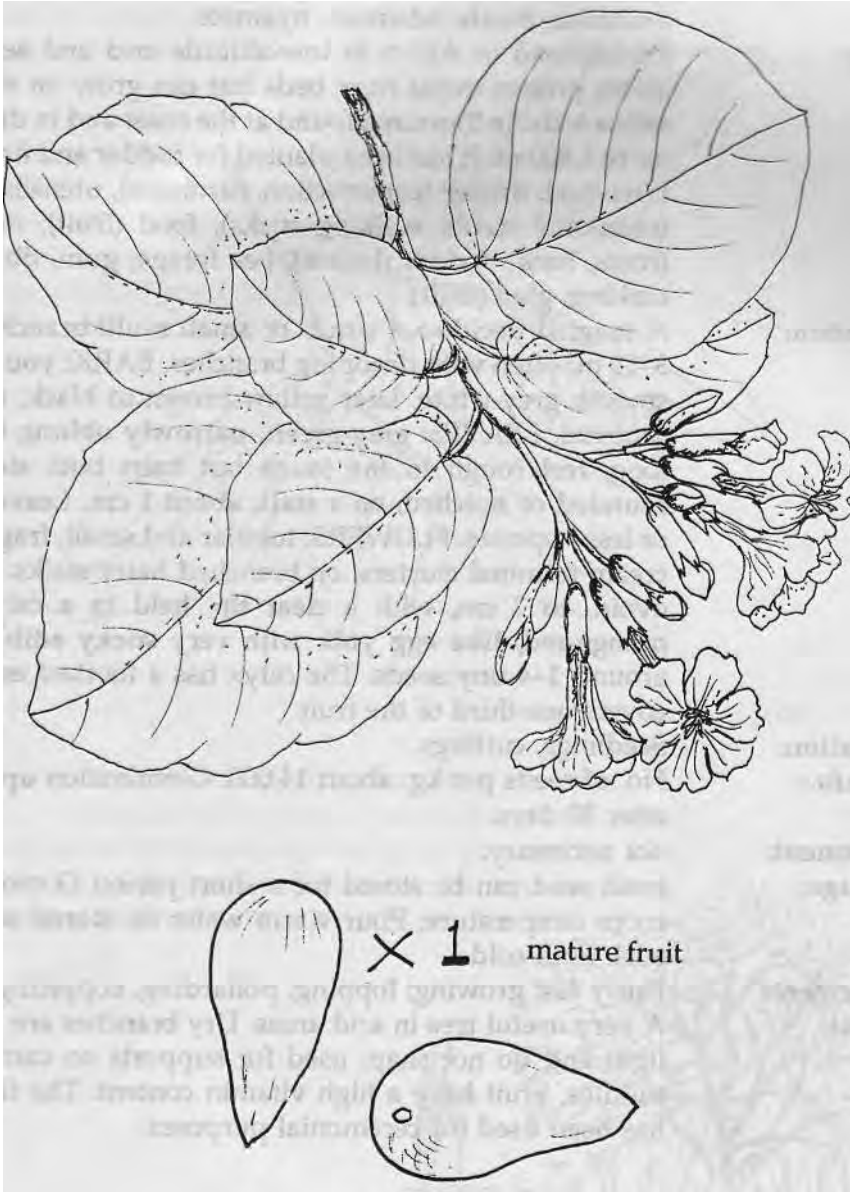


Cordia sebestena

Boraginaceae

Caribbean region, Cuba

- Common names: Eng: aloe wood, geiger tree, scarlet cordia.
- Ecology: A decorative tree planted in many parts of the tropics where the climate is similar to that of the West Indies. Widely planted as a garden and avenue tree in Dar es Salaam and elsewhere at the coast. Best grown in sandy loams, but will also grow in poor sands.
- Uses: Ornamental, shade.
- Description: An evergreen shrub or small tree, but can reach 10 m, with brilliant orange-red flowers. BARK: dark brown to black, rough, fissured and fibrous. LEAVES: alternate, large; broadly oval to 20 cm long, thick, rough and hairy, tip pointed. FLOWERS: showy, orange-red, funnel shaped, 1.5 to 3.5 cm across with 5 or 8 rounded petals, in terminal clusters. FRUIT: white berries with sweet, sticky flesh.
- Propagation: Direct sowing, seedlings, cuttings.
- Seed info.: No. of seeds per kg: 1,000-1,300. Germination is good and uniform.
- treatment: not necessary.
- storage: seed can be stored for up to six months.
- Management: Fast growing; grows easily from seed or cuttings.
- Remarks: Normally resistant to termites. A good avenue tree. The sticky berries have been used as cough sweets. The timber is suitable for furniture. The rough leaves have been used as a sandpaper substitute.

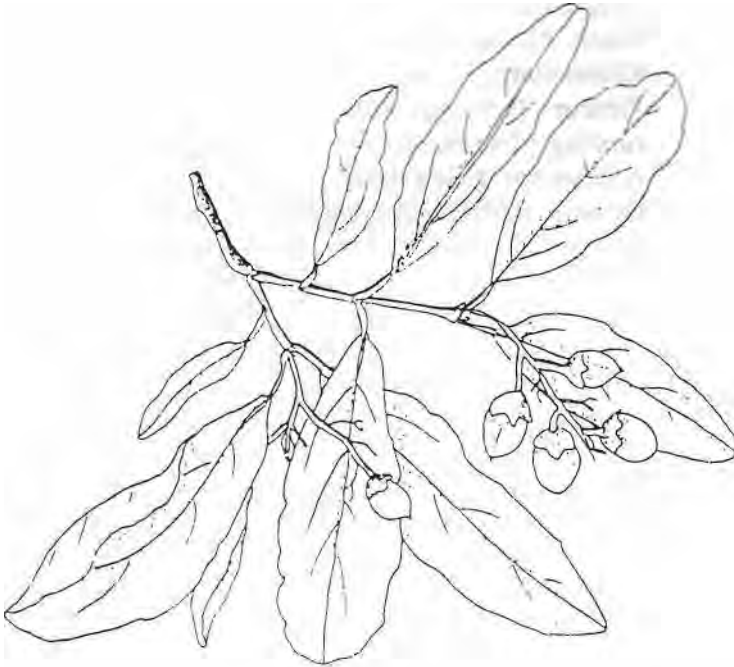


Indigenous

- Common names:** Eng: grey-leaved cordia, grey-leaved saucer berry; **Fiome:** baghalmo-lambi; Gogo: mdawi, mdawisogwe; **Goro:** hanarmo; Iraqw: bagharimo, funidang, hararmo; Maasa: ol dorko, ol olfot; Mbug: mochocho; Nyam: mlembu, mnerabu; **Nyat:** mdumwa-kiguu; Pare: mpololo; Rangi: mnembu; Swan: mkamasi, nyamate.
- Ecology:** Widespread in Africa in low-altitude arid and semi-arid areas; prefers moist river beds but can grow on stony or saline soils. In Tanzania found at the coast and in dry areas up to 1,800 m. It has been planted for fodder and firewood.
- Uses:** Firewood, timber (construction, furniture), utensils (bows, traditional stools, walking sticks), food (fruit), medicine (roots, bark), fodder (leaves), bee forage, gum, fibres, fire making, glue (fruit).
- Description:** A tangled deciduous shrub or small multi-branched tree 3-12 m, often with drooping branches. **BARK:** young **bark** smooth grey-white, later yellow-brown to black, roughly grooved. **LEAVES:** grey-green, **narrowly oblong** to 9 cm long, feel rough to the touch but hairs both sides, **tip** rounded or notched, on a **stalk about 1 cm**. Leaves more or less opposite. **FLOWERS:** tubular and small, fragrant, in cream terminal clusters, on branched hairy stalks. **FRUIT:** ovoid, to 2 cm, with a clear tip, held in a calyx cup orange-red, **like egg yolk** with very **sticky edible pulp** around 1-4 tiny seeds. The calyx has a toothed edge and covers one-third of the fruit.
- Propagation:** Seedlings, cuttings.
- Seed info.:** No. of seeds per kg: about 14,000. Germination up to 60% after 30 days,
- treatment:** not necessary.
- storage:** fresh seed can be stored for a short period (3 months) at room temperature. Pour warm water on stored seed **and** soak until cold.
- Management:** Fairly fast growing; lopping, pollarding, coppicing.
- Remarks:** A very useful tree in arid areas. Dry branches are flexible; light and do not snap; used for supports on camel **pack** saddles. Fruit have a high vitamin content. The firewood has been used for ceremonial purposes.

Cordia sinensis (*C. gharaf*, *C. rothii*)

Boraginaceae



Cordyla africana

Papilionoideae

Indigenous

- Common names:** Chag: mbachanga, mpachama, mroma; Eng: wild manga
Gogo: mkwata; Lugu: mgwata; Mwera: mtondo, ntondo;
Swah: mgwata, mroma, mroo, mvoo, mtigonzi, mumbwe.
- Ecology:** Found at low altitudes in hot areas, especially in riverine fringes or forests, and also in swamp forests from Kenya to South Africa. In Tanzania it is widespread, especially in Kilimanjaro, Kilosa, Lindi and on Zanzibar island.
- Uses:** Timber (construction), poles, beehives, tool handles, carving (drums, stools, mortars), food (fruit), shade, gum.
- Description:** A large spreading deciduous tree 9-25 m tall with rounded crown. **BARK:** greyish-brown and rough, thick and grooved. **LEAVES:** alternate, compound, with 11-28 pairs of leaflets plus a terminal leaflet, each one oblong to 2.5 cm, dark green with a short hairy stalk. Held up to the light unusual clear dots and streaks can be seen. **FLOWERS:** semi-spherical heads of yellow-orange stamens up to 2.5 cm long on branched stalks. They appear in axillary sprays or at axils, with the new leaves in July-October. No petals but sepals, ovary stalked. **FRUIT:** unusual pods, yellow when ripe, oblong to spherical, thin walled, about 6 cm long. The 3 flat seeds are contained in fleshy pulp and appear in November-December. The sticky pulp smells like beans.
- Propagation:** Seedlings, suckers.
- Seed info.:** Fresh seed germinates easily.
- treatment:** not necessary.
- storage:** viability is short.
- Management:** Pollarding, lopping, coppicing. Reduced growth and yield if grown outside areas of natural distribution.
- Remarks:** The fruit is very tasty and is eaten both raw and cooked. It has a very high vitamin C content. The heartwood is a rich brown colour and the timber is hard but susceptible to borers.



Crotalaria grandibracteata

Papilionoidem

Indigenous

- Common names: Chag: ichekechi; Eng: crotalaria; Goto: qoly; Iraqw: golid Nyat: songa; Samb: mzungozongo.
- Ecology: A shrub growing on open sites and alongside streams, 600-3,000 m. Endemic in Tanzania, but found only in North Kilimanjaro and West Usambara often with Juniperus, Olea, Ocotea and Podocarpus.
- Uses: Fodder (leaves, twigs), bee forage, ornamental, nitrogen fixation, soil improvement.
- Description: A much-branched shrub, 1-4 m high. Branches and young shoots hairy at first. BARK: green and smooth, fibrous LEAVES: compound with three leaflets, 3-8 cm long, slightly hairy above, hairy beneath. Leaf stalks 5-8 cm long. FLOWERS: lemon yellow, often with dark lines, the upright "standard" petal dull purple on back, the lower "keel" strongly rounded, green-white. FRUIT: inflate: pods 7-9 cm long, 2 cm across, pale green at first, turning black at maturity, many seeded.
- Propagation: Seedlings, direct sowing.
- Seed info.: Small, heart shaped, up to 7 mm long, smooth **and** brownish. Germination very good and fast.
- treatment: no treatment required.
- storage: can keep viability for a long period if kept dry.
- Management: A very fast-growing shrub with potential for use as green manure on fallow fields.
- Remarks: Currently under investigation for use as green manure in maize/bean fields in the West Usambara Mountains.



Croton macrostachyus

Euphorbiaceae

Indigenous

Common names: **Arusha:** loyabiyabi, olobiago, ololyapiyapi; **Bena:** lirulugu; **Chag:** ifurufuru, mfurufuru; **Eng:** broad-leaved croton; **Fipa:** mzululwa; **Goro:** meali; **Hehe:** muhugu, muvulugu; **Kuria:** msuju; **Meru:** mfurufuru; **Nyak:** livuluku; **Nyiha:** liwulugu, mkurungu; **Pare:** mfurifuri; **Samb:** mshunduzi; **Zinza:** muhuwa.

Ecology: A medium-sized tree of eastern Africa, widespread in areas with high rainfall in forest margins, along roadsides and in Juniperus-Podocarpus habitats. In Tanzania very common around Kilimanjaro, Meru and in Iringa, Mbeya and Rukwa, 1,100-2,500 m.

Uses: Firewood, timber, poles, tool handles, medicine (sap, leaves, roots, bark), fodder, bee forage, mulch, green-leaf manure, soil conservation, ceremonies.

Description: A deciduous tree, crown rounded and open with large spreading branches to 25 m. **BARK:** pale grey, fairly smooth. **LEAVES:** large, **soft and heart shaped, to 15 cm long, on long stems** crowded at the end of branchlets, veins prominent **with 2 stalked glands** just visible at the leaf base. **FLOWERS:** cream-yellow, **sweetly scented, in erect spikes to 25 cm.** The flower spike turns down as fruits mature. **FRUIT:** **pea-sized capsules on drooping spikes, to 30 cm,** mature capsules split open with a sharp noise to release shiny grey seeds with a soft, cream aril.

Propagation: Seedlings, wildings.

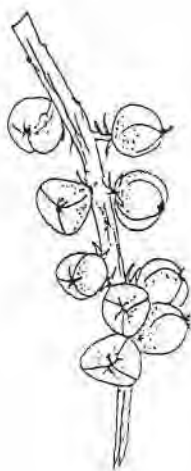
Seed info.: No. of seeds per kg: 16,000-27,000. Seed usually damaged by insects while on the tree. Germination is good: 40-70% in 30-60 days.

treatment: not necessary; inside of viable seeds must be white-cream coloured. Collect seed from mature grey fruit. Sun dry to release seed.

storage: seed will store for some months if kept cool, dry and free from insects.

Management: Fairly fast growing on good sites; lopping, pollarding and coppicing.

Remarks: Seed and resin are poisonous. When cut it has a rather unpleasant spicy odour. It is a good tree for intercropping. The soft light wood is very perishable and does not make good timber.



fruit capsules

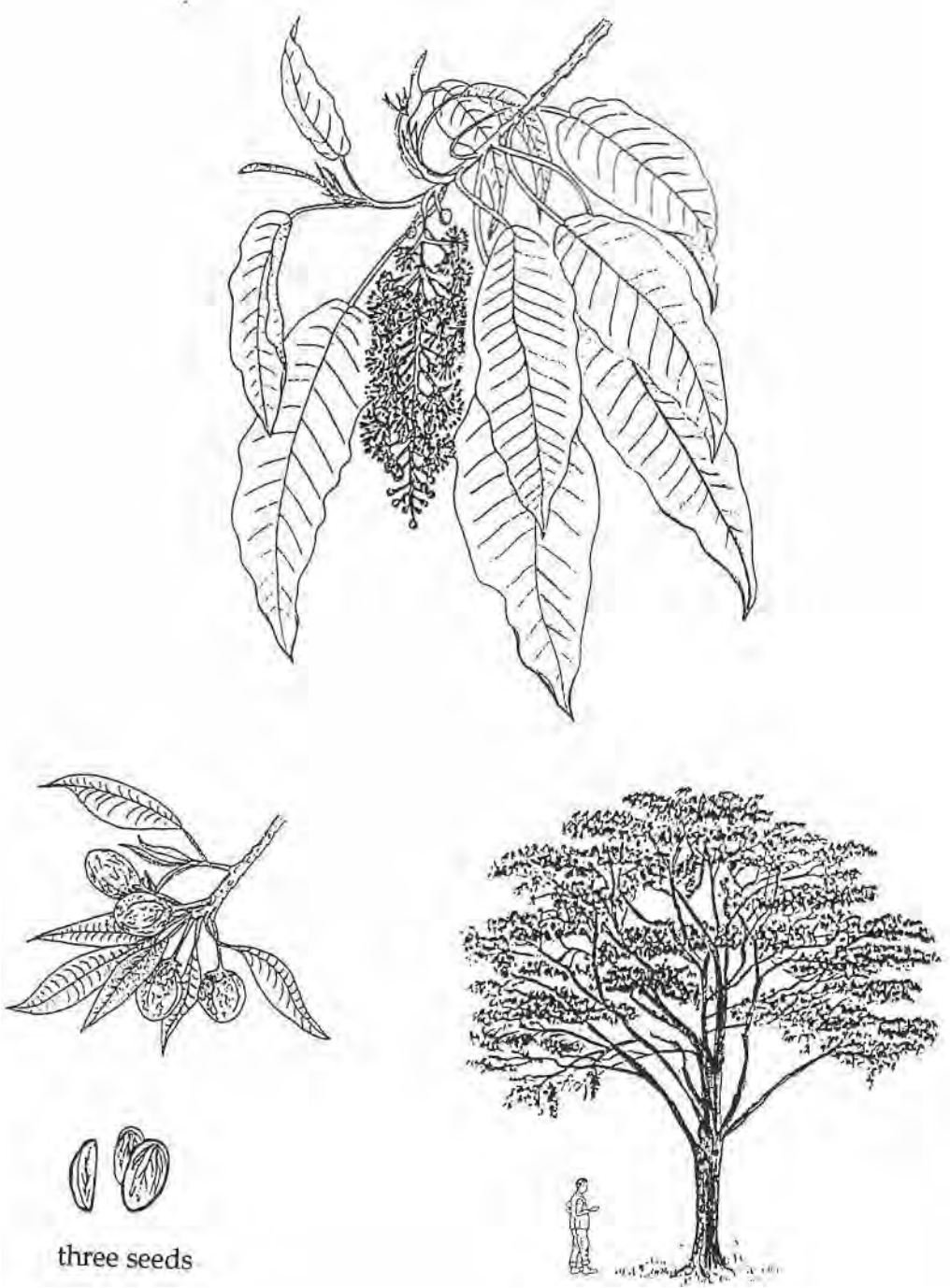


Croton megalocarpus

Euphorbiaceae

Indigenous

- Common names:** Chag: mbali, lali, mlalai, lalei, mlandee, mnyaki, mwajaji; Eng: croton; Goro: meali; Haya: muhihi; Iraqw: zilo; Maasai: ol mergoit, ol margait, ol marbait, olmarubai; Meru: marabai; Pare: muhande.
- Ecology:** A dominant upper-storey tree in some forested areas of East Africa, widespread in the mountain areas of Kilimanjaro, Meru, Ngorongoro, and Usambara. It can be found in a range of semi-humid habitats, 1,200-2,400 m, but has been planted at lower altitudes.
- Uses:** Firewood, charcoal, timber, poles, medicine (bark), bee forage, shade, ornamental, mulch, live fence, boundary marker.
- Description:** A spreading deciduous tree to 35 m with distinctive layering of branches, the crown rather flat and giving light shade. **BARK:** dark grey, rough, cracking. **LEAVES:** variable, long oval and pointed to 12 cm but often much smaller, stalked. The dull green upper surface contrasts with the pale, silvery underside. **FLOWERS:** very short lived but conspicuous, the buds opening after heavy rains into pale yellow, hanging spikes to 25 cm, with only a few female flowers at the base. **FRUIT:** very many grey woody capsules, about 2.5 cm long with three flattened seeds inside, grey-brown when mature with a small bump.
- Propagation:** Direct sowing (recommended), seedlings, wildings.
- Seed info.:** No. of seeds per kg: about 1,000. The tree seeds prolifically. Extract seed by cracking fruit shell and sun dry firm mature seed. Germination is good: up to 70% after 30 days.
- treatment:** not necessary.
- storage:** seed cannot be stored for long periods due to the high oil content (at best 50% viability after 6 months).
- Management:** Fast growing in high-potential areas, slow elsewhere lopping, pollarding, coppicing.
- Remarks:** The seed has high oil content (30%) and high protein content (50%). The oil extract can be a strong purgative. Not recommended for intercropping due to competition with crops. There are cultural beliefs against planting this tree close to houses. Smoke from the firewood can irritate the eyes.



Cupressus lusitanica

Cupressaceae

Mexico, Guatamala

- Common names: Chag: mtarakwa; Eng: cypress, Mexican cypress.
- Ecology: A fast-growing cypress representing over 40% of the plantation trees in Tanzania. Grows best above 1,500 m with good soil and fair rainfall. It has been widely planted throughout Tanzania (Meru, Shume, West and Norm Kilimanjaro, Kawetire plantations).
- Uses: Firewood, poles, posts, timber (furniture, construction), ornamental, shade, windbreak, live fence.
- Description: An evergreen tree to 35 m with straight trunk, generally conical but irregular in shape, the branches hang down with branchlets in all directions. BARK: red-brown with vertical grooves/grey with age. LEAVES: dull blue-green, the tiny leaves in 4 ranks, with spreading pointed tips. FRUIT: male cones like fat tips to branchlets, producing clouds of yellow pollen dust; female cones ripen in two years, rounded, 1.5 cm across, brown, the cone scales with central, pointed projections. About 75 winged seeds are released from beneath the cone scales.
- Propagation: Seedlings, wildings.
- Seed info.: No. of seeds per kg: 160,000-290,000. Germination of good seed 30-40% in 10-20 days,
- treatment: not necessary.
- storage: seed can be stored for up to six months.
- Management: Fast growing on good sites, moderate on poorer sites- Weeding during early establishment; trimming as a hedge, pruning and thinning of trees in woodlots used for timber.
- Remarks: Can produce poles after 10 years, general-purpose timber after 20 years. Not good for intercropping. From 1990 severely attacked by the cypress aphid: branches turn yellow, later dry out. The aphid is difficult to control and thus planting cannot be recommended until a solution (biological control) is found. Young trees grown in the Uluguru Mountains are sold profitably in Dar es Salaam as Christmas trees.



male cones



Cussonia kirkii (C. arborea)

Araliaceae

Indigenous

Common names: **Arusha:** oldimaroi, oljumaroi; **Eng:** cabbage tree; **Fiome:** liasi-lianzovu; **Fipa:** nawowo; **Haya:** kihondogro; **Kere:** murendembezwa; **Mate:** mtumbitumbi; **Mwera:** mtumbitumbi; **Nyam:** mgagigagi; **Nyiha:** muwawa; **Pare:** intindi; **Suku:** yagi ya nsovu;

Ecology: A common tree at the edge of miombo woodlands, occasionally on anthills. Many other species of "cabbage tree" grow from East to South Africa. All have very soft wood and the leafy heads are a characteristic shape.

Uses: Timber (stools), utensils (spoons), medicine (bark, roots), live fence.

Description: A small deciduous tree with a rounded crown and a short bole growing up to 12 m high. **BARK:** grey-brown, deep furrows with scales. **LEAVES:** compound, **7-9 leaflets**, blue-green in colour, **edges toothed**. Leaves **crowded at ends of branches in very large round clusters** (cabbage like). **FLOWERS:** green, appear from October to December on long thin spikes. **FRUIT:** small, dark green turning to **dark purple** when mature, **spherical, 5-7 cm across, clustered on a long fruiting stalk**.

Propagation: Cuttings.

Seed info.: Not important as the tree is propagated by cuttings.

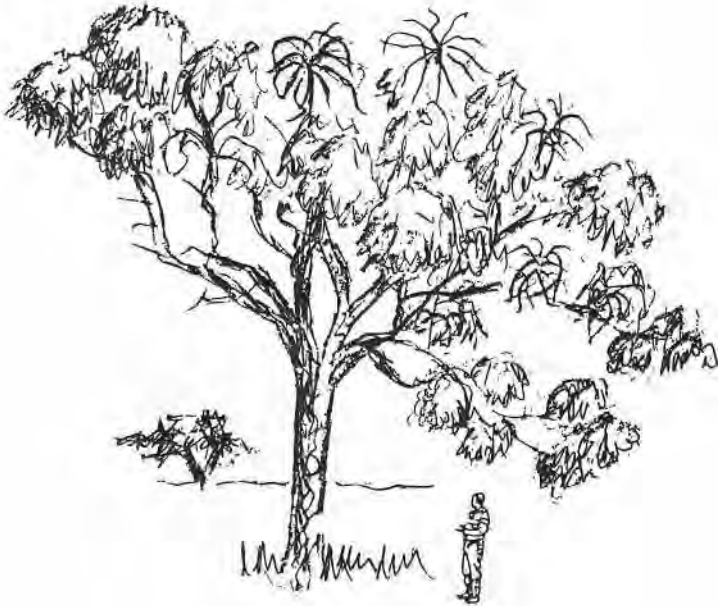
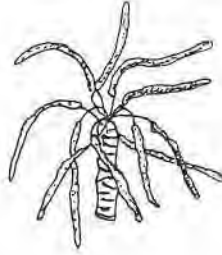
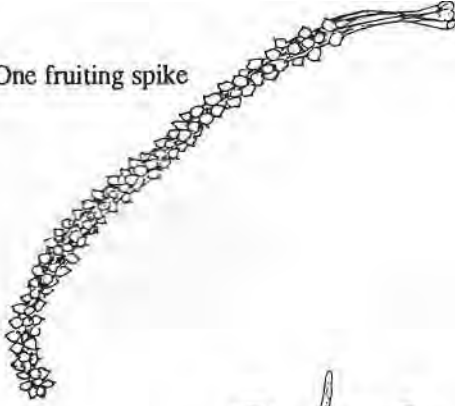
treatment:

storage:

Management: Fast growing; pollarding.

Remarks: Burning wood produces an unpleasant smell, therefore it is not commonly used for firewood.

One fruiting spike

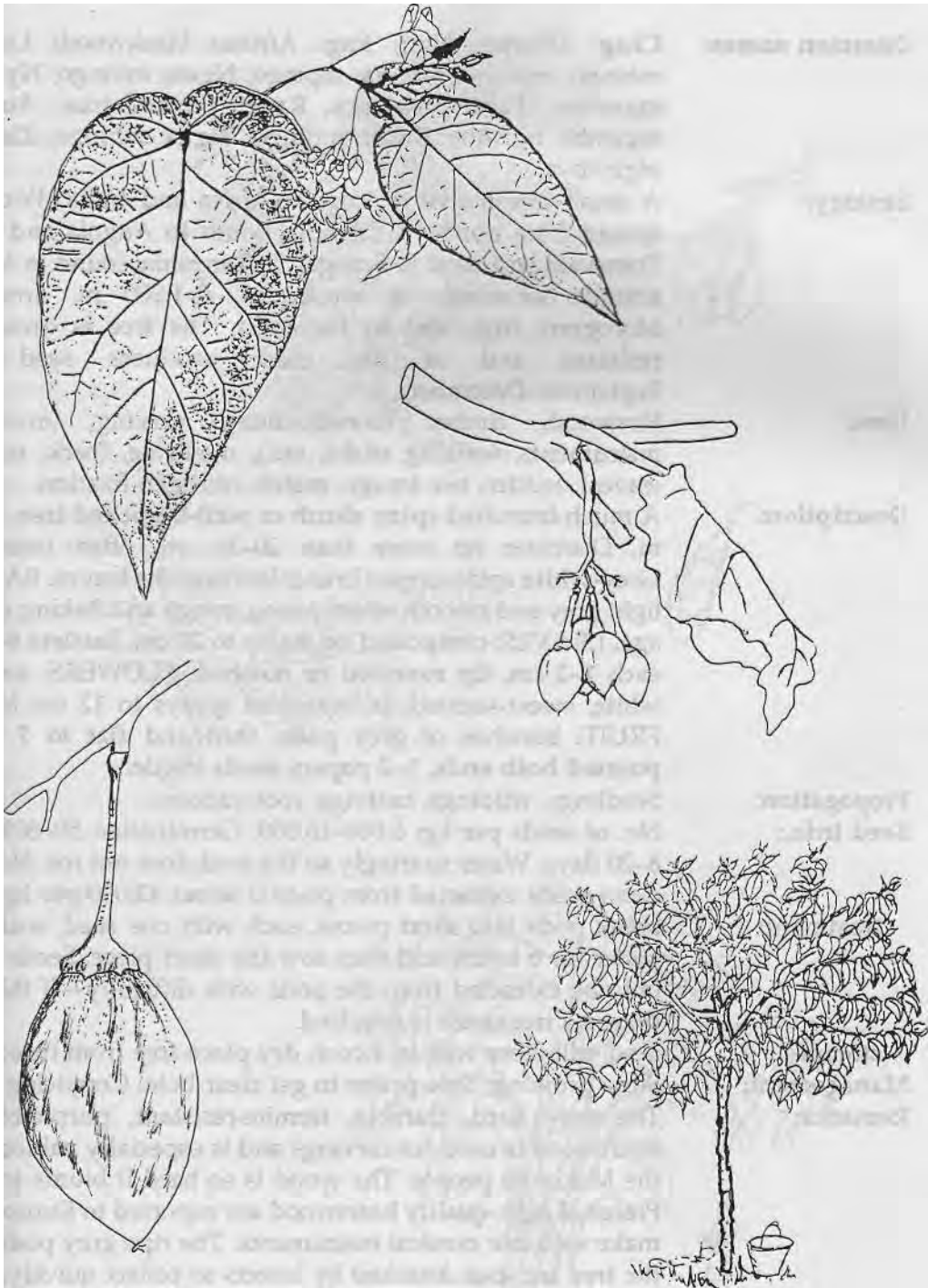


Cyphomandra betacea

Solanaceae

Peru, South America

- Common names: **Eng:** tree tomato; **Pare:** mtunguja; **Samb:** maghogwe
Swah: mgogwe.
- Ecology: A woody shrub or small tree introduced long ago to many tropical countries where it is sometimes naturalized. In Tanzania it grows between 1,000 and 2,000 m. It does best on deep soils, bearing fruit in about two years **and** remaining productive for several years.
- Uses: Food (jam, fruit, vegetable).
- Description:** A large evergreen shrub or tree to 3 m with **characteristic umbrella-like branching**. BARK: young stems are shiny, old stems with rounded leaf scars. LEAVES: alternate, large, rather **heart shaped, 40 x 30 cm, softly** hairy, drooping in heat, on a long stalk. FLOWERS: in **fragrant** hanging groups from older stems. **Each flower 5-lobed, white-pink** with a darker stripe. FRUIT: in clusters, **egg shaped to 7 cm long**, abundant, on long stems, **shiny orange-red to purple**.
- Propagation:** Seedlings, cuttings, wildings.
- Seed info.:** No. of seeds per kg: about 100,000.
- treatment:** not required.
- storage:** seed can be stored.
- Management:** Fast growing; coppicing.
- Remarks:** The fruit is slower to ripen at higher altitudes. The **acid** fruit can be eaten raw or cooked, and quality depends on the variety grown.



Dalbergia melanoxylon

Papilionoidem

Indigenous

Common names: **Chag:** kidamo, kinti; **Eng:** African blackwood; Lugu mbingo, mpingo; **Mwera:** mpingo; **Nguu:** mbingo; **Nyam:** mgembe; **Pare:** mwingo; **Rangi:** nyamfunza; **Suku:** mgembe, ngembe; **Swah:** mpingo; **Zigua:** mbingo; Zinza: mgembya.

Ecology: A small tree native to tropical Africa and India. **Widely** spread from northern Ethiopia, south to Angola and the Transvaal and west to Senegal. In Tanzania, found in low-altitude savannah or woodland, 0-1,300 m, around Morogoro, Itigi, and to the coast. The tree is **drought** resistant and at the coast produces seed in September-December.

Uses: Firewood, timber (construction), carving (musical instruments, walking sticks, etc.), medicine, (bark, **roots**, leaves), fodder, bee forage, mulch, nitrogen fixation.

Description: A much-branched **spiny shrub or well-branched tree, to 7** m. Diameter no more than 20-30 cm, often **twisted**. **Grey-white** spine-tipped branchlets bear the leaves. **BARK:** light grey and smooth when young, rough and flaking **with** age. **LEAVES:** compound on stalks to 20 cm, **leaflets 9-13**, each **1-2 cm, tip rounded or notched**. **FLOWERS:** **small** white, sweet-scented, in branched sprays to 12 cm long **FRUIT:** bunches of grey pods, **thin and flat to 7 cm, pointed both ends**, 1-2 papery seeds inside.

Propagation: Seedlings, wildings, cuttings, root suckers.

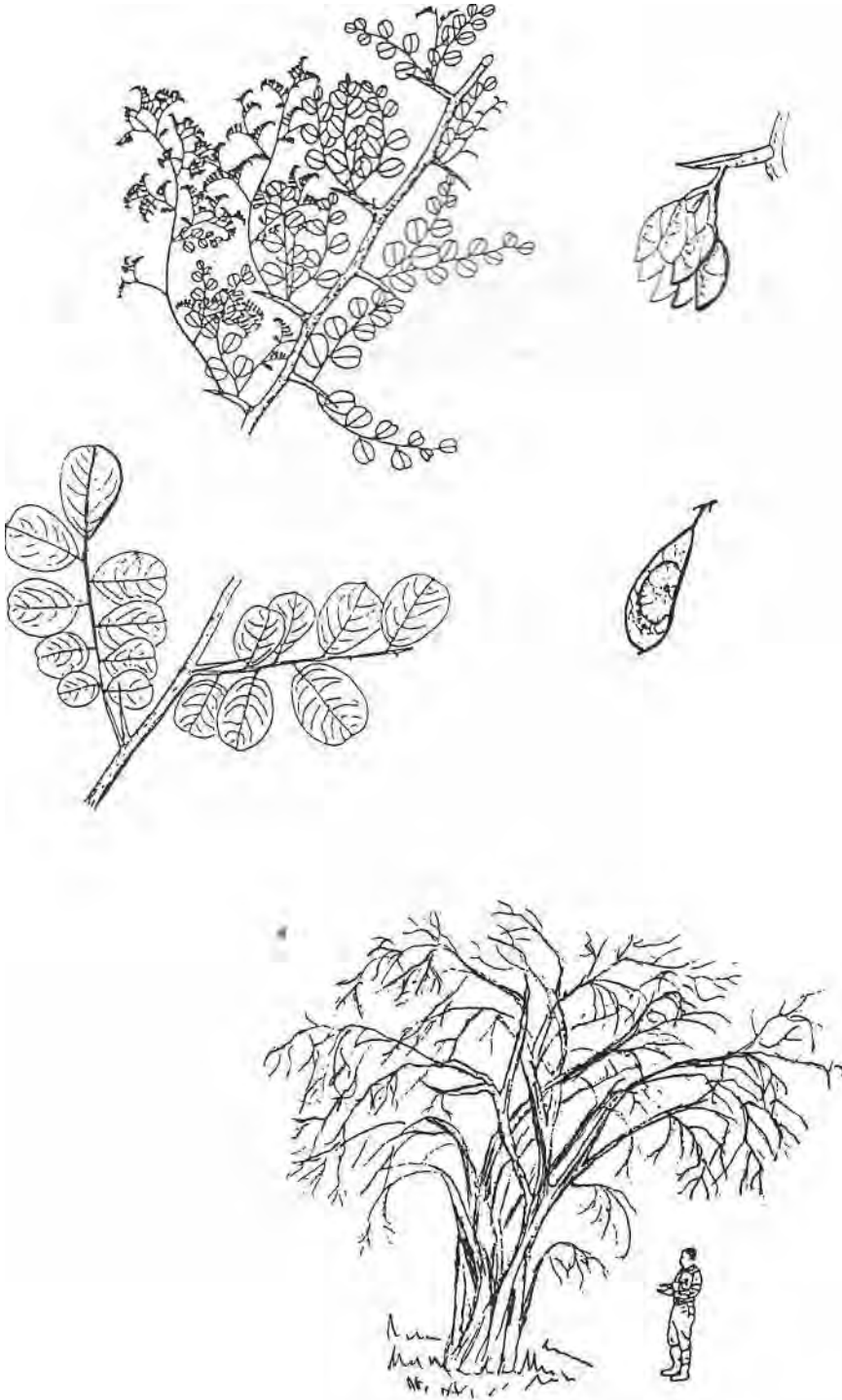
Seed info.: No. of seeds per kg: 6,000-16,000. Germination 50-60% in 8-20 days. Water sparingly so the seed does not rot. No. of clean seeds extracted from pods is about 42,000 per kg.

treatment: break pods into short pieces, each with one seed, soak in water for 6 hours and then sow the short piece. Seeds can only be extracted from the pods with difficulty—if this is done no treatment is required.

storage: seed will store well in a cool, dry place free from insects

Management: Slow growing. Side-prune to get clear bole. Coppicing.

Remarks: The very hard, durable, termite-resistant, purple-black heartwood is used for carvings and is especially valued by the Makonde people. The wood is so hard it blunts **tools** Pieces of high-quality heartwood are exported to Europe to make valuable musical instruments. The ripe grey pods on the tree are soon attacked by insects so collect quickly.



Dalbergia nitidula

Papilionoideae

Indigenous

- Common names:** Eng: glossy flat-bean, purplewood dalbergia; Gogo: mjiha; Nyam: kafinulambasa, kapondolampasa, mfunfu; Nguu: mhuga; Nyat: mobibi; Sangu: msinatemo; Yao: unhungu.
- Ecology:** A tree growing in deciduous woodlands, including Brachystegia woodlands, bushlands, thickets and wooded grassland, 350-1,650 m. Also found in Rwanda, Burundi Mozambique, Malawi, Angola and South Africa.
- Uses:** Firewood, charcoal, poles, tools (digging), handles, carving utensils (pestles), fodder, dye (bark, roots).
- Description:** A deciduous shrub or small tree 4-12 m tall with stiff erect branches to an open crown. **BARK:** grey-brown to reddish rough and fissured, flaking longitudinally, branchlets with dense yellow-brown hairs. **LEAVES:** compound, 4-7 pairs leaflets opposite or nearly so, plus one at the tip; each leaflet usually 2-3 cm, up to 8 cm, tip round, pointed or notched, base rounded, clear veins below and very hairy **FLOWERS:** white flowers before leaves in dense branched heads to 10 cm, each flower small, pea-shaped. (Often rounded galls (balls of dark, needle-like growths) grow instead.) **FRUIT:** flat, thin brown pods, 7 x 1.5 cm, sharply tipped, do not open but rot on the ground to release 1-2 seeds.
- Propagation:** Seedlings and suckers.
- Seed info.:** There are about 16,000 short pieces of broken pods (each containing one seed) per kg. The germination is good and uniform.
- treatment:** pods should be broken into one-seeded pieces, soaked in 4 cold water for 6 hours and sown together with the seed as extraction is difficult. .
- storage:** can keep viability only for a few months. The pods are susceptible to attack by insects.
- Management:** Slow growing; coppicing.
- Remarks:** Roots are poisonous to human beings. The purple heartwood has been used for walking sticks. It is very durable and termite resistant but so small that it is only suitable for tool handles, building poles, fence posts, etc.



India

Common names: Eng: sissoo.

Ecology: Found in the foothills of the Himalayas, in high-rainfall areas. Planted along canal banks and rivers it tolerates a variety of soils. In Tanzania the tree has been grown in Muheza (Amani and Longuza) and at Korogwe (Mombo).

Uses: Firewood, charcoal, poles, posts, timber (construction, furniture), tool handles, carving, fodder (pods, leaves), bee forage, soil conservation, soil improvement, nitrogen fixation, shade, ornamental, windbreak, oil (seeds), tannin (bark).

Description: A medium to large tree, up to 30 m, deciduous, with a light crown, trunk often crooked. LEAVES: compound, on 15 cm stalks, about 5 alternate leaflets, each one widest at the base, to 6 cm long with a fine-pointed tip, clear veins above, the stalk flexible. FLOWERS: pink-white in dense clusters to 10 cm. FRUIT: many oblong, flat, thin pods to 7 cm long, pale brown, containing up to 5 seeds.

Propagation: Seedlings, direct sowing, cuttings, root suckers.

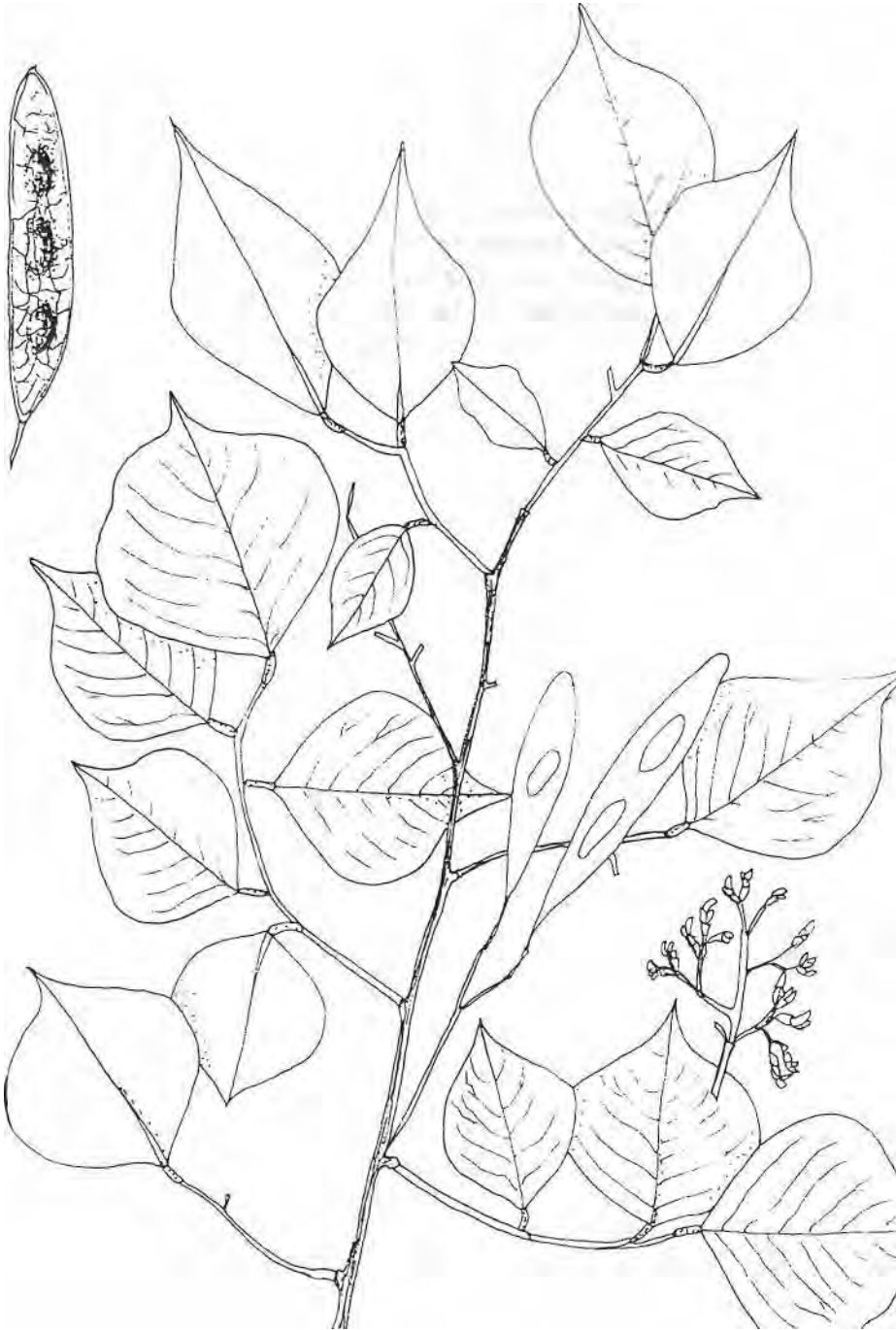
Seed info.: No. of seed per kg: 50,000 when clean. Germination rate is about 70%. One kg has 12,000 pieces of pod, *each* containing one seed.

treatment: not necessary.

storage: can be stored for up to two years if kept dry.

Management: Lopping, pollarding, coppicing.

Remarks: Fresh leaves may cause digestive disorders when fed to livestock as dry-season fodder. It is better to convert the leaves into silage. A taproot develops quickly in the seedling and will penetrate stony soils to the watertable, becoming deeply rooted. Long surface roots hold the soil together and so help prevent erosion. The dark brown heartwood is a durable timber and makes excellent firewood and charcoal.



Delonix regia (Poinciana regia)

Caesalpinioideae

Madagascar

Common names: Eng: flamboyant; **Swah:** mkakaya.

Ecology: Now very rare in its native Madagascar. However, this deciduous tree is grown throughout the lowland tropics. It prefers sandy soils. In Tanzania it is widely planted in towns as an avenue tree below 1,500 m altitude.

Uses: Firewood, medicine (bark), bee forage, shade, ornamental, beads (seed).

Description: A medium-sized deciduous tree with an **umbrella crown**, reaching a maximum 15 m. **BARK:** grey, smooth. **LEAVES:** light green and feathery, each **compound leaf to 45 cm long, with leaflets less than 1 cm**. **FLOWERS:** often appear before the leaves and remain some time, **brilliant clusters, scarlet to orange**, sometimes yellow, each flower up to 10 cm with 5 petals, one petal cream, heavily spotted. **FRUIT:** conspicuous **long woody pods**, flat and heavy to 75 cm long, remain many months on the tree. They break open to release oblong seeds about 1 cm long.

Propagation: Seedlings, direct sowing.

Seed info.: No. of seeds per kg: 2,000-2,300. Seeds prolifically. Germination rate up to 90%.

treatment: immerse seed in hot water, allow to cool and soak for 24 hours. Nicking the hard seed also increases germination rate.

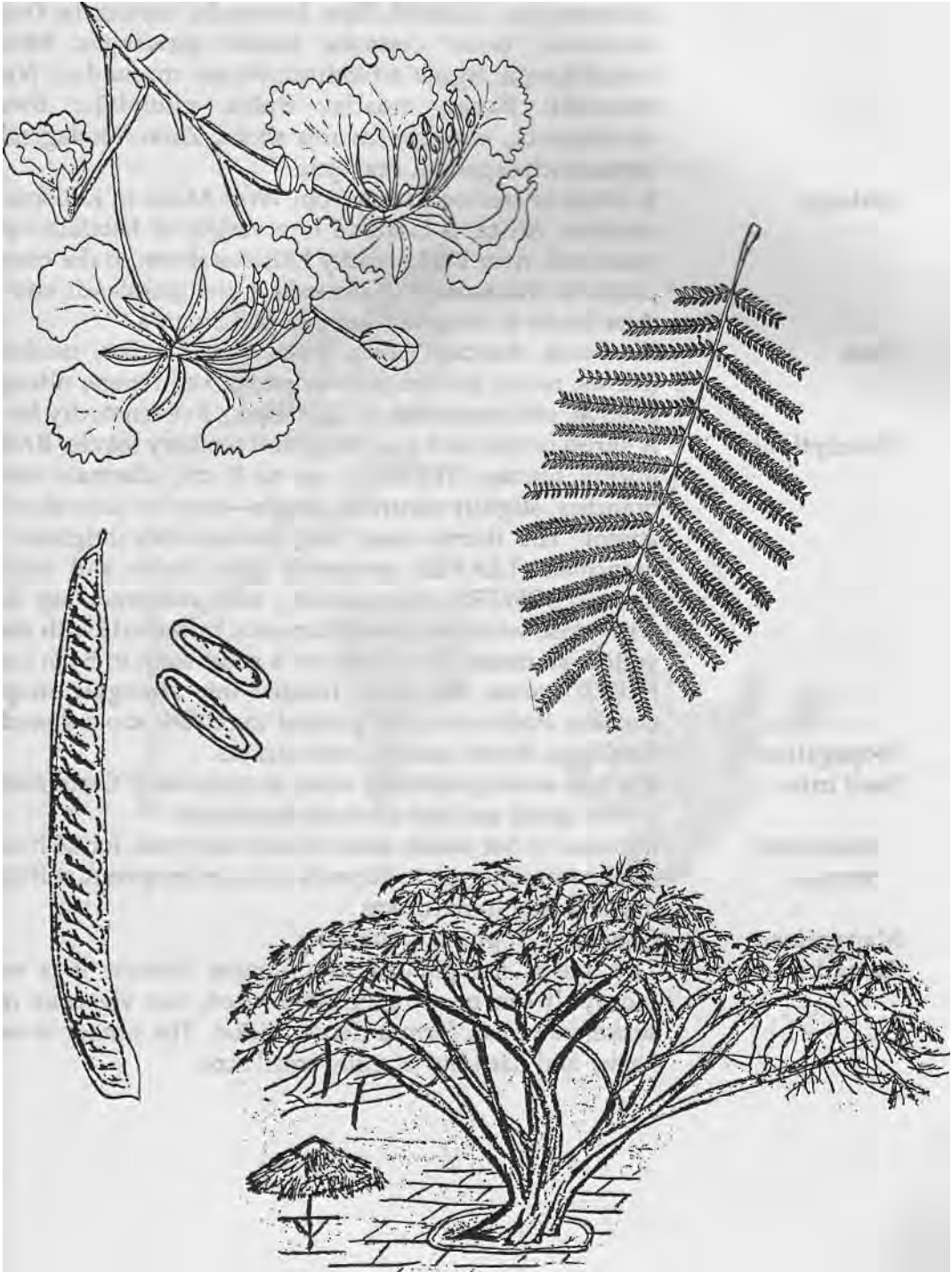
storage: seed can be stored for long periods.

Management: Fast growing.

Remarks: The species has a shallow root system. The dense canopy makes it unsuitable for intercropping.

Delonix regia (Poinciana regia)

Caesalpinioideae

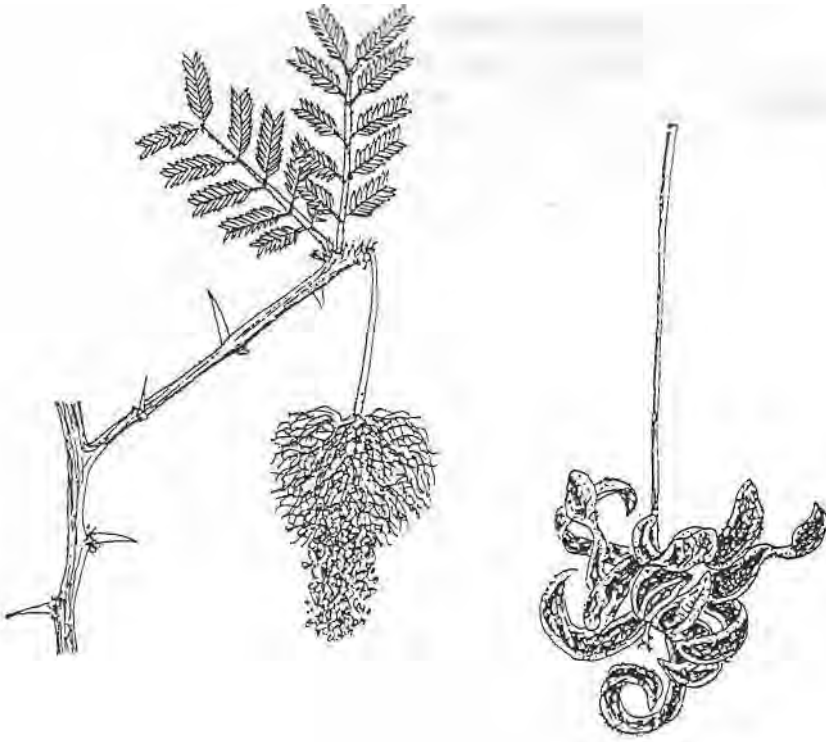


Dichrostachys cinerea

Mimosoideae

Indigenous

- Common names:** Arusha: endundulu; Bara: mtundarai, mtundurut; Bende: kafunampasa, katindili; Fipa: kasunjulu, mpangala; Gogo: mtundulu; Goro: gewawu; Iraqw: girwangw; Mbug: mukalakanga; Nguu: mtunduru; Nyam: mutunduu; Nyat: mutundu; Rangi: mdabiri; Suku: mtundulu; Swah: mkulagembe, msigino, mvunja shoka; Zara: mkulagembe; Zigua: mchelegembe, mjerejele.
- Ecology:** A shrub or tree occurring from West Africa to Ethiopia to southern Africa. It is found in a variety of habitats: open grassland, river banks, rocky hillsides down to the coastal plains. In Tanzania it is common in the grasslands and on river banks in Arusha, Dodoma and Singida.
- Uses:** Firewood, charcoal, poles, posts, tool handles, medicine (leaves, roots), fodder (leaves, pods), bee forage, nitrogen fixation, soil conservation, fibre (bark), live fence, dry fence.
- Description:** A shrub or tree to 4 m with typical feathery leaves. **BARK:** thickly fibrous. **THORNS:** up to 8 cm, alternate along branches, slightly recurved, single—may be quite short or absent. The thorns may bear leaves—they originate as branchlets. **LEAVES:** underside pale, stalks and leaflets hairy. **FLOWERS:** characteristic, two coloured, top half with pink, white or mauve filaments, lower half with short yellow stamens. They hang on a short stalk to 5 cm long. **FRUIT:** brown, flat pods, twisted into strangely shaped clusters. Pods rot on the ground to release about 4 seeds.
- Propagation:** Seedlings, direct sowing, root suckers.
- Seed info.:** The tree seeds prolifically when in open land. Germination is very good and fast after pre-treatment.
- treatment:** immerse in hot water, allow to cool and soak for 24 hours,
- storage:** can be stored for up to 10 years at room temperature if kept dry and free from insects.
- Management:** Coppicing, lopping, pollarding.
- Remarks:** The tree is not planted near houses because it is very thorny. It can be an aggressive weed, has vigorous root suckers and can form a dense thicket. The timber is very heavy and hard but of quite small size.



Indigenous

Common names: **Bende:** msinde; **Chag:** mkadi, mkuare, msindi; **Eng:** African ebony; **Lugu:** mkoko, mtitu; **Mate:** nzakala we mwana; **Nyam:** mkinde, msinde; **Pare:** mjongolo; **Swah:** mgiriti; **Zigua:** mhukwi, mkulwe, mkulwi.

Ecology: An evergreen tree of medium to low altitudes, found in West, East and southern Africa in woodland, savannah and on rocky hillsides. In Tanzania it is a coastal woodland and riverine forest tree.

Uses: Firewood, charcoal, timber (construction, furniture), carving (walking sticks), food, (fruit: dry, fresh, fermented drink), medicine (bark, roots, fruit), bee forage, shade, ornamental.

Description: A medium to large tree, to 25 m. There may be a tall clear bole from a buttressed base to the dense rounded crown. Young parts have silvery hairs. **BARK: grey-black, rough and squared, grooved.** **LEAVES: shiny dark green, alternate, to 14 x 3 cm, the midrib raised below, edge wavy, tip rounded.** **FLOWERS:** fragrant, male clustered, female solitary, cream-white petals, 1 cm. **FRUIT: rounded to 2.5 cm in a calyx cup, the five segments curling back.** fruit yellow, later purple, pulp soft and sweet with 4-6 brown, hairy seeds.

Propagation: Seedlings.

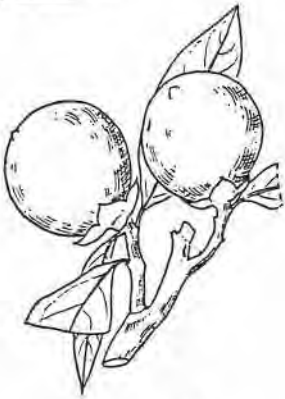
Seed info.: No. of seeds per kg: 2,700-3,200. Good germination.

treatment: not necessary.

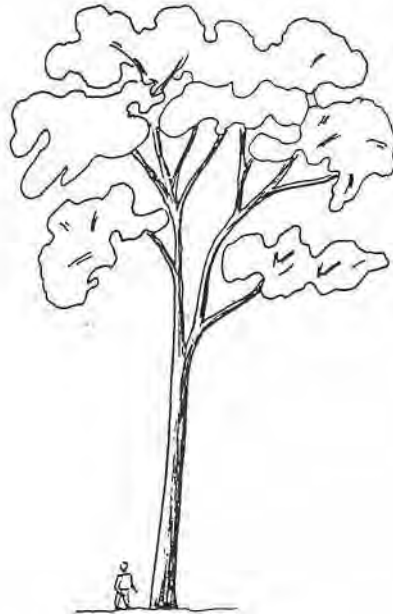
storage: seed can be stored for very long periods.

Management: Slow growing.

Remarks: *Diospyros* species produce the valuable black heartwood ebony. Only a few trees yield the black wood after felling; pale at first, the timber gradually becomes dark brown. The wood is hard and strong with a fine grain and is fungus and termite resistant.



DAMTEW T.



Dodonaea angustifolia (D. viscosa)

Sapindaceae

Indigenous

Common names: **Arusha:** ol getinai; **Eng:** hopbush; **Fiome:** berima; **Fipa:** nzwite; **Goro:** berimi; Hehe: luhahi, lunyahi; **Iraqw:** berima; **Lugu:** kiganhihingi, mhangehange; **Meru:** iwuwu; **Pare:** mgwiti, mnjitwe; **Rangi:** muberimo; **Samb:** mzutu, mzutwe, mzutu; **Swah:** mkengata.

Ecology: The natural range of this tree is wide: Australia, India, tropical and sub-tropical Africa. In Tanzania it is found from sea level to 2,800 m, but is more common in **the dry** mountain forests than at lower altitudes. It can thrive in a wide range of soils and climates.

Uses: Firewood, charcoal, poles, tool handles, medicine (leaves roots), bee forage, soil conservation, windbreak, live fence, toothbrushes (twigs).

Description: A thin-stemmed tree or shrub, usually 2-8 m, with a light crown. **BARK:** grey, grooved, peeling. Branchlets red **and** sticky. **LEAVES:** thin, **narrow, stiffly erect to 10 cm, tapering** to a stalk, **young leaves light green, shiny and sticky.** **FLOWERS:** male and female separate, insignificant. **FRUIT:** distinctive capsules, 2 cm with **three papery** wings. sometimes **inflated, greenish to red,** looking like blossoms, turning light brown, small seeds inside.

Propagation: Seedlings, wildings, direct sowing.

Seed info.: No. of seeds per kg: about 100,000. Germination rate 30-70% after 15 days.

treatment: not necessary.

storage: seed can be stored for up to a year.

Management: Fast growing. Little or no management required **once** established.

Remarks: The species is not browsed which makes it easy to establish. A good live fence for dry areas; susceptible **to** fire **but** regenerates rapidly after burning. It is especially useful **fat** reclaiming poor land—from marshes to sand dunes. **The** wood is heavy.

Dodonaea angustifolia (*D. viscosa*)

Sapindaceae



Dombeya rotundifolia

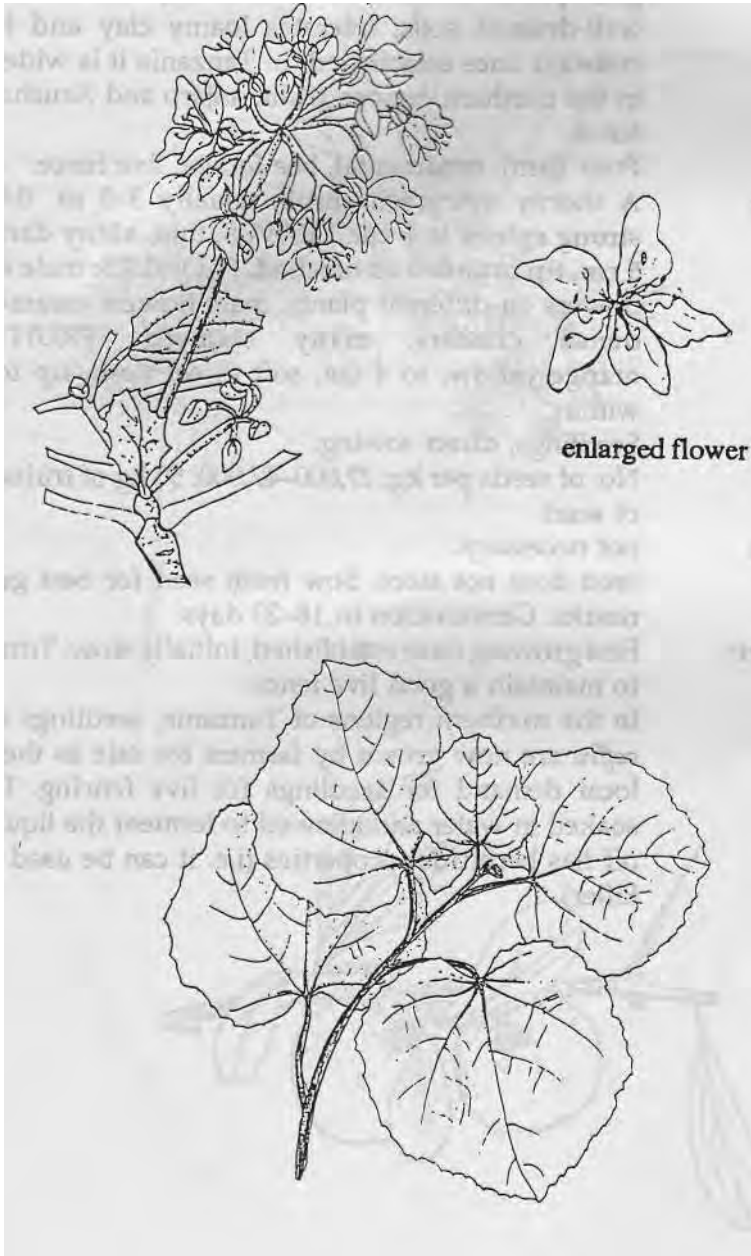
Sterculiaceae

Indigenous

- Common names: Bende: msubu, musubu; Chag: mringaringa porini; Eng: white dombeya; Gogo: mtati; Goro: gwaata-aati; Hehe mkangatowo, mlati; Iraqw: gwaadati, gwaatati; Kinga: mpangala; Lugu: mlwati, msoto, mswayu; Mwera: nachiu Nyam: msagusa, nsagusa; Nyat: mutogotogho; Nyiha: litanji, tanji; Nyir: mtogo; Rangi: mchakay; Zigua: mluati, mlwati.
- Ecology: A small tree occurring over a wide range of altitudes usually in wooded or open grassland. Common in dry areas of Babati, Singida, and Mbulu. Grows best between 1,400 and 2,200 m, often near termite mounds.
- Uses: Firewood, fodder (leaves), bee forage, medicine (roots), ornamental, fibres, bows (strong but flexible branches).
- Description: A shapely deciduous tree to 4 m. BARK: dark brown, deeply furrowed. LEAVES: oval to almost circular, 6-18 cm across, rough, often very hairy below, edge unevenly toothed, stalked. The leaves dry, very crisp and hard. FLOWERS: white-pink in many-flowered heads, buds woolly. Sweet-scented blossom attracts bees. FRUIT: small, round, hairy capsules.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 35,000-40,000. Germination is goal and completed after 3 weeks.
- treatment: no treatment required.
- storage: can retain viability only for a short period (3 months) a room temperature.
- Management: Coppicing.
- Remarks: The wood makes good fuel, is strong and tough but often twisted. An attractive tree in dry areas when in flower.

Dombeya rotundifolia

StercuUaceae



Dovyalis caffra

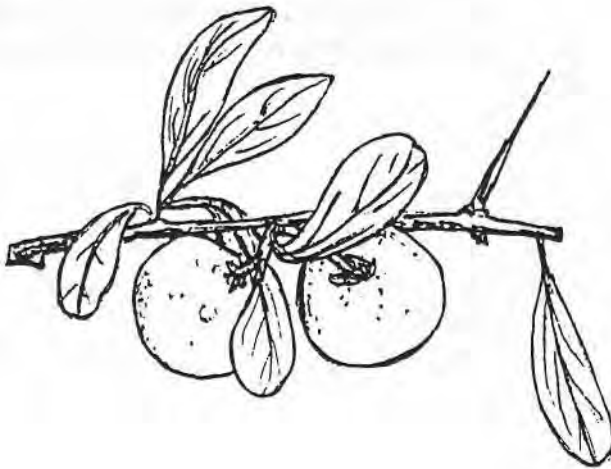
Flacourtiaceae

South Africa

- Common names: Eng: kei apple.
- Ecology: A spiny shrub found in open bush and Acada woodlands in southern Africa, now widely planted in tropical and subtropical areas as an effective fruiting hedge that is almost goat proof. It does well above 1,200 m. Prefers deep well-drained soils, tolerates loamy clay and is drought resistant once established. In Tanzania it is widely planted in the northern regions (Kilimanjaro and Arusha) as a live fence.
- Uses: Fruit (jam), ornamental, bee forage, live fence.
- Description: A thorny evergreen shrub, usually 3-5 m. BARK: with strong spines to 6 cm. LEAVES: thin, shiny dark green to 5 cm, tip rounded or notched. FLOWERS: male and female flowers on different plants, male flowers cream-yellow in dense clusters, many stamens. FRUIT: round, orange-yellow, to 4 cm, soft sweet flesh, up to 20 seeds within.
- Propagation: Seedlings, direct sowing.
- Seed info.: No. of seeds per kg: 27,000-47,000; 50 kg of fruits yield 1 kg of seed,
- treatment: not necessary.
- storage: seed does not store. Sow fresh seed for best germination results. Germination in 18-20 days.
- Management: Fast growing once established, initially slow. Trim regularly to maintain a good live fence.
- Remarks: In the northern regions of Tanzania, seedlings of *Dovyalis caffra* are now grown by farmers for sale as there is a big local demand for seedlings for live fencing. If fruit are soaked in water and allowed to ferment the liquid drained off has herbicidal properties (i.e. it can be used as a weed killer).

Dovyalis caffra

Flacourtiaceae

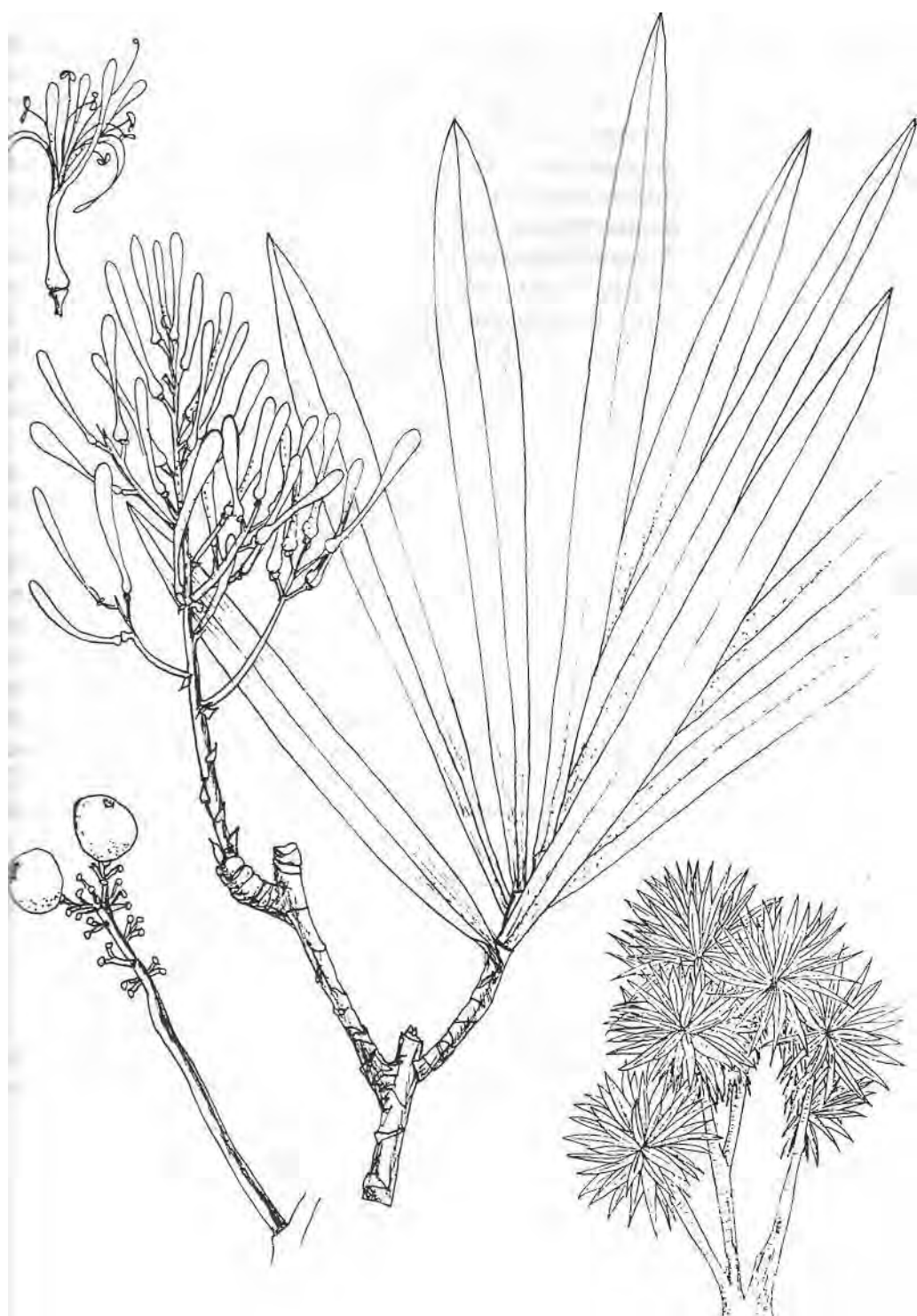


Dracaena usambarensis

Dracaenaceae

Indigenous

- Common names:** Chag: isare; Bond: kiteguzi; Eng: long-leaved dragon tree; Haya: mulamula, mutendere; Iraqw: sansuli; Pare: isae; Samb: ng'weng'we.
- Ecology:** Scattered in high-rainfall areas in forest edges and swamp forest in Tanzania from sea level to about 1,830 m. Also found in wet forests on the Kenya coast and in Mozambique, Malawi and Zambia.
- Uses:** Fodder (leaves), medicine (roots), grave or boundary marker, ornamental.
- Description:** A palm-like tree to 15 m high with compact crown, often multi-stemmed. **BARK:** grey or whitish, smooth, marked with leaf scars. **LEAVES:** narrow, elongated, spear shaped, 15-26 cm long, 2-5 cm wide, leathery and shiny dark green, largely arranged towards the end of branchlets. **FLOWERS:** greenish white in loose branched flowering spikes, up to 25 cm long, sweet scented, open at night, petal lobes as long as the tube of the flower. **FRUIT:** red-brown fleshy berries, up to 2 cm diameter, containing 1-3; seeds. Fruit stalks bright orange.
- Propagation:** Seedlings and cuttings.
- Seed info.:** No. of seeds per kg: 4,500-5,000. Germination is very good and fast.
- treatment:** no treatment required.
- storage:** the seed is perishable, so avoid storage.
- Management:** A fast-growing plant and coppices very well.
- Remarks:** In the Usambara mountains, the tree is found in thid forests and on farmlands with coffee, bananas, sugarcane etc. Foliage is cut as fodder for cattle in the dry season. Root extracts have been used to treat stomach ache.



Ekebergia capensis (E. rueppeliana)

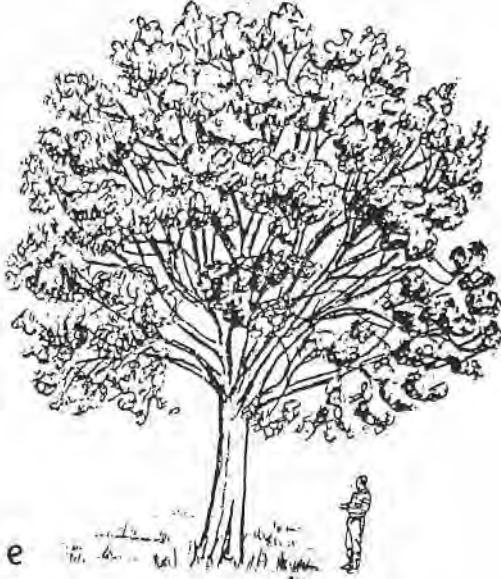
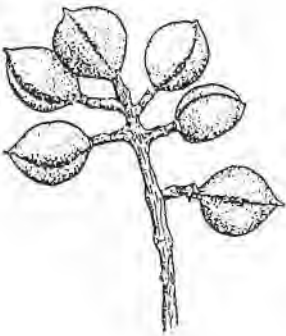
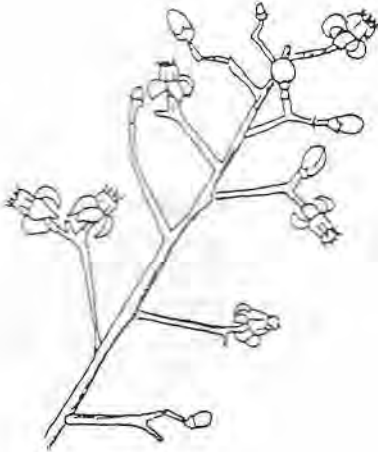
Melastomataceae

Indigenous

- Common names: Arusha: ol mukuma, olmukuna; Bara: mtongoti; Chag: mfuare, mfyahi, mroboki, msisi; Eng: ekebergia; Fipa: mng'ongo; Gogo: mvumba; Haya: musimbi; Iraqw: taewi mtongoti taewi; Kere: mgondogondo; Kinga: lurulamona muvulamono; Maasai: ol mukuna, osongoroi; Menu: mkuna, olmkuna, olmkuno; Rangi: mnu, mtarima; Samb: monko; Zinza: umuyagu.
- Ecology: A semi-deciduous evergreen tree with a spreading crown widely distributed in a variety of habitats from lowland scrub to highland forest, often a shady meeting place in open grassland, 0-1,500 m. In Tanzania it is common on the northern and western slopes of Mts. Kilimanjaro and Meru, and also found in Usambara, Iringa and on Maisome Island in Lake Victoria.
- Uses: Firewood, poles, timber (furniture, light construction), tool handles, medicine, fodder (leaves), bee forage, shade, ornamental, soil conservation, windbreak.
- Description: A handsome tree, 20-30 m. BARK: brown and rough with age, branchlets dotted with whitish breathing pores LEAVES: compound, on stalks to 30 cm, mostly crowded at the ends of branches, young leaflets hairy, later thin and shiny, up to five pairs of lateral leaflets, leaf blades unequal-sided, to 10 cm long. FLOWERS: in loose sprays, up to 8 cm, each flower small and white, heavily scented. Male and female flowers on different trees. FRUIT: rounded, thin-skinned berries on long stalks, yellow-red when ripe.
- Propagation: Seedlings, wildings.
- Seed info.: No. of seeds per kg: 2,500-8,600. Germination is fairly good.
- treatment: not necessary.
- storage: seed does not store.
- Management: Fairly fast growing.
- Remarks: Wildings are used more commonly for propagation. The light pale wood with an even grain makes attractive furniture.

Ekebergia capensis (E. meppeliana)

Meliaceae



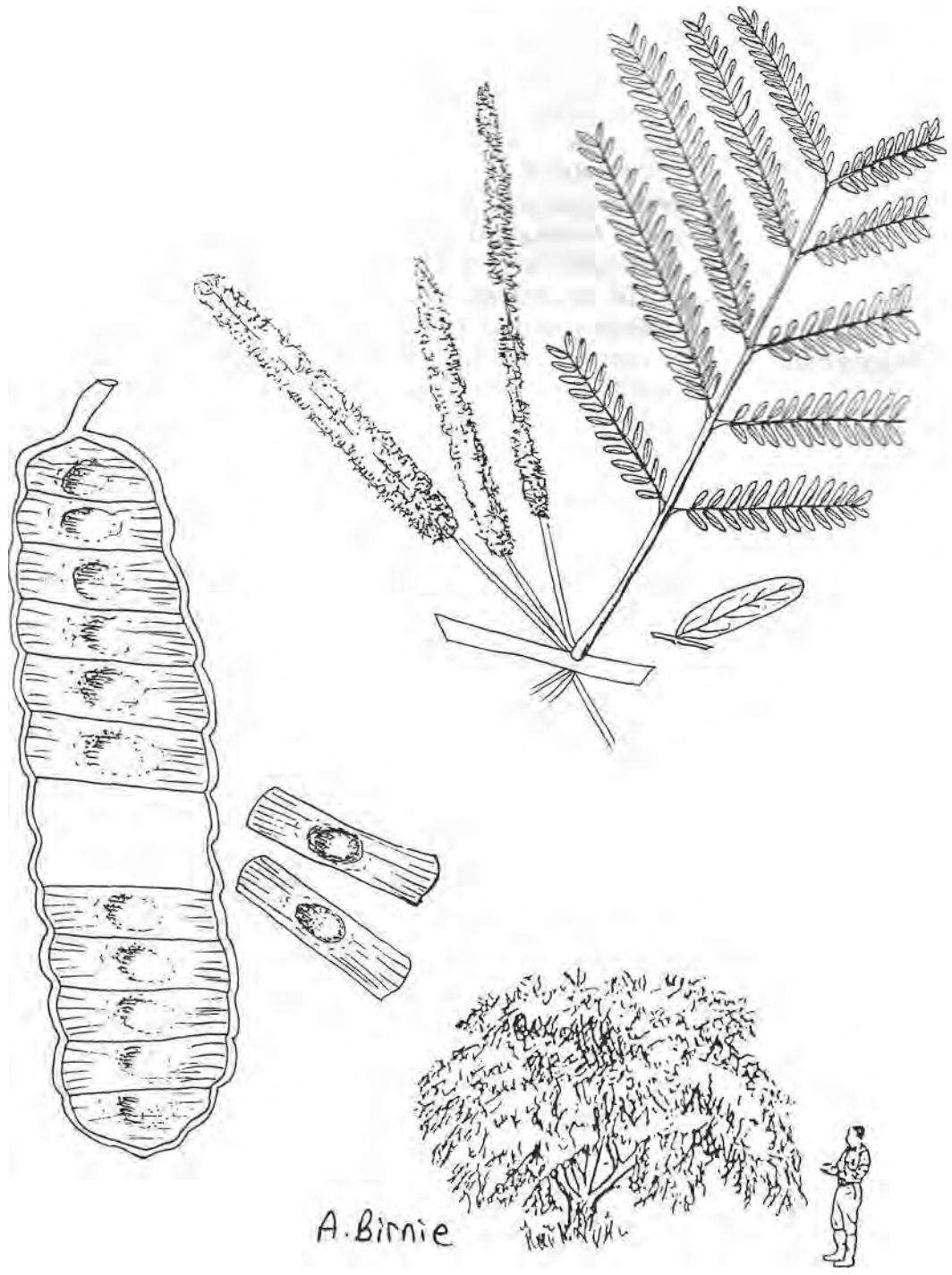
A. Birnie

Entada abyssinica

Mimosoideae

Indigenous

- Common names:** **Bende:** mubundu; **Eng:** tree entada; **Goro:** aere-desu; **Hehe:** mugelagela; **Kuria:** msarwa; **Lugu:** mvutambula; **Mate:** mtangati, munzati; **Nyam:** mfutambula; **Nyin** msaningala; **Rangi:** ijwejwe; **Zigua:** mfufumasimba; **Zinza:** musangisangi.
- Ecology:** A small tree which grows from Sierra Leone, Eritrea and Uganda south to Angola, typically with *Brachystegia* and *Julbernardia* in woodland or wooded grassland, 450-2,250 m. It is found in all districts of Tanzania. Here and further south the branchlets are typically hairy.
- Uses:** Firewood, medicine (roots), shade, nitrogen fixation, soil improvement.
- Description:** A small deciduous tree 3-10 m, with a **dense** leafy-spreading crown and **large conspicuous pods** often remaining on the tree for a long time. **BARK:** grey-brown, rough or smooth. **LEAVES:** compound, feathery and Acacia-like with 4-22 pairs of pinnae and **very many leaflets**, each narrow and up to 1 cm long, tip rounded. **FLOWERS:** small, **creamy-white-yellow, in fluffy spikes** up to 14 cm long, sweet scented. **FRUIT:** woody pods both long and wide to 39 x 10 cm, almost straight. The central sections, each containing one seed, break away from the woody rim leaving a **pod skeleton on the tree**. About 10 **papery winged seeds**.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: 3,600-4,200. Seed germination rate is very high: 70%-100%.
- treatment:** not necessary,
- storage:** seed can be stored.
- Management:** Coppicing.
- Remarks:** The tree does not compete with crops, and has **been** reported by farmers to improve soil.



Eriobotrya japonica

Rosaceae

China, Japan

Common names: **Chag:** mtangawizi, shitunda; **Eng:** loquat; **Lugu:** msambwawa kizungu; **Samb:** msambia.

Ecology: A small evergreen tree very widely planted in its native China, Japan and north India; also in the Mediterranean, and now doing well in the Tanzanian highlands, 1,500-2,400 m. It is drought resistant once established, but prefers moderate to high rainfall. Very commonly planted in the Arusha and Kilimanjaro areas.

Uses: Firewood, poles, posts, carving, food (fruit), bee forage, shade, ornamental, mulch, windbreak, jam, syrup (fruit), boundary marker (Arusha and Kilimanjaro).

Description: A compact tree to 7 m, branching close to the ground. **BARK:** grey and rough, young stems hairy. **LEAVES:** stalkless, **dark green, shiny above, woolly hairs below**, to about 35 cm long, the tip pointed and the edge slightly toothed; young leaves paler, foliage in upward-pointing tufts. **FLOWERS:** **cream-white, scented**, in **pyramidal** tufts at the end of branches, flower buds covered with **golden-brown hairs**. **FRUIT:** **yellow, egg-shaped to 3 cm**. brown-black seeds inside, flesh acid-sweet to taste.

Propagation: Direct sowing, seedlings, wildings.

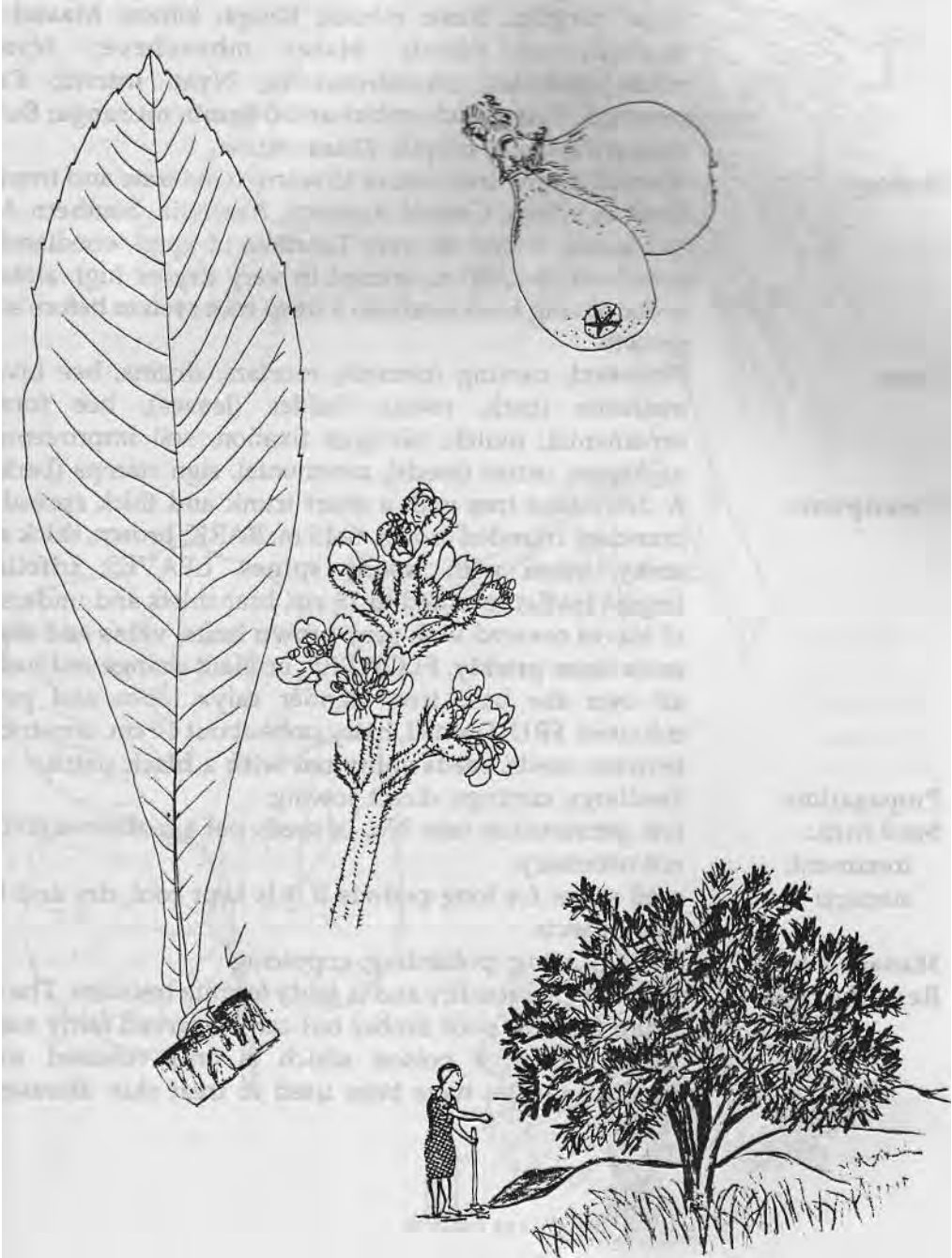
Seed info.: No. of seeds per kg: about 600.

treatment: not necessary.

storage: seed does not store well. It should be sown while still **fresh**.

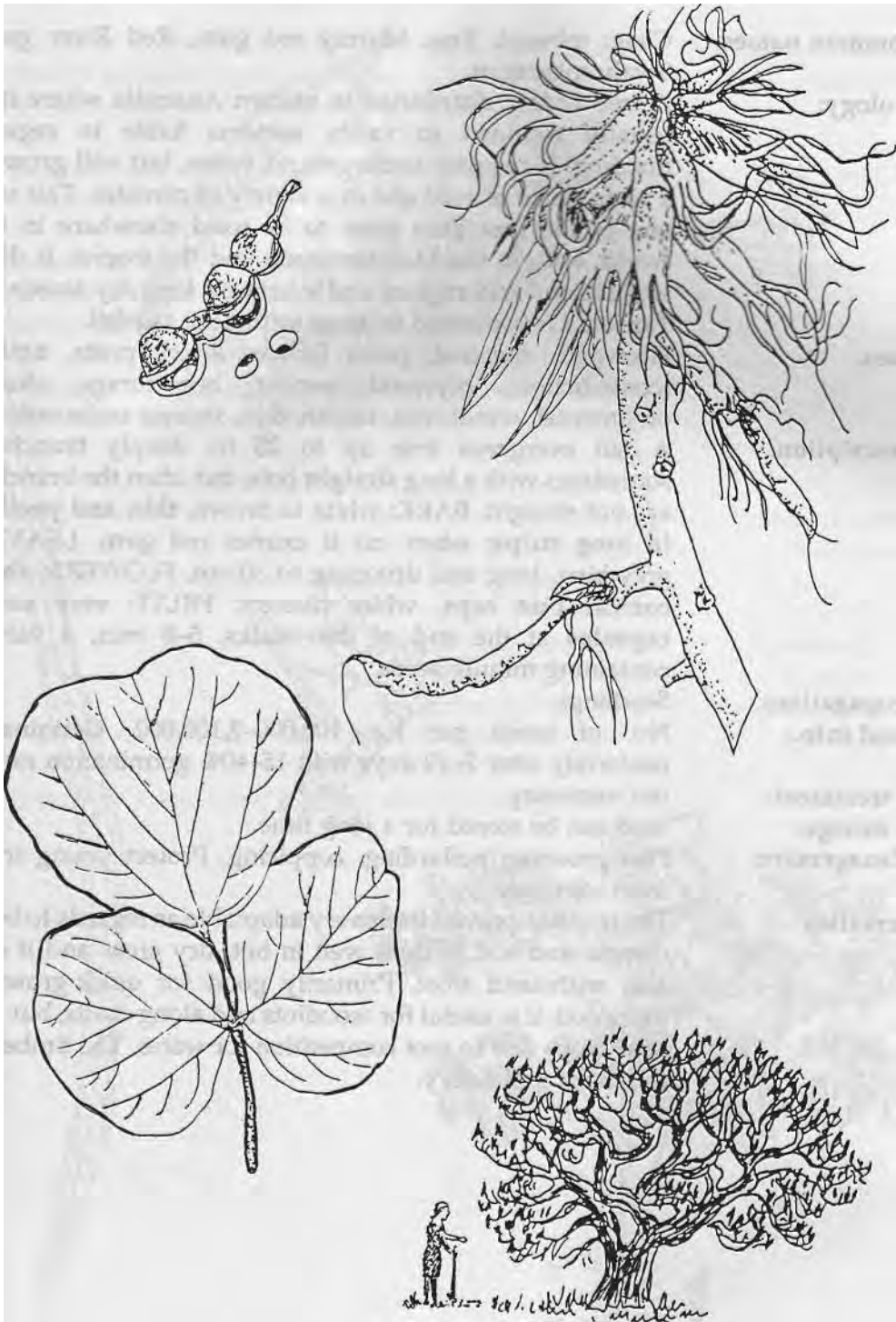
Management: Fairly fast growing; pruning.

Remarks: Grafted trees are available; they make stronger growth, remain smaller; but mature and produce fruits faster. Seeds are poisonous and should be removed before cooking.



Indigenous

- Common names:** **Arusha:** olowani; **Bara:** manenei; **Bende:** mbeko; **Chag:** mriiri; **Eng:** kaffir boom, red-hot-poker tree; **Fipa:** mtiiti; **Gogo:** mbilimisi; **Haya:** mlinzi; **Hehe:** muhemi; **Iraqw:** angal qanguzi; **Kere:** mlenzi; **Kinga:** kihere; **Maasai:** ol ngaboli, ol obani; **Mate:** mheveheve; **Nyam:** mhalalwanhuba, mkalalwankuva; **Nyat:** msiviti; **Pare:** muungu; **Rangi:** kichumbichumbi; **Samb:** murungu; **Suku:** mkalalwanhuba, pilipili; **Zinza:** mtasa.
- Ecology:** A small thorny tree, native to warm temperate and tropical areas of Africa, Central America, Australia, Southern Asia to Hawaii. Found all over Tanzania in open woodland or grassland, 0-2,000 m, except in very dry or high-altitude areas. Young trees establish a deep root system before stem growth.
- Uses:** Firewood, carving (utensils, mortars, drums, bee hives), medicine (bark, roots), fodder (leaves), bee forage, ornamental, mulch, nitrogen fixation, soil improvement, necklaces, curios (seeds), ceremonial, sign stamps (bark).
- Description:** A deciduous tree with a short trunk and thick spreading branches, rounded crown, 6-12 m. **BARK:** brown, **thick and corky, often with woody spines.** **LEAVES:** **trifoliate, largest leaflet rounded to 15 cm,** branchlets and underside of leaves covered with **grey-brown hairs, veins and stalks sometimes prickly.** **FLOWERS:** brilliant **orange-red heads,** all over the bare tree, slender calyx lobes and petals coloured. **FRUIT:** small, hairy pods about 10 cm, constricted between seeds, **seeds shiny red with a black patch.**
- Propagation:** Seedlings, cuttings, direct sowing.
- Seed info.:** low germination rate. No. of seeds per kg: about 6,800.
- treatment:** not necessary.
- storage:** seed stores for long periods if it is kept cool, dry and free from insects.
- Management:** Slow growing; pollarding, coppicing.
- Remarks:** The tree tolerates fire and is fairly termite resistant. The soft white wood is poor timber but can be carved fairly easily. Seeds contain a poison which is only released when crushed. Leaves have been used to treat skin diseases in cattle.



Eucalyptus camaldulensis (E. rostrata)

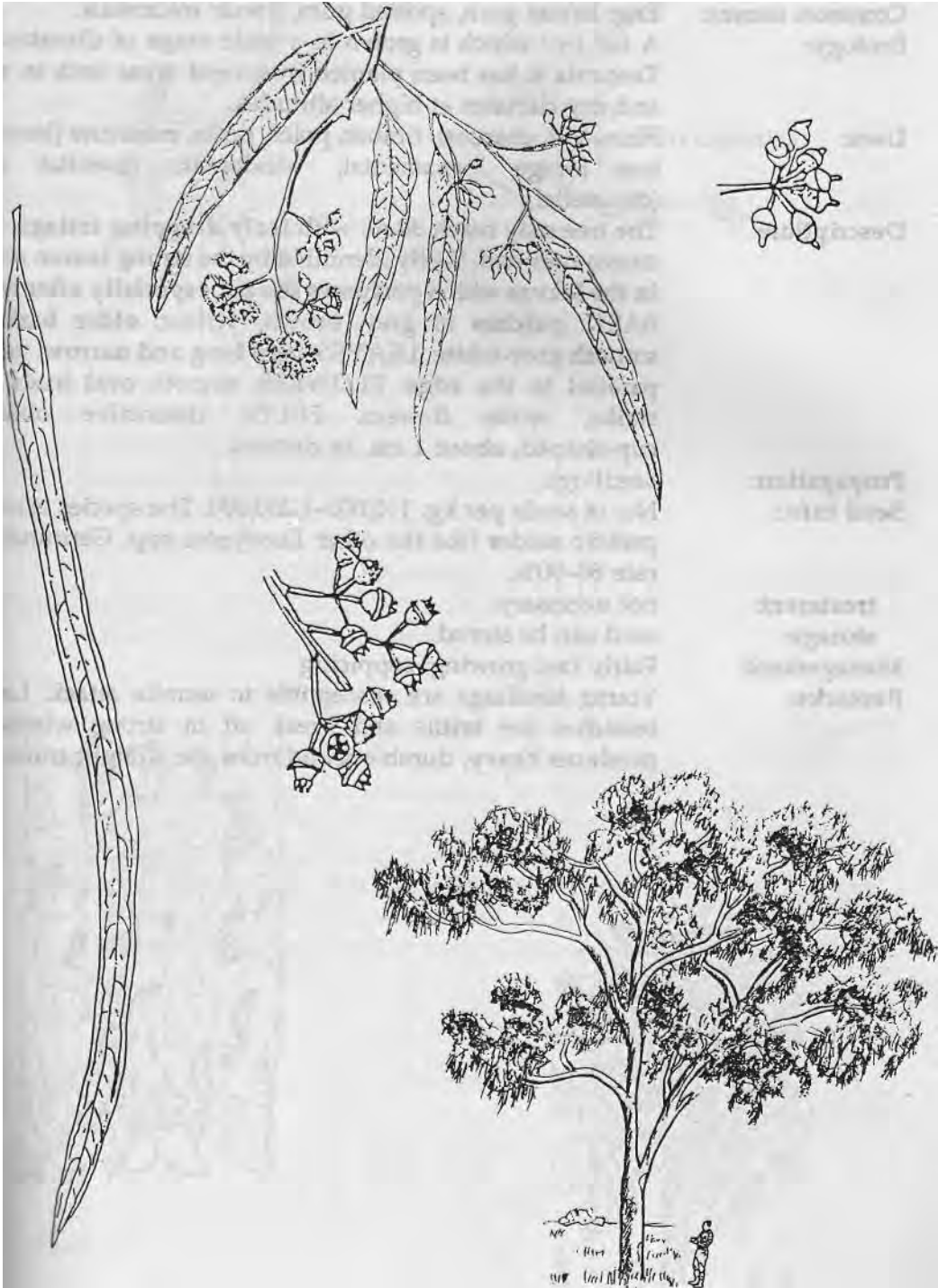
Myrtaceae

Australia

- Common names: **Chag:** mbanyi; Eng: Murray red gum, Red River gum. Swah: mkaratusi.
- Ecology: A tree widely distributed in eastern Australia where it is usually confined to valley bottoms liable to regular flooding. It requires underground water, but will grow in a wide range of soils and in a variety of climates. This was one of the first gum trees to be used elsewhere in the world, both in the Mediterranean and the tropics. It does well in semi-arid regions and tolerates a long dry season. In Tanzania it is planted in areas with little rainfall.
- Uses: Firewood, charcoal, poles (power lines), posts, timber (construction), plywood, veneer, bee forage, shade, ornamental, windbreak, tannin, dye, swamp reclamation.
- Description: A tall evergreen tree up to 25 m, deeply branched sometimes with a long **straight** bole, but often the branches are not straight. BARK: white to brown, **thin and peeling** in **long** strips; when cut it exudes red gum. LEAVES grey-blue, long and drooping to 30 cm. FLOWERS: **short conical bud caps**, white clusters. FRUIT: **very small capsules** at the end of thin stalks, 5-8 mm, 4 valves containing minute seeds.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 100,000-2,100,000. Germinates uniformly after 7-10 days with 15-40% germination rate, not necessary.
- treatment: seed can be stored for a long time.
- storage: seed can be stored for a long time.
- Management: Fast growing; pollarding, coppicing. Protect young trees from termites.
- Remarks: The tree has proved itself very adaptable as regards to **both** climate and soil. It does well in hot, dry areas and it **can** also withstand frost. Primarily good for quick-growing fuelwood, it is useful for woodlots and along roads, but **not** near crops due to root competition for water. The timber is red, hard and heavy.

Eucalyptus camaldulensis (E. rostrata)

Myrtaceae

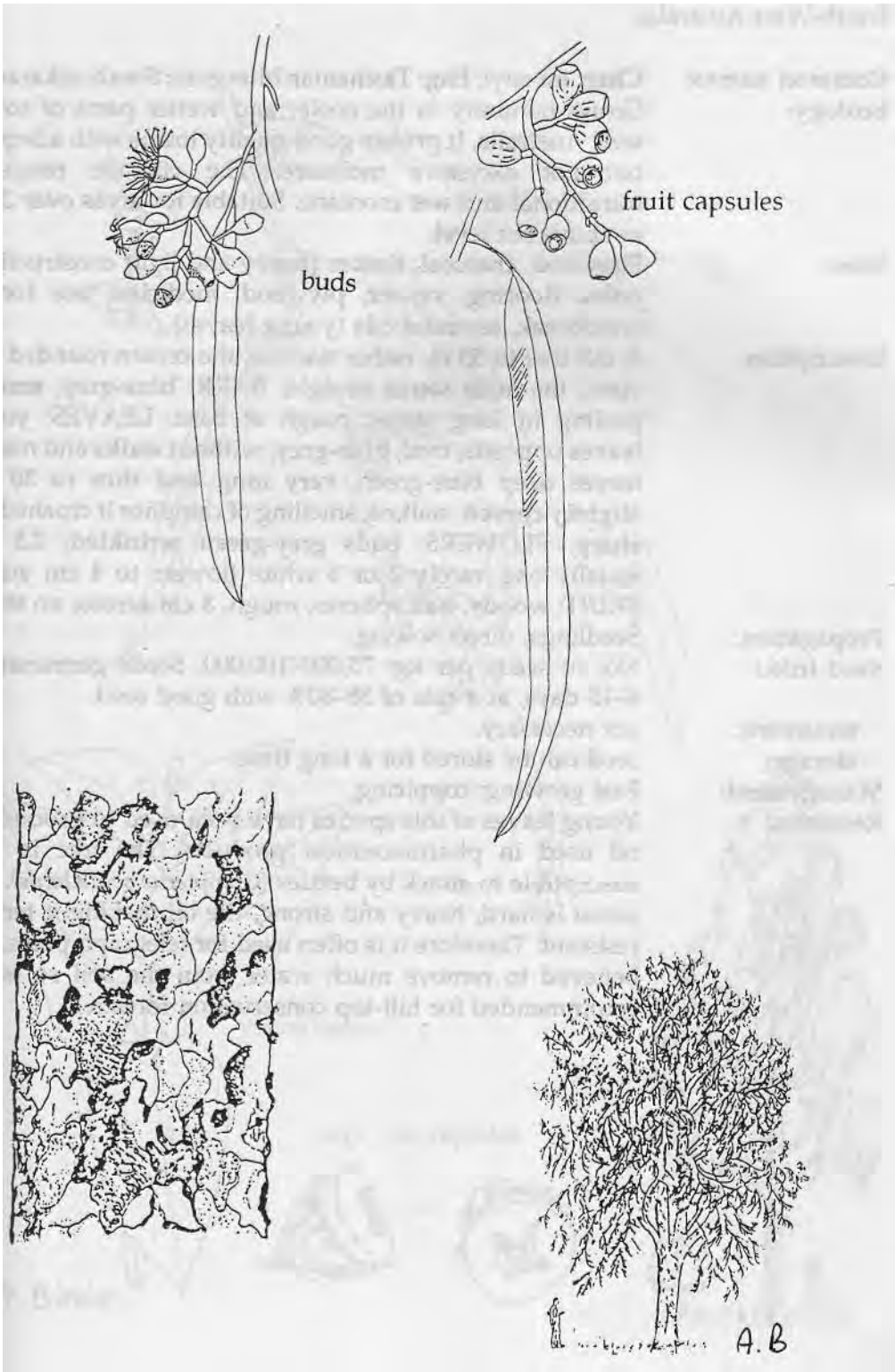


Eucalyptus citriodora

Myrtaceae

Eastern Queensland (Australia)

- Common names:** Eng: lemon gum, spotted gum. Swah: mkaratusi.
- Ecology:** A tall tree which is grown in a wide range of climates. In Tanzania it has been planted in several areas both in **wet** and dry climates at higher altitudes.
- Uses:** Firewood, charcoal, timber, poles, posts, medicine (leaves), bee forage, ornamental, windbreak, essential **oils** (citronellal).
- Description:** The tree may reach 30 m, with leafy drooping foliage, the crown rounded. Easily identified by the strong lemon **scent** in the leaves which perfumes the air, especially after rain. **BARK:** patches of grey, brown, yellow; older bark is smooth grey-white. **LEAVES:** very long and narrow, **veins** parallel to the edge. **FLOWERS:** smooth oval buds on stalks, white flowers. **FRUIT:** distinctive oblong cup-shaped, about 1 cm, in clusters.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: 110,000-1,200,000. The species is not a prolific seeder like the other *Eucalyptus* spp. Germination rate 60-90%.
- treatment:** not necessary.
- storage:** seed can be stored.
- Management:** Fairly fast growing; coppicing.
- Remarks:** Young seedlings are susceptible to termite attack. **Large** branches are brittle and break off in strong wind. It produces heavy, durable wood from the straight trunk.

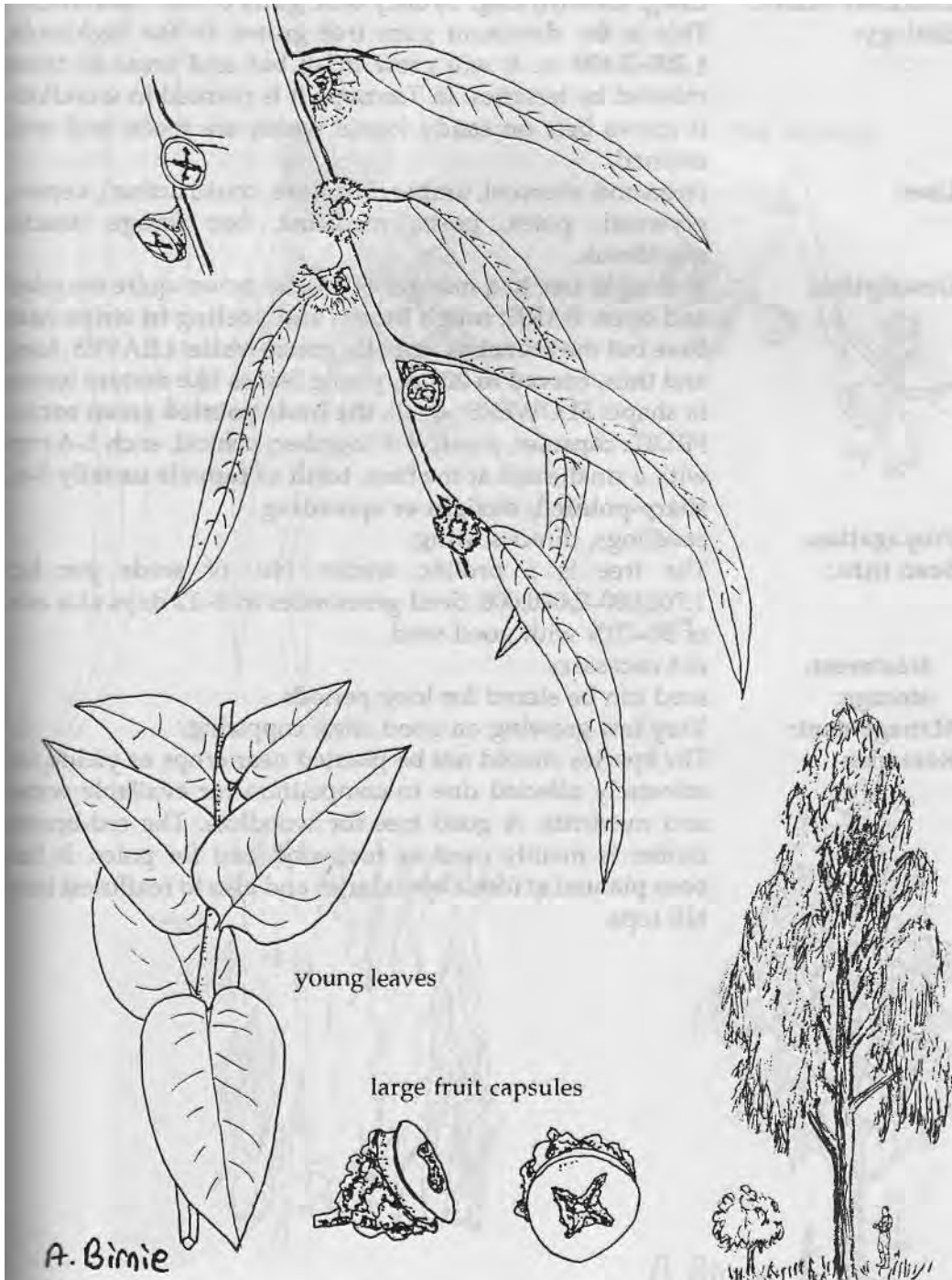


Eucalyptus globulus

Myrtaceae

South-West Australia

- Common names: Chag: mbanyi; Eng: Tasmanian blue gum; Swah: mkaratusi
- Ecology: Grows naturally in the cooler and wetter parts of **south-west** Australia. It prefers good-quality loams with adequate but not excessive moisture. The climatic range transitional and wet montane. Suitable for areas over **2,000** m above sea level.
- Uses: Firewood, charcoal, timber (heavy and light construction), poles, flooring, veneer, plywood, medicine, bee forage, windbreak, essential oils (young leaves).
- Description: A tall tree to 55 m, rather narrow, the crown rounded **and** open, the main stems straight. **BARK:** blue-grey, **smooth** peeling in long strips, rough at base. **LEAVES:** **young** leaves opposite, oval, blue-grey, without stalks and mature leaves deep blue-green, very long and thin to 30 cm, slightly curved, stalked, smelling of camphor if crushed, tip sharp. **FLOWERS:** buds grey-green wrinkled, 2.5 **cm**, usually one, rarely 2 or 3 white flowers to 4 cm **across** **FRUIT:** woody, half spheres, rough, 3 cm across, no **stalks**.
- Propagation: Seedlings, direct sowing.
- Seed info.: No. of seeds per kg: 75,000-100,000. Seeds germinate in 4-15 days, at a rate of 35-80% with good seed.
- treatment: not necessary.
- storage: seed can be stored for a long time.
- Management: Fast growing; coppicing.
- Remarks: Young leaves of this species have been used to produce a oil used in pharmaceutical products. The tree is very susceptible to attack by beetles (*Gonipterus scutellatus*). The wood is hard, heavy and strong, the oil making it termite resistant. Therefore it is often used for telegraph poles. It is believed to remove much water from the soil so is not recommended for hill-top conservation forests.



Eucalyptus saligna

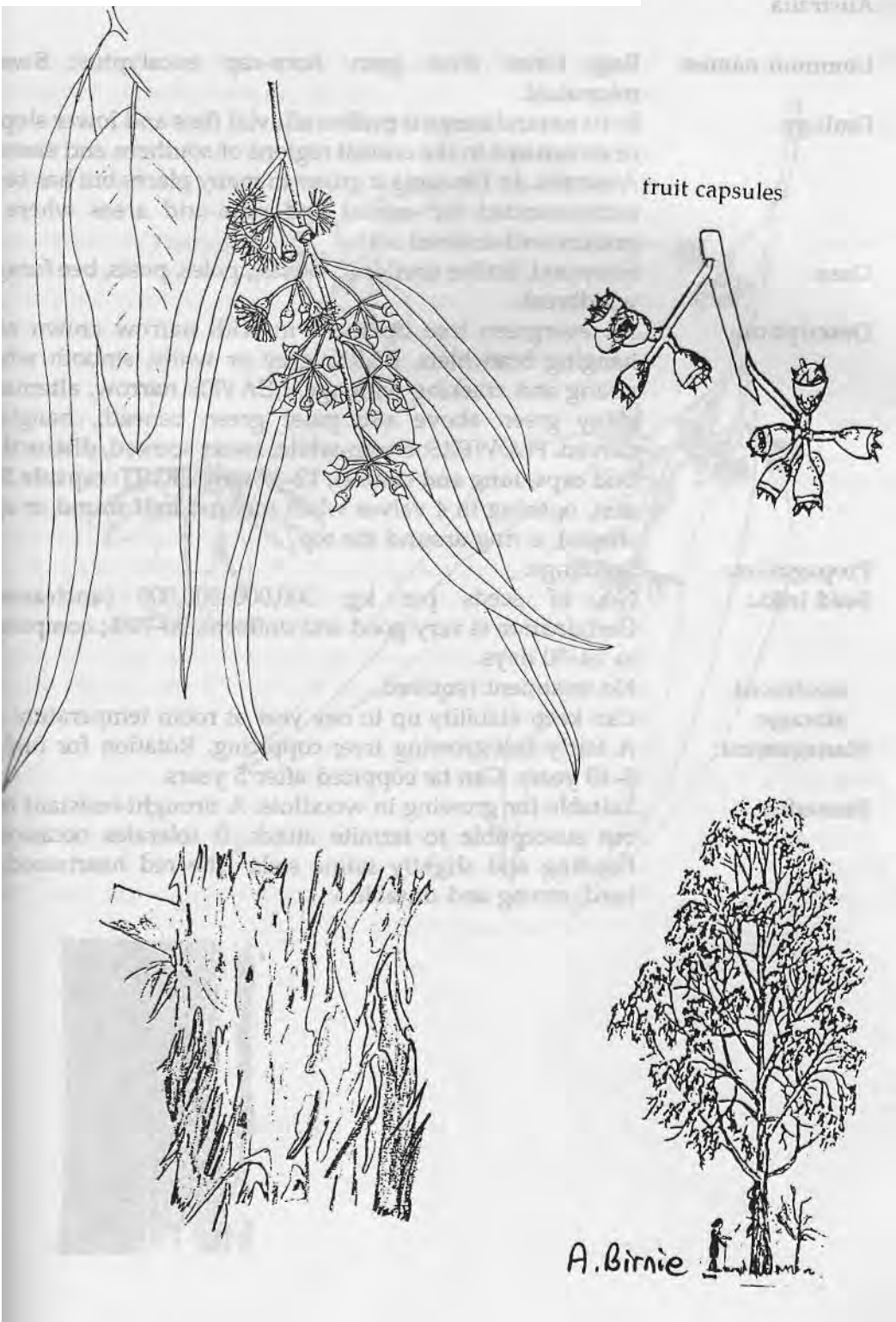
Myrtaceae

Coastal eastern Australia

- Common names:** Chag: mbanyi; **Eng:** Sydney blue gum; Swah: mkaratusi.
- Ecology:** This is the dominant gum tree grown in the highlands 1,200-2,400 m. It will grow in all but arid areas or **those** infested by termites. In Tanzania it is planted in woodlots. It grows best on sandy loams which are moist and well drained.
- Uses:** Firewood, charcoal, timber (furniture, construction), veneer, plywood, poles, posts, medicine, bee forage, **shade**, windbreak.
- Description:** A straight tree to a massive 60 m, the crown quite **rounded** and open. **BARK:** **rough** brown **and** peeling **in** strips **near** base but the branches **smooth**, green-white. **LEAVES:** **long and thin**, curved **to** 20 cm, young leaves like mature leaves in shape. **FLOWERS:** small, **the buds pointed** green cones
FRUIT: capsules, small, 4-8 together, conical, each 5-6 mm with a small stalk at the base, teeth of capsule usually 3-4, sharp-pointed, straight or spreading.
- Propagation:** Seedlings, direct sowing.
- Seed info.:** The tree is a prolific seeder. No. of seeds per kg 1,700,000-2,000,000. Seed germinates in 3-12 days at a **rate** of 30-70% with good seed.
- treatment:** not necessary.
- storage:** seed can be stored for long periods.
- Management:** Very fast growing on good sites; coppicing.
- Remarks:** The species should not be planted near crops as yields are adversely affected due to competition for available **water** and nutrients. A good tree for woodlots. The red-brown timber is mainly used as fuelwood and for poles. It has been planted at forest boundaries and also to reforest bare hill tops.

Eucalyptus saligna

Myrtaceae



Eucalyptus tereticornis

Myrtaceae

Australia

Common names: **Eng:** forest river gum, horn-cap eucalyptus; **Swah:** mkaratusi.

Ecology: In its natural range it prefers alluvial flats and lower slopes of mountains in the coastal regions of southern and eastern Australia. In Tanzania it grows in many places **but** has been recommended for coastal and semi-arid areas where **it** prefers well-drained soils.

Uses: Firewood, timber (building, boxes), poles, posts, bee forage, windbreak.

Description: An evergreen tree up to 30 m with narrow crown **and** hanging branchlets. **BARK:** grey or white, smooth **when** young and cracking with age. **LEAVES:** narrow, alternate, shiny green above and paler green beneath, hanging, curved. **FLOWERS:** cream-white, sweet scented, **distinctive bud caps, long and conical, 12-17 mm.** **FRUIT:** **capsule 5-8 mm**, opening in 4 valves when mature, **half round** or **egg** shaped, a ring around the top.

Propagation: Seedlings.

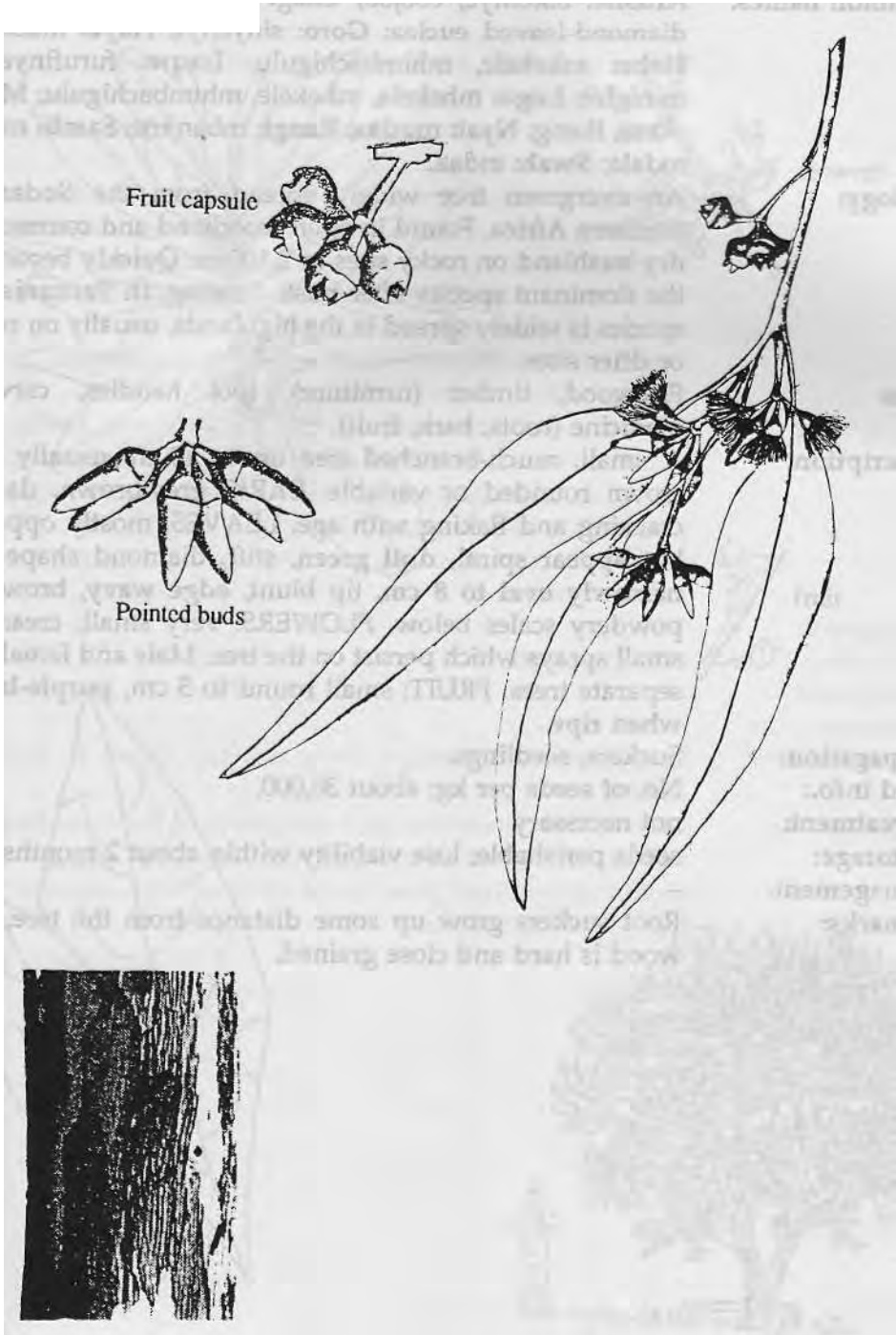
Seed info.: No. of seeds per kg: 300,000-500,000 (uncleaned); Germination is very good and uniform, 30-70%; completed in 14-30 days.

treatment: No treatment required.

storage: Can keep viability up to one year at room temperature.

Management: A fairly fast-growing tree; coppicing. Rotation for fuel is 8-10 years. Can be coppiced after 5 years.

Remarks: Suitable for, growing in woodlots. A drought-resistant **tree** but susceptible to termite attack. It tolerates occasional flooding and slightly saline soils. The red heartwood **is** hard, strong and durable.



Euclea divinorum

Ebenaceae

Indigenous

Common names: **Arusha:** olkoinye, osojoo; **Chag:** iwaruka, mkenye; **Eng:** diamond-leaved euclea; **Goro:** sinyanyi; **Haya:** musikizi; **Hehe:** mhekele, mhimbachigulu; **Iraqw:** furufinyanyi, minighit; **Lugu:** mhekela, mhekele, mhimbachigulu; **Meru:** ekeni, ikeng; **Nyat: madaa; Rangi:** mbanjiru; **Samb:** mdaa, mdala; **Swah:** mdaa.

Ecology: An evergreen tree widely spread from the Sudan to southern Africa. Found in open woodland and common in dry bushland on rocky sites to 2,100 m. Quickly becoming the dominant species after bush clearing. In Tanzania the species is widely spread in the highlands, usually on rocky or drier sites.

Uses: Firewood, timber (furniture), tool handles, carving medicine (roots, bark, fruit).

Description: A small, much-branched tree up to 10 m, usually less, crown rounded or variable. **BARK:** grey-brown, darker, cracking and flaking with age. **LEAVES:** mostly opposite but appear spiral, **dull green**, stiff, diamond shaped or **narrowly oval to 8 cm**, tip blunt, **edge wavy**, brownish powdery scales below. **FLOWERS:** very small, cream in small sprays which persist on the tree. Male and female on separate trees. **FRUIT:** small round to 5 cm, **purple-black when ripe**.

Propagation: Suckers, seedlings.

Seed info.: No. of seeds per kg: about 30,000.

treatment: not necessary

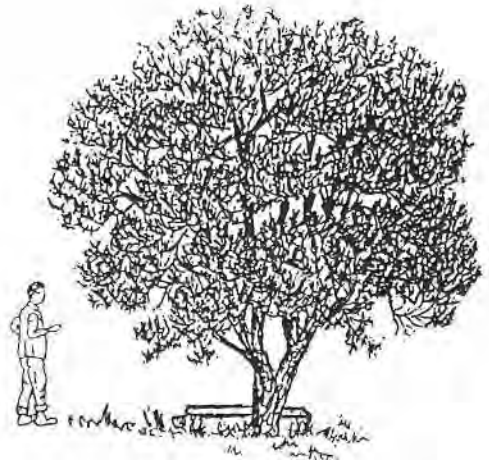
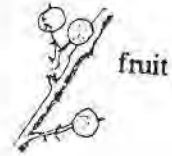
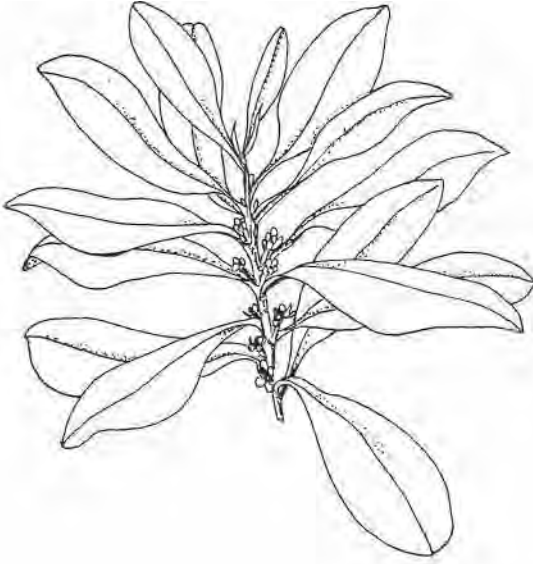
storage: seeds perishable; lose viability within about 2 months.

Management:

Remarks: Root suckers grow up some distance from the tree. The wood is hard and close grained.

Euclea divinorum

Ebenaceae



Euphorbia tirucalli

Euphorbiaceae

Indigenous

- Common names:** **Bond:** sapu; **Eng:** finger euphorbia; **Gogo:** manyala, manyara; **Goro:** mulughwai; **Hehe:** mgofu; **Iraqw:** manyari; **Lugu:** kigomvu; **Maasai:** ol aile, oloile; **Nyam:** manyala; **Nyat:** munyaa; **Rangi:** luwundu, mnyala; **Samb:** sapu; **Suku:** inala, mhunga shalo, munyala; **Swah:** mnyara, mwasi, utupa; **Zinza:** mangara, mnyara.
- Ecology:** A succulent shrub frequently planted as a *botna* fence in dry areas but also found as a tree. It may have come from India but is now widespread and naturalized throughout Africa. In Tanzania it is common in livestock-rearing areas (Arusha, Dodoma, Mwanza and Singida).
- Uses:** Firewood, medicine (young branches), fish poison (latex), live fence, boundary marker.
- Description:** A dense straight-stemmed tree to 6 m or more, **the branchlets are smooth green, cylindrical in dense masses.** LEAVES: small, present on young stems, soon dropping. FLOWERS: yellow-cream, small, in dense clusters. FRUIT: **three-part capsules, hard, purple-green,** less than 1 cm across.
- Propagation:** Cuttings.
- Seed info.:** Not important.
- treatment:**
- storage:**
- Management:** Fast growing; coppicing, trim and top prune to make a hedge.
- Remarks:** Latex is very poisonous and dangerous to the eyes. Human milk is said to be a remedy if the latex gets into the eyes. Medicine from the plant must be used with extreme care due to its high toxicity.



Fagaropsis angolensis

Rutaceae

Indigenous

- Common names:** **Arusha:** olmoirijoi; **Bara:** marambit; **Chag:** mfu, mtua; **Eng:** fagaropsis; **Iraqw:** garumo, mtongoti, taewi; **Maasai:** olmoljoi; **Samb:** mkunguni.
- Ecology:** Common in dry evergreen forest and at the edges of wetter rain forests, 1,200-2,000 m. In Tanzania it is found in Kilimanjaro, West Usambara, Arusha, Mbulu and Iringa.
- Uses:** Firewood, timber (furniture, flooring).
- Description:** Medium or large deciduous tree from 7 m, occasionally to 20 m, with spreading crown. Sometimes with buttresses. **BARK:** grey-brown, slightly corky, branchlets purple-brown, **hairy, dotted with pale lenticels.** **LEAVES:** compound, opposite on a **stalk to 30 cm without hairs**, with 2-4 pairs of ovate leaflets and one terminal leaflet, 4-9 cm long, **aromatic when crushed.** Lateral leaves unequal sided. **FLOWERS:** small, inconspicuous, green-yellow, produced **in heads or on branched flowering stalks up to 12 cm long** on the bare tree. Sepals white, hairy outside. Male and female flowers separate on the same tree. **FRUIT: rounded to 1 cm** across, pale green with dark raised gland dots, soft, **shiny purple when ripe.**
- Propagation:** Seedlings, root suckers.
- Seed info.:** No. of seeds per kg: 4,000-4,500. The germination is very good and fast.
- treatment:** not necessary
- storage:** can keep viability for only a short time (2 months) at room temperature.
- Management:** Fairly fast growing; coppicing.
- Remarks:** The timber is fine, grey, moderately hard but not durable. Heavily exploited and threatened in the West Usambara Mountains as the timber is highly valued. It is easy **to** saw, finishes well and can make beautiful furniture and panelling.



Faurea saligna

Proteaceae

Indigenous

Common names: **Arusha:** ol garian; **Chag:** mfuka, mudi; **Eng:** beachwood; **Fipa:** msega; **Hehe:** mhenyi, mwemba; **Iraqw:** behetoh; **Lugu:** mhenyi, mwemba; **Mako:** nsese, sese; **Mate:** mteteleka; **Nyiha:** sense; **Samb:** msisi, msize, msizi mgosi.

Ecology: A tall tree found in both low- and high-altitude forest as far north as Nigeria and the Sudan and south to southern Africa. It is common around forest edges of Mts. Kilimanjaro and Meru, the Usambaras and Mbulu.

Uses: Firewood, charcoal, timber (furniture, construction), poles, posts, bee forage, medicine (roots, bark), mulch, ornamental, windbreak, tannin (bark), dye (bark).

Description: A deciduous shrub or slender forest tree to 20 m with a dense crown. Bole 7-10 m, often twisted. It resembles a gum tree. **BARK:** almost black, rough with deep grooves. **LEAVES:** leathery, **shiny and drooping, long and narrow, to 12 cm**, tip pointed, edge wavy, often slightly curved, a short red stalk. **FLOWERS:** dense **silky spikes, cream-purple, honey scented and attracting bees**, calyx red and hairy. **FRUIT:** small nutlets, with silky white hairs, the reddish styles persist and appear as **woolly pinkish-white spikes**.

Propagation: Seedlings.

Seed info.: No. of seeds per kg: about 165,000.

treatment: fresh seed should be sown for best results,

storage: perishable; loses viability within a month.

Management: Slow growing.

Remarks: The species is often left standing in croplands. Wood is resistant to termites. Hard, yellow-brown wood with an attractive grain, valued for furniture and panelling.



Ficus sycomorus (F. gnaphalocarpa)

Moraceae

Indigenous

- Common names: Eng: sycamore fig; **Fiome:** kuyu; Fipa: kivuzi; Gogo: mkuyu; Hehe: njombe; Maasai: ol gngangboli, ol mangulai, ol nanboli; Nyam: mkuyu; Rangi: mkuyu; **Zara:** mkuju.
- Ecology: A fig tree widespread all over Africa. It is found in all regions of Tanzania near rivers or where the watertable is high, always left standing when riverine forest is cut down. It prefers rich well-drained soils and elevations of 0-2,000 m.
- Uses: Firewood, carving, food (fruit), medicine (milky latex), shade, mulch, ornamental, soil conservation, **soil** improvement, bee hives, ceremonial.
- Description: A large deciduous spreading tree to 25 m, sometimes **with** stem buttresses and the **base commonly spreading over the ground**. **BARK: distinctive yellow to cream-brown. smooth.** **LEAVES:** oval to **almost circular**, to 15 cm, upper surface **rough** to **touch**, margin wavy, roughly tocihed, base heart **shaped**, a hairy stalk to 3 cm. **FRUIT:** in **leaf** axils or in dense **clusters** on **main branches and trunk**, each rounded 2-4 cm, yellow-red when ripe, edible.
- Propagation: Cuttings strike readily, wildings.
- Seed info.: No. of seeds per kg: 800,000-1,000,000.
- treatment: not necessary
- storage: seeds should not be stored.
- Management: Fairly fast growing; pruning, lopping.
- Remarks: The fruits are eaten by livestock, birds and wild animal. They can be dried and have a high food value. The tree **can** be intercropped and managed to reduce shade. In Kilimanjaro and Arusha bananas are grown underneath. The wood is light, pale and easy to work.

Ficus sycomorus (F. gnaphalocarpa)

Moraceae



Ficus thonningii

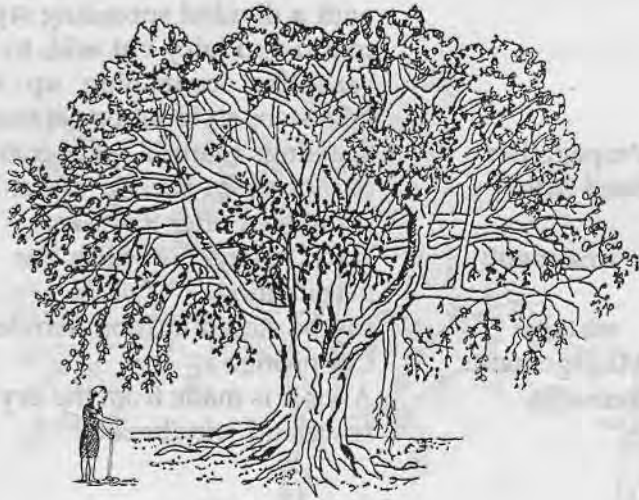
Moraceae

Indigenous

- Common names: Chag: mkuu; Eng: strangler fig; **Fiome**: tiita; **Gogo**: mlumba; Ha: mshasha, mtenza, mtoma mtenza, munyam-wonyu, Maasai: oreteti; Mako: ndola; **Ngoni**, mlandege, ndengo; Nyam: mlumba, mugumo, mla-ndaeje; **Nyir**: mugumo-wa-ntwike; Rangi: mumu-muzura; **Samb**: mvumo; Swah: mrumbapori.
- Ecology: Among the commonest figs in Tanzania. Widespread **in** Africa, often starting as an epiphyte on another tree, **then** buttressed or multi-stemmed from the growth of **aerial** roots. Widespread in upland forest, open grassland and riverine areas from 1,000-2,500 m. It is always left standing in cropland. Grows on a variety of soils.
- Uses: Medicine (bark), fodder, mulch, shade, ornamental, fibres glue, live fence, ceremonial.
- Description: A deciduous tree to 25 m. **BARK**: thin, **grey and smooth** often many **aerial stem roots**. **LEAVES**: very variable, oval to 12 cm, often smaller, **apex mostly rounded, base** rounded or tapering, shiny green, young leaves pale and hairy below **FRUIT**: in **axillary clusters** at **the** ends of **branches**, prominent on the bare tree, **round** to 1.5 cm, smooth or bumpy, **yellow or purple-red when ripe**. Two **small** leafy bracts **remain** at **the** base of **the** fig.
- Propagation: Large cuttings normally used.
- Seed info.: No. of seeds per kg: about 90,000.
- treatment: not necessary
- storage: seeds should not be stored.
- Management: Fast growing from cuttings and better than seed.
- Remarks: The fruit is eaten by small mammals and birds—thus dispersing the seed. The species should be protected **from** browsing when young. Usually not planted near buildings as the roots may crack foundations. Like all figs the extensive root system penetrates into the smallest crack **in** the soil or buildings where water might accumulate. Fig roots probably have a stronger suction force to draw **in** water than other trees—a reason why parasitic plants do not grow on fig trees.



young epiphytic seedling

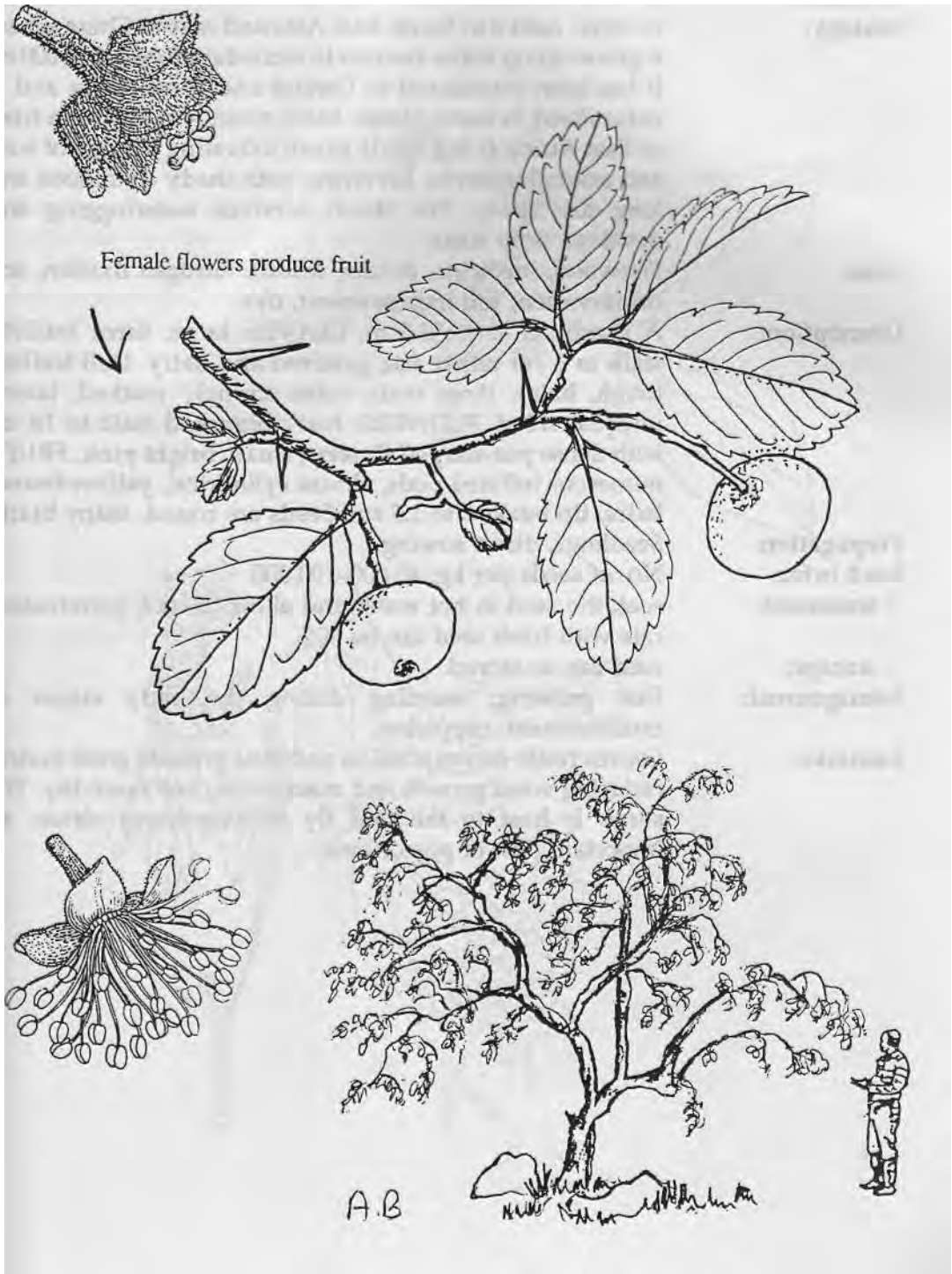


Flacourtia indica

Flacourtiaceae

Indigenous

- Common names:** Bende: msunga; Chag: msambuchi; Fipa: mwanga; Goro: tsapenai; Hehe: mgola; Iraqw: sokhaimo; Lugu: mgora; Mate: mbilipili, mngfunga; Mwera: mtawa; Nyam: mpuguswa, msingila; Nyat: musingisa; Rangi: mtundukarya; Suku: mpuguswa; Zara: mtawa; Zigua: mgola; Zinza: msungusu.
- Ecology:** Widespread in tropical Africa, this tree occurs in woodland from sea level to about 1,600 m. Common in Brachystegia woodland, it can grow in a variety of climates and soils but prefers sandy soil, a high watertable and a lot of sunlight
- Uses:** Firewood, timber, farm tools, fodder (leaves), food (fruit), medicine (leaves, bark, roots), live fence.
- Description:** A deciduous shrub or tree usually 3-5 m in height, but sometimes reaching 10 m. The trunk may be very spiny with characteristic branched masses. **BARK:** usually pale grey, powdery yellow at first, rather smooth, but may become brown-dark grey and flaking, revealing pale orange patches, the branches unarmed or armed with large spines. Leaves and branches with or without dense soft short hairs. **LEAVES:** variable in size, oval to round, to 12 cm, edge toothed, becoming leathery, 4-7 pairs veins clear on both surfaces, stalk to 2 cm. Leaves turn brilliant red-purple before they fall. **FLOWERS:** small, cream, fragrant. Male flowers with very many yellow stamens, female flowers with a divided spreading style. **FRUIT:** Red-purple-black, round and juicy but acid, to 2.5 cm across, hanging on the bare tree, containing up to 10 seeds, hard and flat. Persistent style set one-sided on fruit.
- Propagation:** Seedlings (natural regeneration).
- Seed info.:** No. of seeds per kg: about 200,000. Germination is slow, completed after 9 weeks.
- treatment:** crack, pierce or nick the hard seed coat to improve germination.
- storage:** can be stored at room temperature up to 6 months.
- Management:** Coppicing.
- Remarks:** A tonic is made from the dry leaves. It can be used as a live fence and windbreak.



Flemingia macrophylla (F. congesta)

Papilionoideae

South-East Asia

Common names:

Ecology:

A shrub native to South-East Asia and east to China where it grows along water courses in secondary forest, 0-2,000 m. It has been introduced to Central and West Africa and is naturalized in some places. More recently it has been tried in East Africa. It is a hardy plant, tolerating a range of soils and rainfall patterns, surviving both shady conditions and long dry spells. The shrub survives waterlogging and develops deep roots.

Uses:

Firewood, medicine, fodder, mulch, nitrogen fixation, soil conservation, soil improvement, dye.

Description:

A shrub, to about 2.5 m. LEAVES: large, three leaflets, stalk to 3 cm rather flat, grooved and hairy. Dull leaflets, tough, hairy, three main veins strongly marked, lateral unequal sided. FLOWERS: hairy branched stalk to 18 cm with dense pea-shaped flowers, small, bright pink. FRUIT: numerous inflated pods, almost cylindrical, yellow-brown hairs, tip beaked to 1.5 cm. Seeds are round, shiny black.

Propagation:

Seedlings, direct sowing.

Seed info.:

No. of seeds per kg: 45,000-100,000.

treatment:

soak the seed in hot water and allow to cool; germination rate with fresh seed can be 50%.

storage:

seed can be stored.

Management:

Fast growing; weeding during the early stages of establishment, coppicing.

Remarks:

Leaves resist decomposition and thus provide good mulch, reducing weed growth and maintaining soil humidity. The shrub is host to the pod fly *Melanogromyza obtusa*, an important pest of pigeon pea.

Flemingia macrophylla (F. congesta)

Papilionoideae

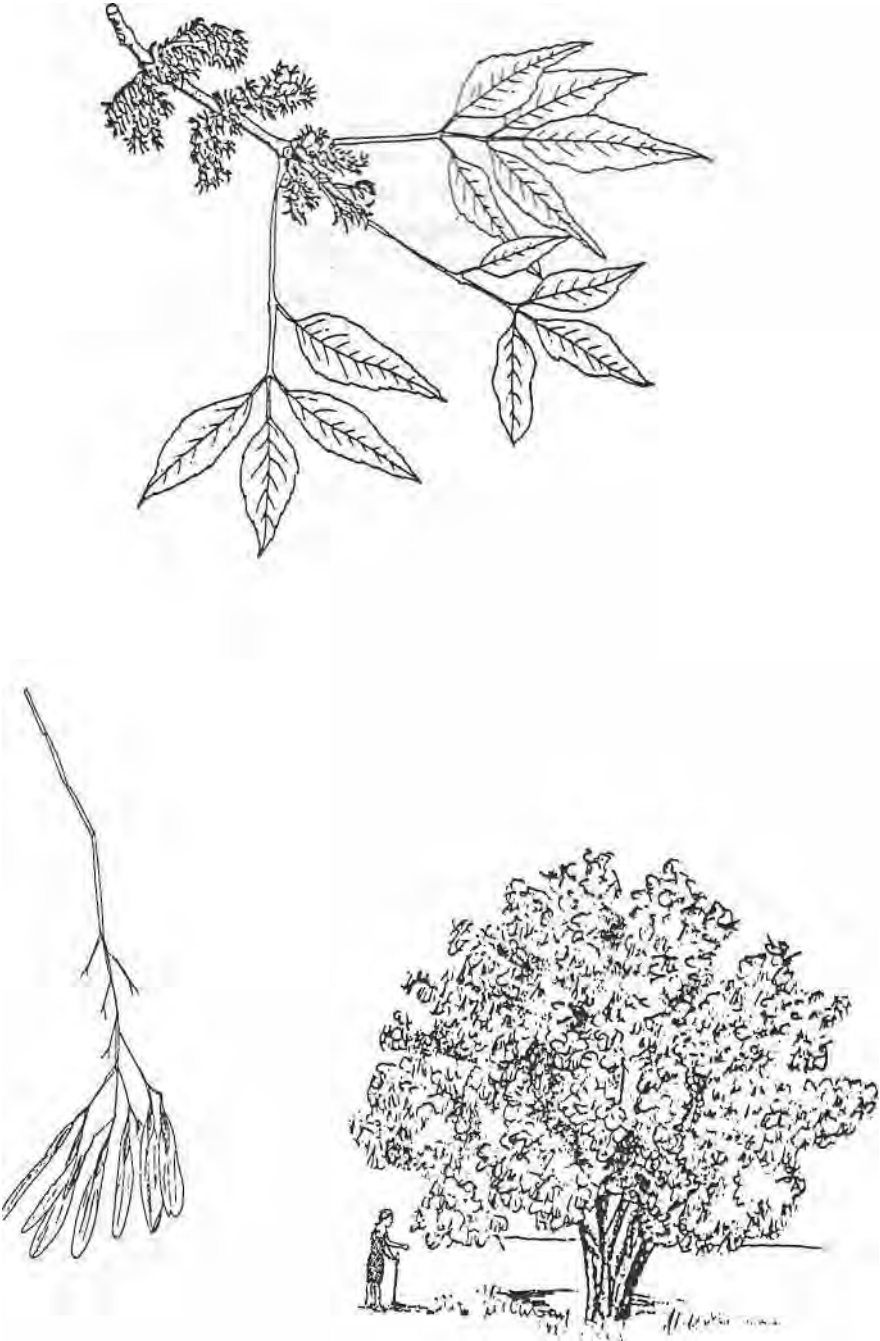


Fraxinus pennsylvanica

Oleaceae

North America

- Common names: Eng: Mexican ash.
- Ecology: Ash trees are usually native to temperate zones but a few extend to the tropics. This species is fairly widely planted in Tanzania at high altitudes, 1,500-2,800 m.
- Uses: Firewood, timber, posts, fodder (leaves), bee forage, shade, ornamental, windbreak.
- Description: A spreading, shapely, deciduous tree up to 15 m. BARK: grey, darker and cracking with age. LEAVES: compound, opposite, to 30 cm, **crowded at the ends of branches, leaflets spear shaped**, up to 10 cm long, edge irregularly toothed. **Dark brown leaf buds** conspicuous before they open and new lime-green leaves appear. FLOWERS: without petals, **male stamens purple-brown**, female separate and very small, both in terminal sprays. FRUIT: single winged **and up to 5 cm on thin stalks**, hanging a long time in **clusters on the tree**.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 26,000-28,000.
- treatment: soak in cold water for 12 hours.
- storage: can retain viability up to 6 months at room temperature.
- Management:
- Remarks: In some areas of Tanzania this tree has been planted as a shade tree.

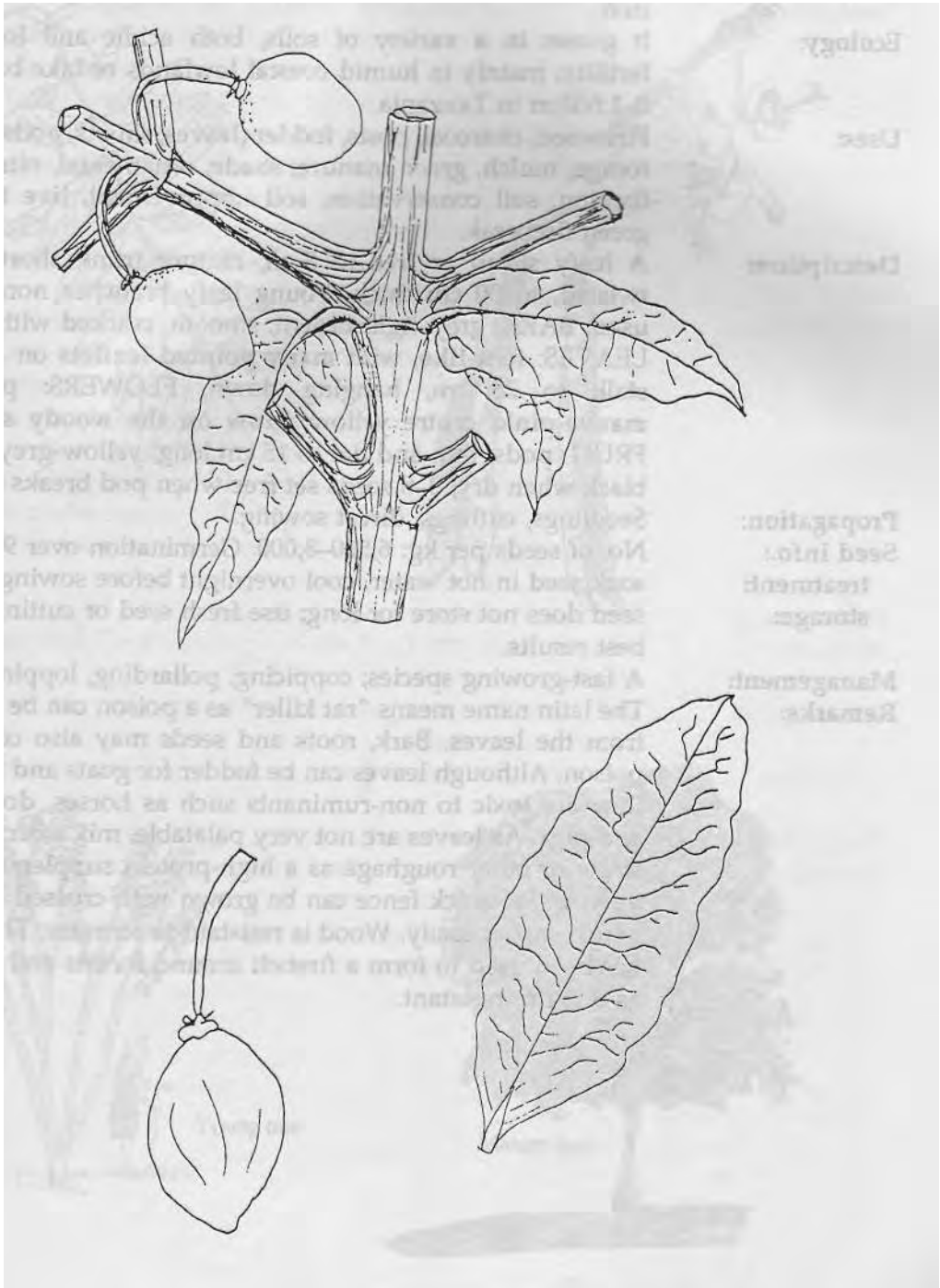


Garcinia livingstonei

Guttiferae

Indigenous

- Common names:** **Hehe:** mpipete; **Nyam:** kanala; **Swah:** mpekechu, mutumbi.
- Ecology:** This tree is widespread in riverine forest and in open woodland in low-altitude tropical Africa, 0-1,800 m; often under larger trees.
- Uses:** Food (fruit), medicine (leaves), utensils (twigs), soil conservation, fodder.
- Description:** A distinctive evergreen tree or shrub, 2-10 m, with a short bole. Garcinia bark exudes drops of yellow to red latex when damaged. **Tough erect branches** producing a heavy conical crown. **BARK:** dark grey-black, ridged. **LEAVES:** stiff and leathery **in pairs or threes**, 4–14 cm, edge usually wavy, **the veins irregular and raised on shiny upper surface**. **FLOWERS:** cream-green, in small clusters, a sweetish smell, small green buds sticky with resin. **FRUIT:** **yellow-orange oval, 2.5 cm** diameter, very many, edible, acid-sweet, up to 5 seeds.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: about 500. Germination is good and fast.
- treatment:** not necessary.
- storage:** seeds should not be stored; they lose viability within a few weeks.
- Management:** Fairly fast growing.
- Remarks:** Trees in this family have yellow sap and resin or oil glands. Leaf extracts have shown some antibiotic properties. Wild animals browse the leaves. Twigs are used in some areas to stir porridge.



Gliricidia sepium

Papilionoideae

Central America, Mexico

Common names: **Eng:** Mexican lilac, mother of cocoa, quick stick, tree of iron.

Ecology: It grows in a variety of soils, both acidic and low in fertility, mainly in humid coastal lowlands or lake basins, 0-1,600 m in Tanzania.

Uses: Firewood, charcoal, posts, fodder (leaves, shoots, pods), bee forage, mulch, green manure, shade, ornamental, nitrogen fixation, soil conservation, soil improvement, live fence, green firebreak.

Description: A leafy shrub or tree to 8 m, mature trunk short and twisted, to 30 cm thick. Young leafy branches normally used. **BARK:** grey-light brown, smooth, cracked with age. **LEAVES:** **fern-like**, with **many pointed leaflets** on a leaf stalk to 25 cm, hanging down. **FLOWERS:** pretty, **mauve-pink**, centre yellow, **grow on the woody stems**. **FRUIT:** pods, thin and flat to 15 cm long, yellow-grey then black when dry; 3-8 seeds set free when pod breaks open.

Propagation: Seedlings, cuttings, direct sowing.

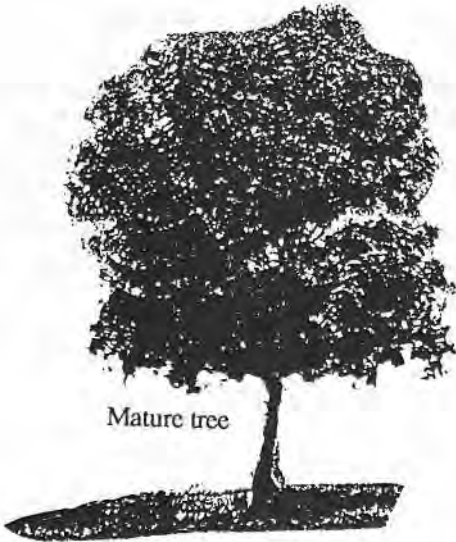
Seed info.: No. of seeds per kg: 6,500-8,000. Germination over 90%.

treatment: soak seed in hot water, cool overnight before sowing,

storage: seed does not store for long; use fresh seed or cuttings for best results.

Management: A fast-growing species; coppicing, pollarding, lopping.

Remarks: The latin name means "rat killer" as a poison can be made from the leaves. Bark, roots and seeds may also contain poison. Although leaves can be fodder for goats and cattle, they are toxic to non-ruminants such as horses, donkeys and pigs. As leaves are not very palatable, mix with grass, straw or other roughage as a high-protein supplement. A very useful quick fence can be grown with crossed stakes which sprout easily. Wood is resistant to termites. The tree has been used to form a firebelt around forests and farms as it is fire resistant.

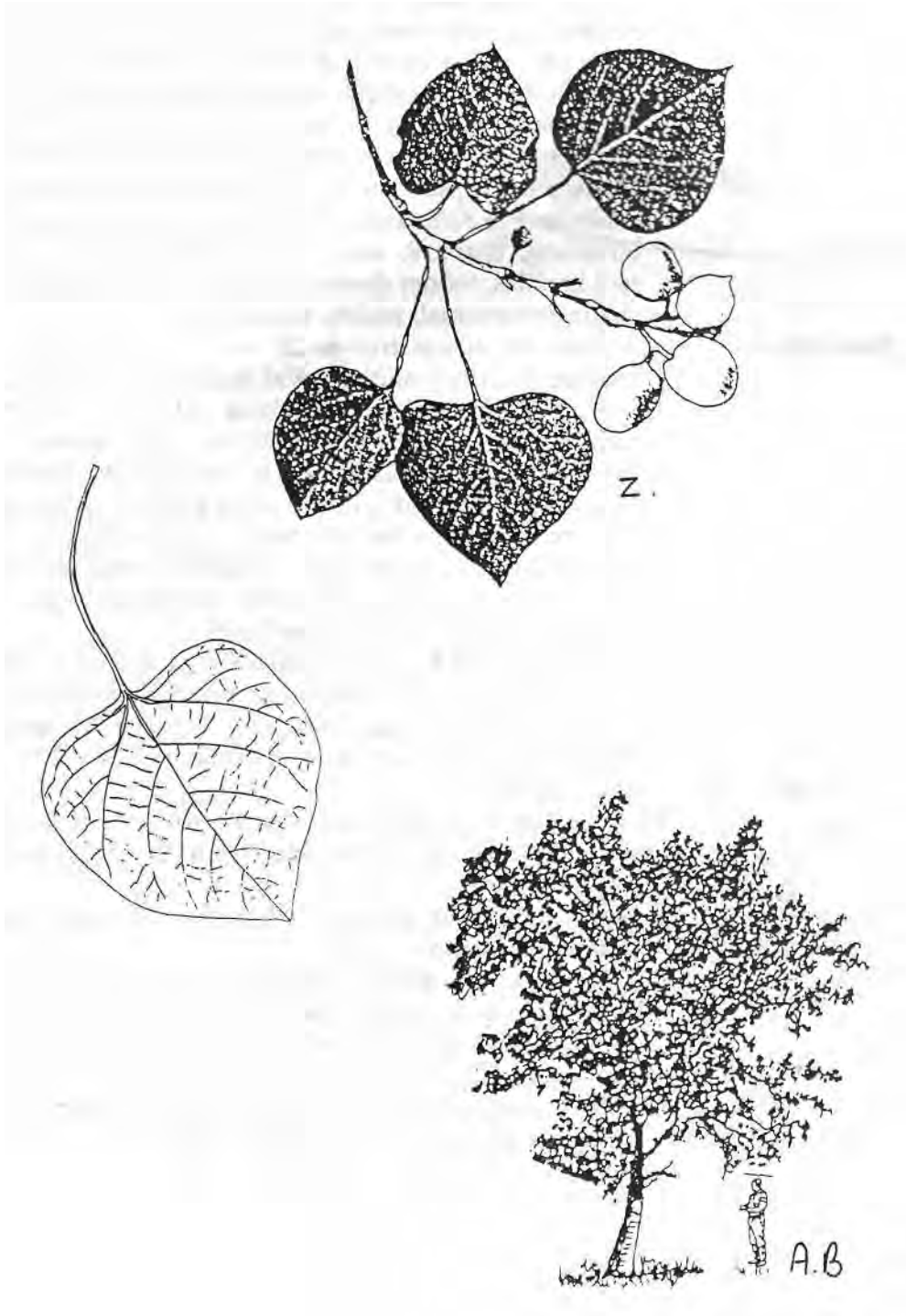


Gmelina arborea

Vetbenaceae

South Asia

- Common names:** **Eng:** gmelina, white teak.
- Ecology:** Native to the lowlands of India, Burma and Sri Lanka. A useful tree planted worldwide, 0-1,200 m, but relatively new to Tanzania. It prefers hot, humid areas with fertile well-drained loams. Avoid dry poor sands. Its climatic range is moist plateau, wet tropical and dry plateau. In Tanzania the species has performed well in Rau forest, Moshi and Geita Districts.
- Uses:** Firewood, charcoal, timber (furniture), veneer/plywood, poles, tools, fodder (leaves, fruit), bee forage, shade, ornamental, windbreak.
- Description:** A deciduous tree which may reach 26 m, usually much smaller, a fairly open crown, the base often multi-branched, **BARK:** Pale cream when young, grey-brown with age, corky, rough. **LEAVES:** large, **tip pointed, heart shaped, shiny above but pale and softly hairy below**, on stalks to 12 cm. **FLOWERS:** attractive **peach-yellow, bell shaped** abundant nectar attracts bees. **FRUIT:** **orange when ripe, 2.5 cm long** with 1-4 seeds inside. The fruity smell attracts bats.
- Propagation:** Seedlings, direct sowing, cuttings.
- Seed info.:** No. of seeds per kg: 1,400. Germination 40-80% in 20-50 days.
- treatment:** not necessary but soak in cold water for 24 hours to improve germination.
- storage:** seed can be stored for a year before it starts to lose viability.
- Management:** Fast growing; pruning, lopping, coppicing.
- Remarks:** Protect young trees from livestock. Young trees do not compete well with weeds, but once established **compete** with crops and suppress undergrowth and thus should **not** be grown near cultivated land. The soft grey-white timber is light but strong.

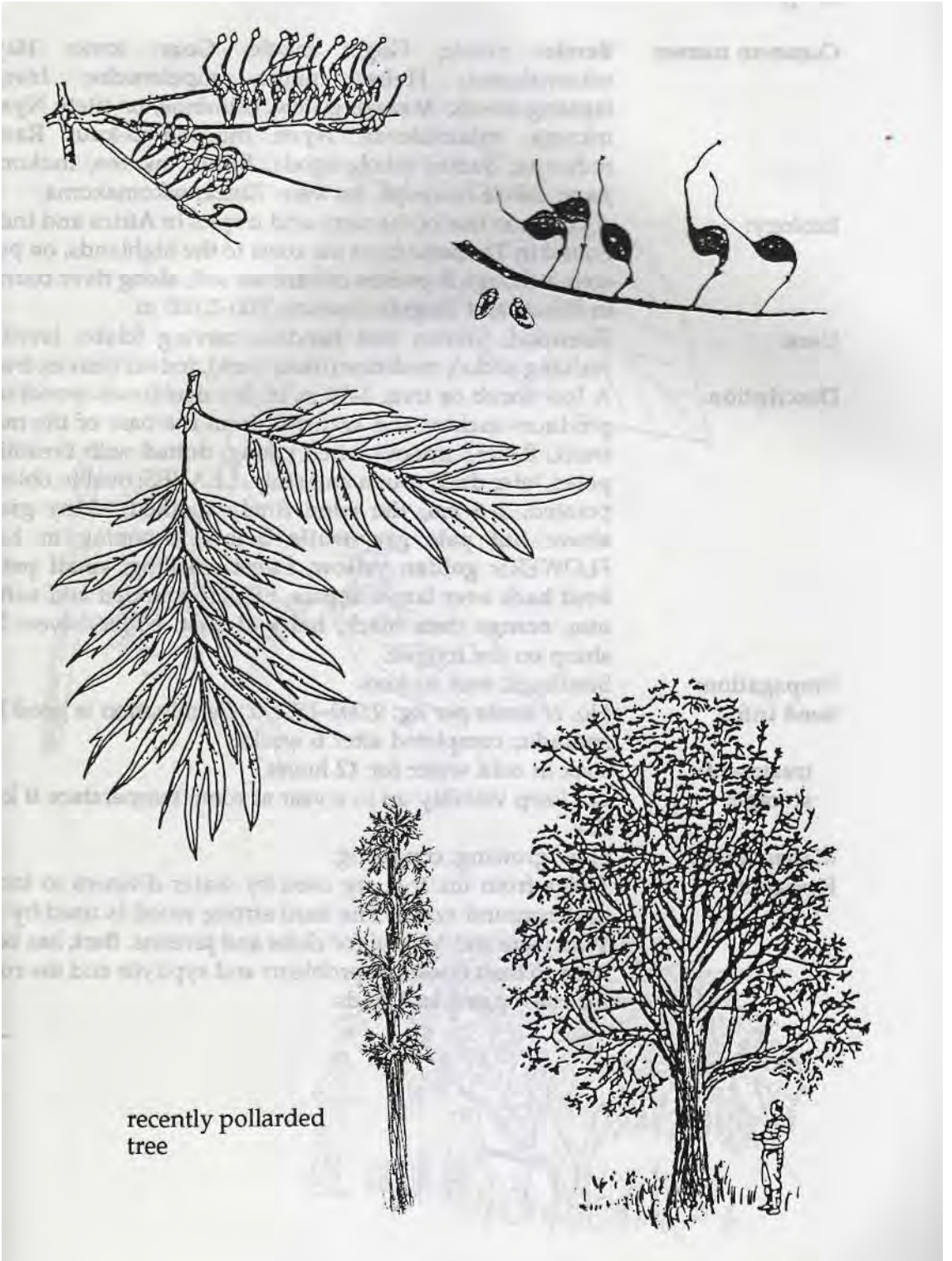


Grevillea robusta

Proteaceae

Southern and eastern Australia

- Common names: Chag: meresi; Eng: grevillea, silky oak; Swah: mgrivea.
- Ecology: Naturally growing in the forest areas of southern and eastern Australia from near sea level to over 1,000 m. It will grow on a wide variety of soils except heavy clay. It can grow well in low-rainfall areas as well as montane zones. In Tanzania it has been planted as a nurse tree for *Olea capensis* in the Usa forest project and as a commercial tree in Meru forest plantations. It has also been used as a coffee shade tree in Kilimanjaro, Arusha and Mbeya regions.
- Uses: Firewood, charcoal, timber (furniture), veneer/plywood, tool handles, fodder (leaves), bee forage, soil conservation, shade, ornamental, mulch, windbreak.
- Description: A semi-deciduous tree to 20 m with a straight trunk, angular branches and an oval leafy crown. BARK: dark grey, rough, vertically grooved. LEAVES: distinctive, fern-like, very divided, leathery, pale green above, silver-grey below. Fallen leaves are slow to decompose. FLOWERS: very many, in one-sided golden-orange spikes, with much nectar which attracts bees and sunbirds. FRUIT: capsules, about 1 cm with a slender beak, green then yellow-brown, splitting to set free 2 winged seeds.
- Propagation: Wildings commonly used, seedlings.
- Seed info.: No. of seeds per kg: 70,000-120,000. The species is a prolific seeder but the seed is difficult to collect. There are only 2-3 days between seed maturity and dispersal by wind and only mature seeds are useful. Germination rate 30%-90%.
- treatment: not necessary.
- storage: mature seed can be stored for up to three months. The storage period can be extended up to 2 years if seeds are refrigerated.
- Management: Moderate to fast growing; pollarding, lopping, pruning. Young trees coppice well.
- Remarks: This tree is important for farmers as a general utility timber and dry season fodder. Relatively easy to establish and manage. When grown with food crops, branches are pruned and pollarded and lateral roots may also be pruned to reduce competition with crops. The hard timber has an attractive grain—the colour and silky surface rather like true oak (*Quercus*).



recently pollarded
tree

Indigenous

Common names: Bende: mkole; Gogo: mkole; Goro: lomo; Haya: mkomakoma; Hehe: mkole, mpelemehe; Iraqw: lagaang-aawak; Maasai: esitete, osiminde, os siteti; **Nyam:** mkoma, mkomalendi; Nyat: musuna-nu-kuu; **Rangi:** mduwau; Samb: mkole-ngoda; **Suku:** mkoma, mukoma; Zara: mkole mweupe, mswere; Zinza: mkomakoma.

Ecology: A common tree of the semi-arid tropics in Africa and India. Found in Tanzania from the coast to the highlands, on **poor** soils although it prefers calcareous soil, along river courses in Babati and Singida districts, 800-2,000 m.

Uses: Firewood, timber, tool handles, carving (clubs, javelins, walking sticks), medicine (roots, bark), fodder (leaves, fruit).

Description: A low shrub or tree, 2-10 m in dry deciduous woodland, •produces suckers and branches from the base of the **main** trunk. **BARK:** smooth when young, dotted with breathing pores, later dark, rough and scaly. **LEAVES:** oval to oblong, pointed, 1-8 **cm, the edge finely toothed, shiny green** above but pale grey-white **below**, drooping in **heat**. **FLOWERS:** **golden yellow**, sweet smelling, **small petals** bent back **over** larger sepals. **FRUIT:** rounded and soft 5 **mm**, orange then black, hairy at first, edible, sweet **but** sharp on the tongue.

Seedlings, root suckers.

No. of seeds per kg: 9,000-15,000. Germination is good **but** sporadic; completed after 6 weeks.

soak in cold water for 12 hours.

can keep viability up to a year at room temperature if **kept** dry.

Slow growing; coppicing.

Twigs from the tree are used by water diviners to **locate** underground water. The hard strong wood is used by **the** Waarusha and Maasai for clubs and javelins. Bark has **been** used to treat intestinal problems and syphylis and the roots for chest pains and colds.

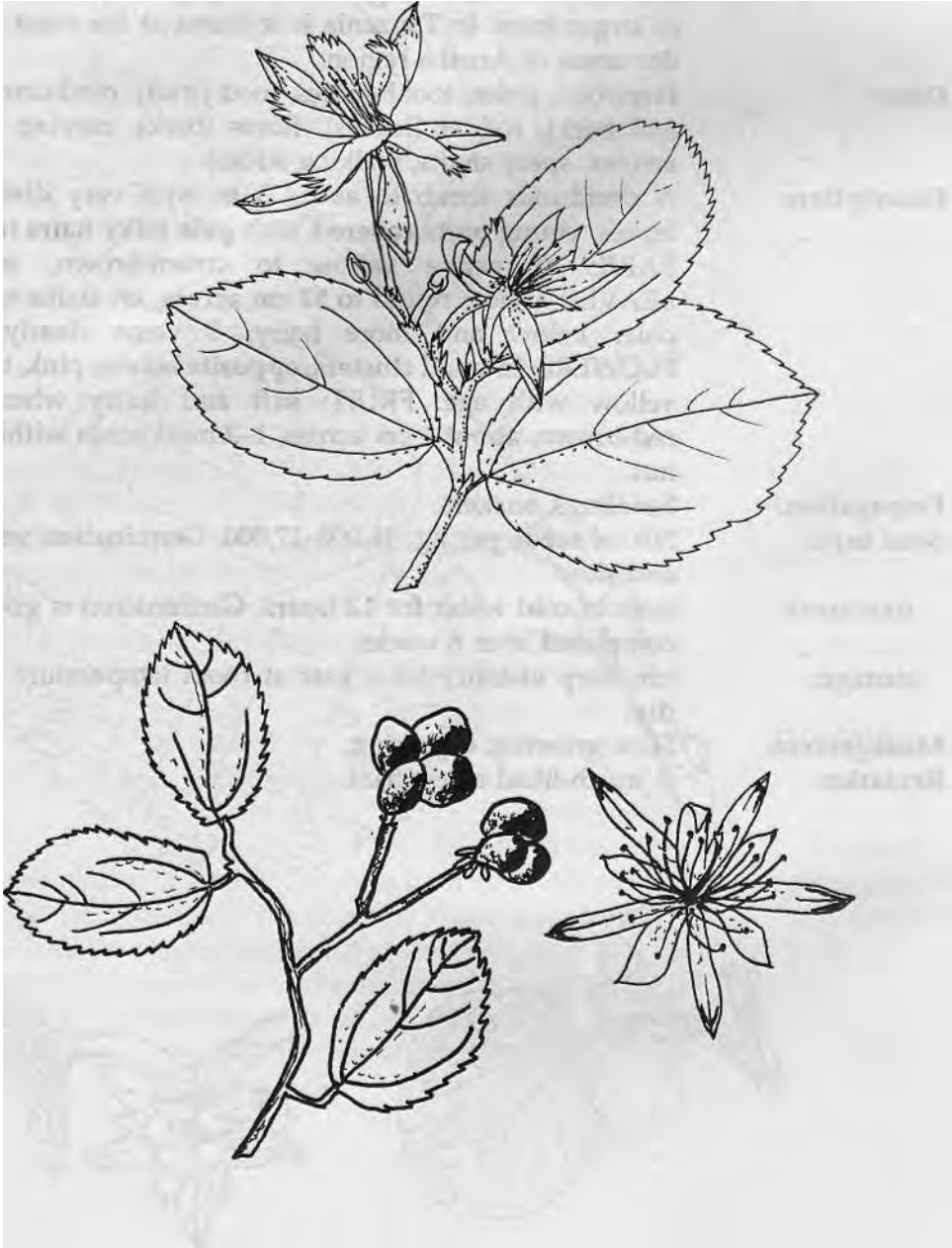


Grewia similis

Tiliaceae

Indigenous

- Common names: Bond: mnangu; Goro: saski; Hehe: mpelemehe; Iraqw: furudou, mgombaryandi, saski; Nyam: mkomabubu; Nyat: mukhantokhanto; Nyir: mukuma; Rangi: mnangu; Samb: mnangu; Swah: mkole; Zara: mkole mweupe.
- Ecology: Widespread along the coast and in Acacia woodlands and dry montane forests. In Tanzania it is common in the Usambara Mountains, in coastal areas, Mbulu, Iringa and Njombe.
- Uses: Firewood, poles, utensils (storage pots), food (leaves, fruit), medicine (bark), fodder (leaves).
- Description: A shrub, 2-3 m, sometimes a climber. BARK: grey or grey-brown, smooth at first, becoming rough and flaking with age; fibrous. LEAVES: shiny dark green above, hairy below, oval to rounded, about 5 cm long, often smaller, tip rounded or notched, base rounded, not one-sided, 3 *clear* veins from the base, edge finely toothed. FLOWERS: bright mauve or pink, sometimes white. Produced in terminal shoots or between the leaf and branchlet, 3-6 together, star shaped, 5 sepals pointed and mauve inside, as long or longer than petals. FRUIT: small fleshy berries. bright red or orange when ripe, deeply 4-lobed, each 6 mm across.
- Propagation: Seedlings, suckers.
- Seed info.: No. of seeds per kg: 10,000-15,000. Germination is good but takes a long time (6 weeks),
- treatment: soak in cold water for 12 hours.
- storage: can keep viability for a year at room temperature if kept dry.
- Management: Slow growing; coppicing.
- Remarks: Potential for use along contour strips and on slopes Pounded leaves are used as a dry-season vegetable in West Usambara. The sticky substance under the bark has been used as a cure for sores.



Grewia villosa

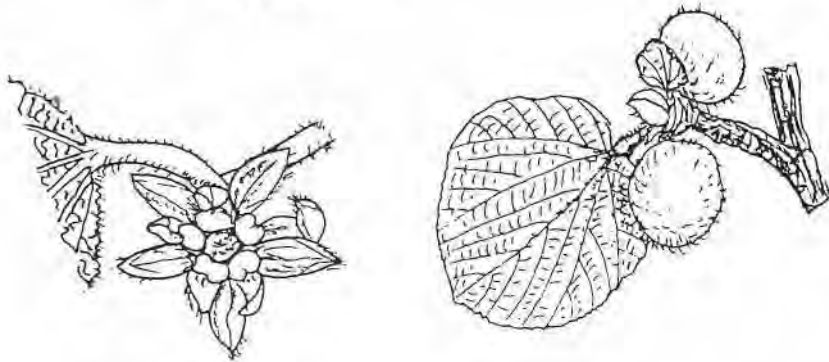
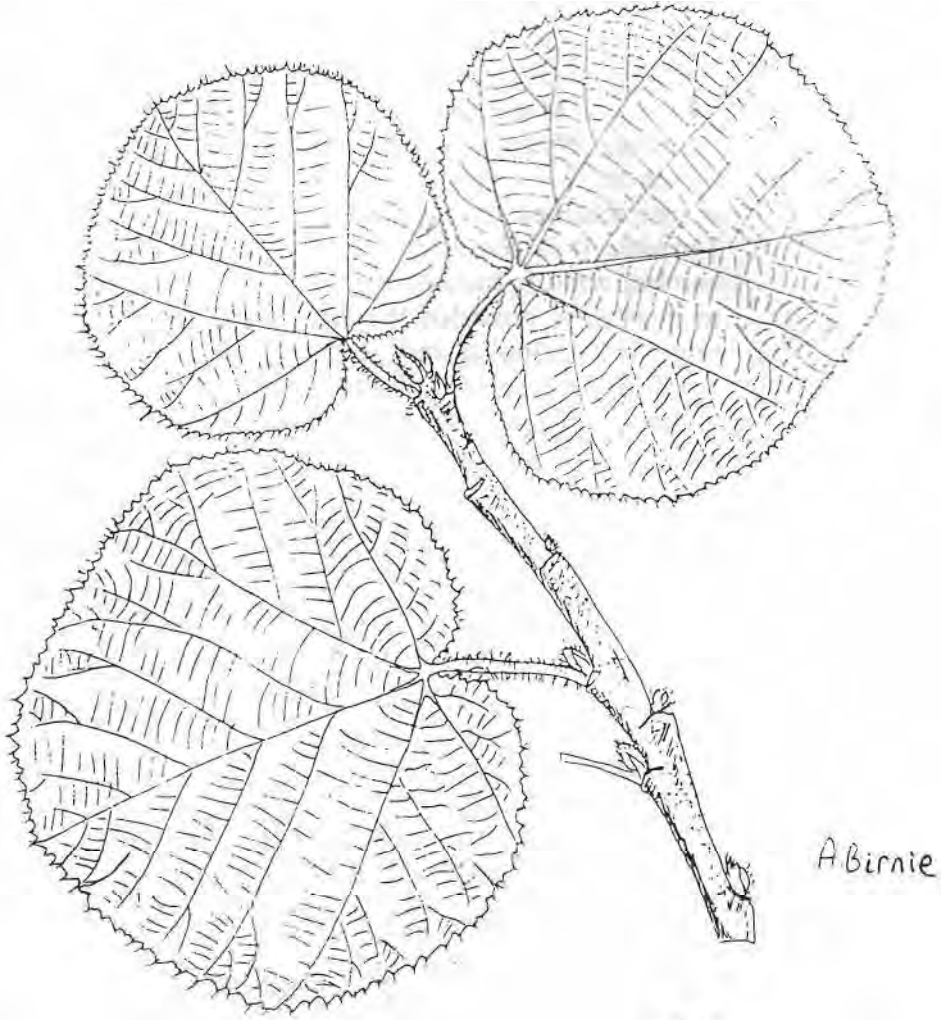
Tiliaceae

Indigenous

- Common names: Arusha: olmalungai; **Fiome**: lomo; **Iraqw. amu**; **Mbug**: motoo; Nyat: mumpembe.
- Ecology: A shrub of the arid areas in Africa and India, often on river banks liable to flooding, or on stony ground, in the shade of larger trees. In Tanzania it is found at the coast and in dry areas of Arusha region.
- Uses: Firewood, poles, tool handles, food (fruit), medicine (roots and bark), fodder (leaves), fibres (bark), carving (bows, arrows, spear shafts, walking sticks).
- Description: A deciduous shrub to about .3 m with very distinctive leaves, **young parts covered with pale silky hairs** (*villosa*). **BARK**: distinctive yellow to cream-brown, smooth. **LEAVES**: **almost round to 12 cm across**, on stalks to 4 cm. paler below and more hairy, 5 veins clearly seen. **FLOWERS**: **in small clusters, opposite leaves**, pink, **turning yellow** with age. **FRUIT**: **soft and hairy** when ripe, **red-brown, about 1 cm** across, 1-2 hard seeds within each nut.
- Propagation: Seedlings, suckers.
- Seed info.: No. of seeds per kg: 16,000-17,000. Germination very **low** and slow.
- treatment: soak in cold water for 12 hours. Germination is good **and** completed after 6 weeks.
- storage: can keep viability for a year at room temperature if **kept** dry.
- Management: Slow growing; coppicing.
- Remarks: A much-liked sweet fruit.

Grewia villosa

Tiliaceae



Hagenia abyssinica (H. anthelmintica)

Rosaceae

Indigenous

Common names: Arusha: alchani-lengai, lengijabe, ol kijabe; Eng: hagenia; Bena: mfoono; Chag: ihanga, mlaagi, mlanga, mwalanga, mwanga; Hehe: mdobole; Maasai: alchani-lengai, ngivavi songejaye; Meru: mlanga; Nyak: mtulanya, mturunga. nturunga; Nyiha: mkumburu, mturunga; Samb: luziluzi, mrosirosi.

Ecology: A tree confined to East Africa extending into Ethiopia. In Tanzania it is common in the mist belt, often above the bamboo zone, in mountain areas. Reported to be indifferent to most soils provided they are well drained. Its climatic range is transitional and wet montane, 2,000-3,000 m, but it will grow at lower altitudes.

Uses: Firewood, timber (furniture, flooring, general purpose), carving, medicine (bark, roots, flowers), mulch, ornamental, soil conservation.

Description: A tree to 20 m, the crown leafy and rounded, usually with thick branches. BARK: red-brown, flaking irregularly, branchlets covered in silky brown hairs and ringed with leaf scars. LEAVES: compound to 40 cm in large terminal tufts, leaflets bright green, silvery hairs below, red and sticky when young, leaf edge toothed and fringed with hairs, stalk winged, hairy. FLOWERS: large attractive masses to 60 cm, female heads pink-red, male heads more feathery, orange-white. Male and female trees. FRUIT: small, dry, one-sided.

Propagation: Seedlings, wildings.

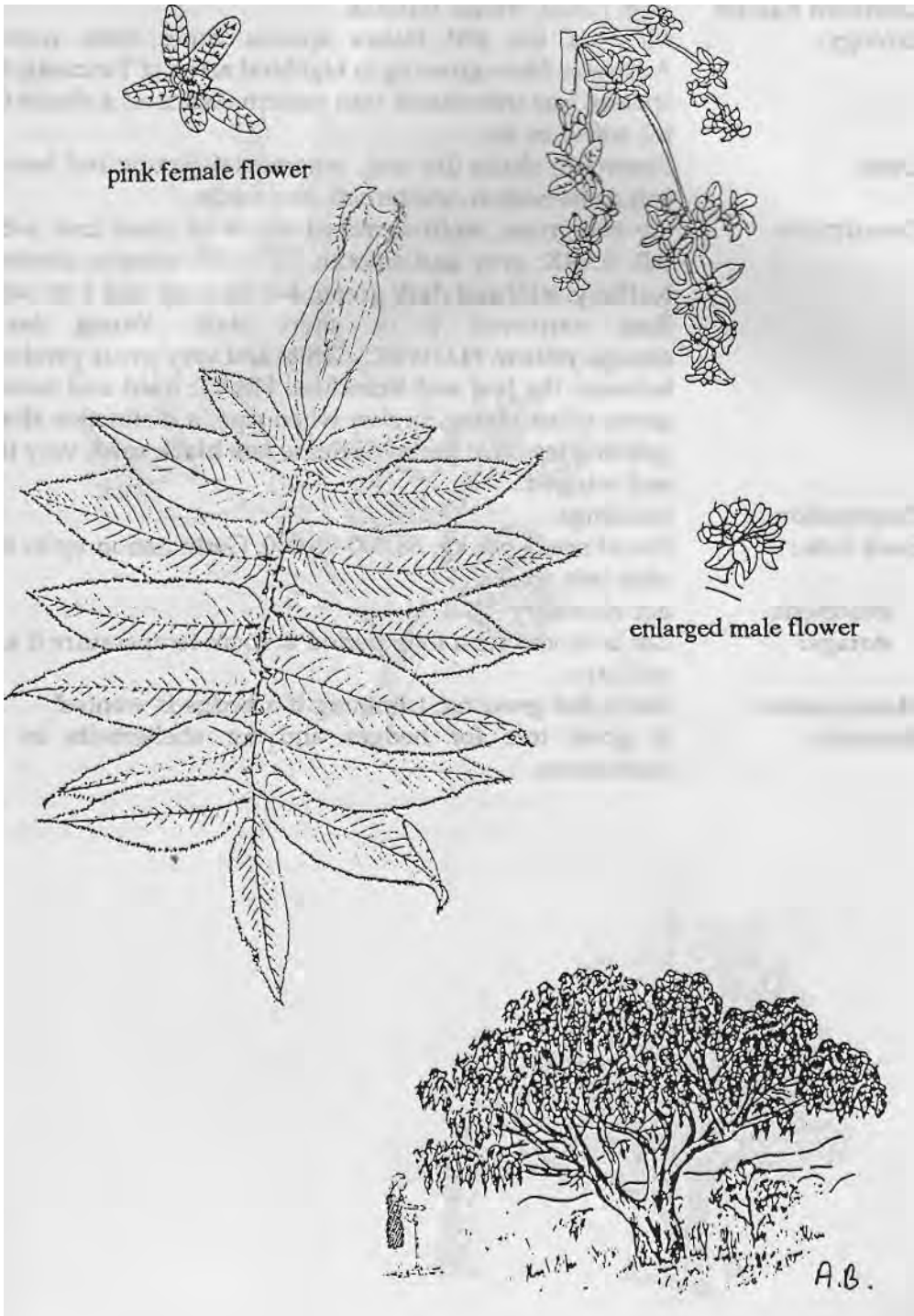
Seed info.: No. of seeds per kg: 176,000-200,000.

treatment: not necessary.

storage: seed can be stored for up to 6 months.

Management: Regeneration by seed (naturally), slow-growing; coppicing.

Remarks: *Hagenia abyssinica* is widely used in the southern highlands of Tanzania as a timber tree for all purposes. The wood is dark red and hard but attacked by borers. Not competitive with crops if managed to prevent shading. It constantly sheds leaves forming a carpet of dry leaves below the tree. Dry female flowers are used as a deworming treatment—anthelmintic.



Hakea saligna

Proteaceae

Australia

Common names: **Eng:** hakea; **Swah:** mhakia.

Ecology: Most of the 100 Hakea species come from western Australia. Now growing in highland areas of Tanzania, this species was introduced into eastern Africa as a shade tree for coffee or tea.

Uses: Firewood, shade (for tea), ornamental (young red leaves), soil conservation, shelterbelt, live fence.

Description: An evergreen, multi-stemmed shrub or small tree 3-6 m tall. **BARK:** grey and smooth. **LEAVES:** simple, alternate, **leathery, stiff and dark green, 4-8 cm long** and 1 cm wide. Base narrowed to a short stalk. **Young leaves orange-yellow.** **FLOWERS:** white and very small, produced between the leaf and branchlet. **FRUIT:** hard and woody, green when young, brown when ripe, a distinctive shape. splitting into two parts to release **one black seed, very thin and winged.**

Propagation: Seedlings.

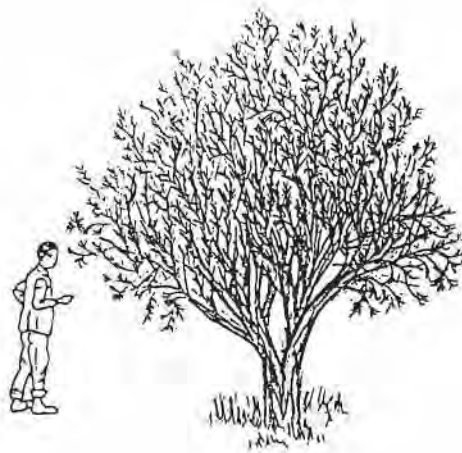
Seed info.: No. of seeds per kg: 68,000-75,000. Germination up to 80% after two weeks.

treatment: not necessary

storage: can be stored for a long period at room temperature if kept well dry.

Management: Fairly fast growing; trimming if a hedge is wanted.

Remarks: A good tree for hedges and for shelterbelts in tea plantations.



Hymenaea verrucosa

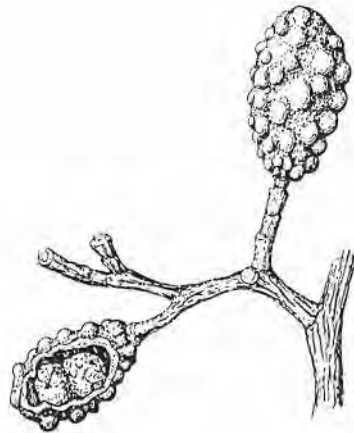
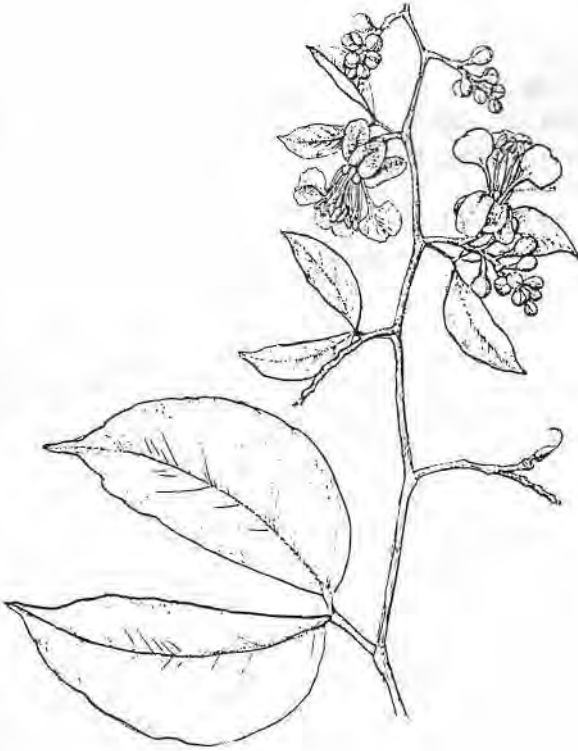
Caesalpinioideae

Indigenous

- Common names: Eng: gum copal tree; **Mwera:** mkumbi; **Swah:** msandarusi, msandaruzi, mtandaruzi, mtanderusi; **Yao:** mpasa; Zara: mnango, munanyo; Zigua: msandarusi.
- Ecology: An evergreen tree of dry lowland forest and coastal forests south to Madagascar; also found in Mauritius and the Seychelles, 0-300 m. In Tanzania it is found in the coastal forests of Tanga and Dar es Salaam.
- Uses: Timber (canoes, doors, general purposes), gum (bark, fruit).
- Description: A tree 6-25 m with a clear bole. **BARK: smooth pale grey, patterned in green, pink and cream.** **LEAVES: characteristic single pair of leaflets,** shiny above, dotted with glands, **unequal sided,** stalked. **FLOWERS: pink-white** in loose sprays. **FRUIT: unusual thick woody pods, 5 x 3 cm covered with gummy warts,** often seen **at the top of the tree** most of the year.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: about 500. Germination is good and fairly uniform.
- treatment: soak in cold water for 24 hours.
- storage: can be stored for some years at room temperature if kept dry and free from insects.
- Management: Coppicing.
- Remarks: The tree has valuable, hard but workable timber. The gum from bark and fruit is valued for high-quality varnishes and the fossilized gum dug up under old trees is even better. The resinous sap is also used as glue. Gum copal has been a traditional tree product in Zanzibar. A previous name for this tree was *Trachylobium verrucosum*.

Hymenaea verrucosa

Caesalpinioideae

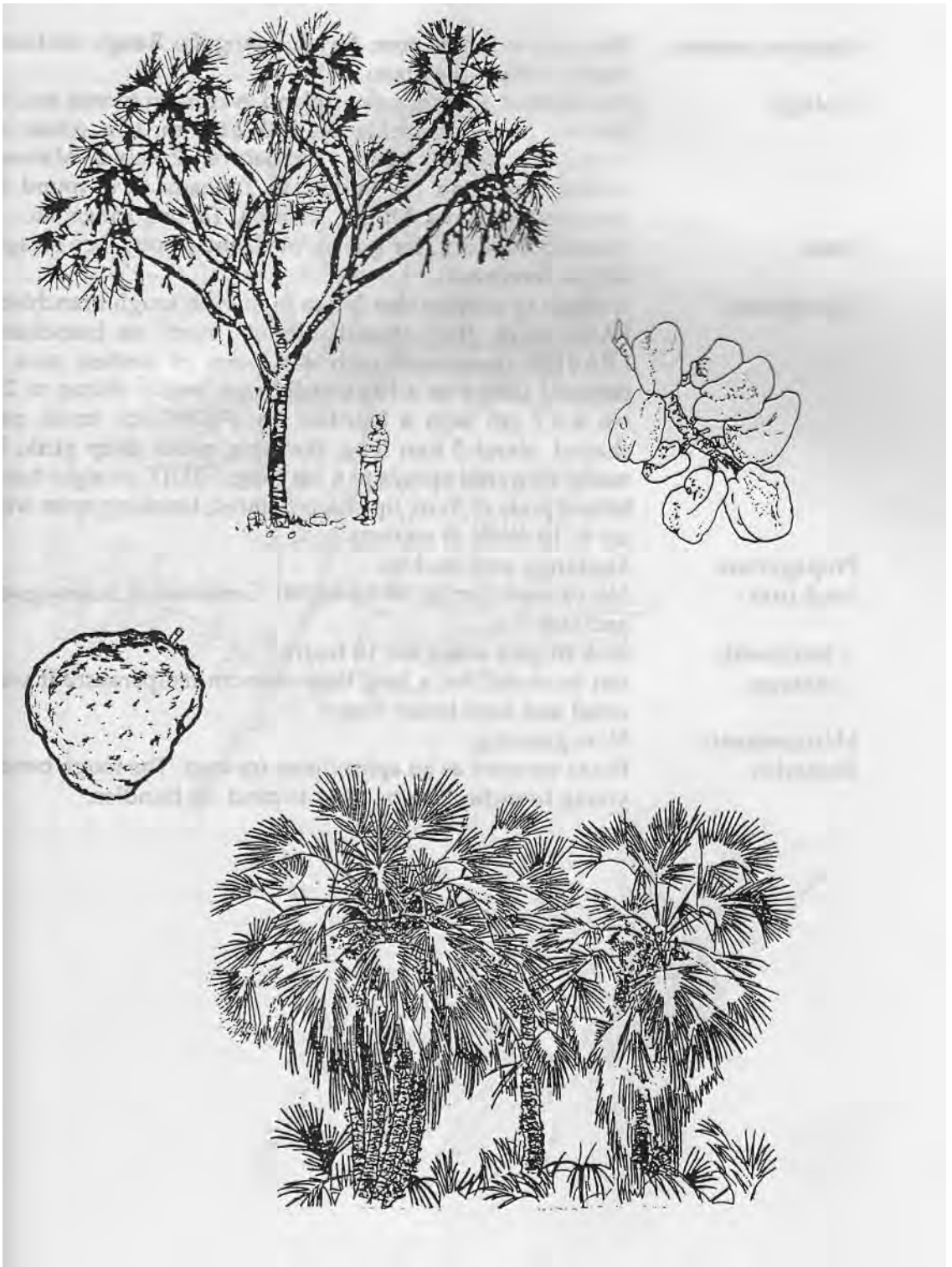


Hyphaene compressa (H. coriacea)

Palmae

Indigenous

- Common names: Eng: doum palm; Nyam: mulala; Swah: mkoche.
- Ecology: Widespread in lowland arid Africa, Madagascar, Arabia to India. Common in dry areas along river courses, and at the coast, 0-1,000 m. It requires a high watertable and hot climate for good growth.
- Uses: Firewood, poles, posts, food (fruit), drink (fruit wine from thin skin), soil conservation (sandy areas), shade, fibre, baskets, mats (leaves), roofing (leaves), fencing (cut leaf stalks), brushes.
- Description: An unusual branched palm tree, to 20 m, each branch crowned with large, fan-shaped leaves, the tree often surrounded by bushy young growth. LEAVES: have a long spiny stalk supporting the fan of leaflets. FLOWERS: male and female on separate trees. FRUIT: orange brown, hanging down in bunches, each fruit to about 10 cm long, 2 sides flattened, edible fibres below the tough shiny skin, one large hard seed.
- Propagation: Direct sowing into carefully prepared pits or any other place where water collects naturally.
- Seed info.:
 treatment: No. of seeds per kg: 10-15.
 storage: nicking at the radicular end.
 stores only for a very short period.
- Management: Slow growing.
- Remarks: Seed for human consumption stores well for long periods. Normally the seeds germinate naturally if they pass through the bowels of elephants. Difficult to raise in nurseries as it starts by sending out a long tap root. Buttons used to be made from "vegetable ivory", the white seed.



Indigofera swaziensis

Papilionoideae

Indigenous

Common names: Eng: velvet indigo tree; Nyam: igangula; Rangi: kinkusa; Samb: mshushulambuzi.

Ecology: Widespread at margins of upland evergreen forests and in riverine fringe of bushlands, 600-2,100 m. It is found in Swaziland, South Africa, Zimbabwe, Zambia, Malawi, Mozambique and the Sudan. In Tanzania it is found in Mwanza, Musoma, Mbulu, Kondo, Tabora, Iringa, etc.

Uses: Firewood, fodder (for goats), medicine (roots), bee forage, withes (branches).

Description: A shrub or slender tree 3-6 m high with tough branchlets. BARK: dark grey, smooth, fibrous, hairy on branchlets. LEAVES: compound with 4-8 pairs of leaflets plus a terminal leaflet on a hairy stalk, each leaflet oblong to 2-5 cm x 0.7 cm with a hair-like tip. FLOWERS: small, pea shaped, about 5 mm long, the wing petals deep pink, in many-flowered sprays to 6 cm long. FRUIT: straight hairy brown pods to 3 cm, tip sharp pointed, breaking open with up to 10 seeds in sections.

Propagation: Seedlings, root suckers.

Seed info.: No. of seeds per kg: about 83,000. Germination is very good and fast.

treatment: soak in cold water for 12 hours.

storage: can be stored for a long time at room temperature if well dried and kept insect free.

Management: Slow growing.

Remarks: Roots are used as an aphrodisiac for men. The tough bendy young branches can be used to bind up bundles.

Indigofera swaziensis

Papilionoideae



Jacaranda mimosifolia (J. acutifolia)

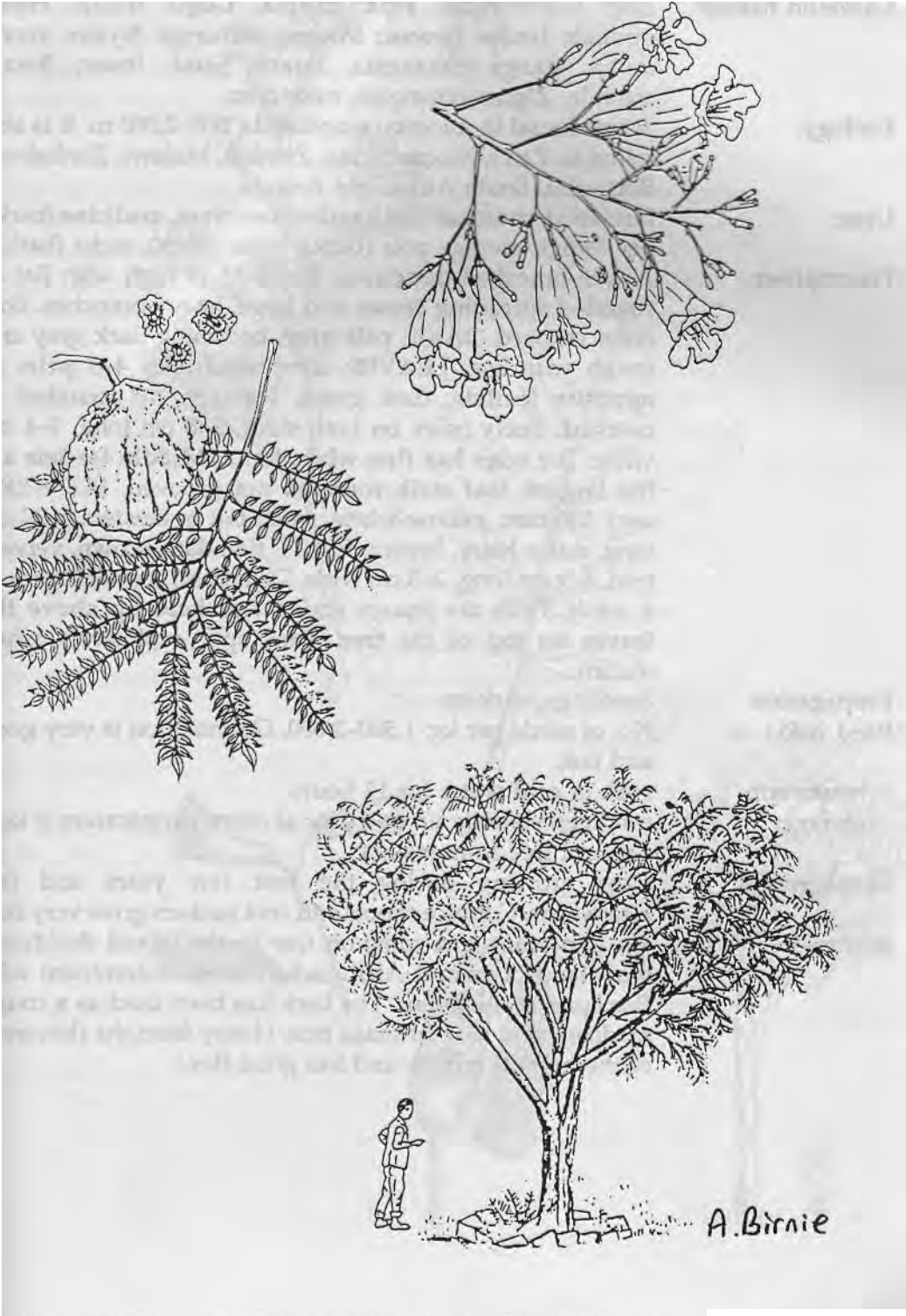
Bignoniaceae

Brazil, Argentina

- Common names: Eng: jacaranda, Brazilian rosewood.
- Ecology: Jacaranda is native to Brazil and Argentina but has been introduced as an ornamental tree to most parts of the tropics, though in many tropical climates its flowering is light, irregular and disappointing. In Tanzania it has been planted frequently in several of the larger towns and flowers well, e.g. in Morogoro. Jacaranda is deep rooted and grows best in well-drained loams, although it will also survive on poor shallow soils. It does not tolerate waterlogged or clay soils. It requires a mean annual rainfall exceeding 900 mm, and elevations of 500-2,000 m.
- Uses: Firewood, timber, poles, tool handles, carving, bee forage, shade, ornamental, mulch, windbreak.
- Description: A deciduous tree, up to 20 m, with spreading branches to a light crown. BARK: pale grey, smooth, rougher with age. LEAVES: compound and feathery on stalks to 40 cm, up to 30 pairs of pinnae with small pointed leaflets. FLOWERS: striking mauve-blue clusters, each flower bell shaped, tree mostly in flower when not in leaf. FRUIT: rounded, woody capsules to about 7 cm, splitting on the tree to release numerous light seeds with transparent wings.
- Propagation Seedlings, wildings.
- Seed info.: No. of seeds per kg: 63,000-80,000. Seeds profusely. Germination rate 50%-85%.
- treatment: not necessary.
- storage: seed does not store well. Sow fresh seed for best germination results.
- Management: Very fast growing on good sites; lopping, pollarding coppicing, pruning (young trees).
- Remarks: A greedy feeder; few plants or crops can grow below Jacaranda.

Jacaranda mimosifolia (J. acutifolia)

Bignoniaceae

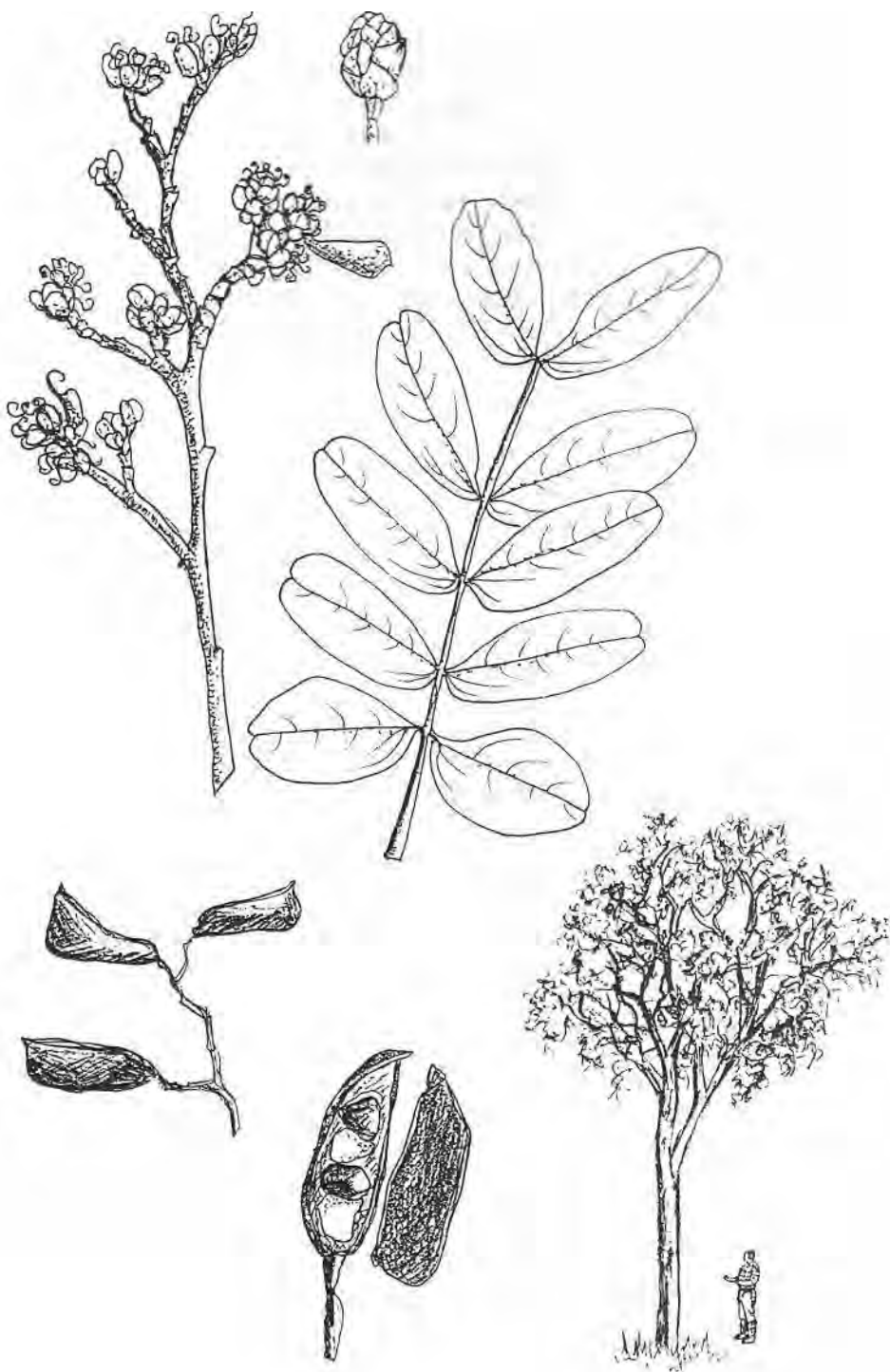


Julbernardia globiflora

Caesalpinioideae

Indigenous

- Common names:** Eng: julbernardia; Fipa: msima; Gogo: mguji; Hehe mpinati; Iraqw: hewasi; Mwera: mchenga; Nyam: muva; muba; Rangi: mhangala, mtata; Sand: innee; Swah: mtondo; Zigua: mhangala, mtorvdoro.
- Ecology:** A tree found in miombo woodlands, 500-2,000 m. It is also found in Zaire, Mozambique, Zambia, Malawi, Zimbabwe, Botswana, South Africa and Angola.
- Uses:** Firewood, charcoal, tool handles, bee hives, medicine (bark), bee forage, storage pots (bark), ropes (bark), sacks (bark).
- Description:** A well-branched deciduous tree 5-15 m high with flat or rounded spreading crown and large, heavy branches. Bole often crooked. **BARK:** pale grey, becoming dark grey and rough with age. **LEAVES:** compound with 4-8 pairs of opposite leaflets, dark green, leathery, tip rounded or notched, finely hairy on both sides, 3-5 cm long, 1-4 cm wide. The edge has fine white hairs. Middle leaflets are the largest, leaf stalk rounded not grooved. **FLOWERS:** very fragrant, yellow-white, small but in clusters 6-30 cm long, stalks hairy, brown. **FRUIT:** flat, dark brown, velvety pod, 4-9 cm long, 2-3 cm wide. Dehiscent, containing up to 4 seeds. Pods are square ended and held up above the leaves on top of the tree. They split explosively when mature.
- Propagation** Seedlings, suckers.
- Seed info.:** No. of seeds per kg: 1,500-2,000. Germination is very good and fast.
- treatment:** soak in cold water for 12 hours.
- storage:** can keep viability up to a year at room temperature if kept dry and free from insects.
- Management:** Slow growing during the first few years and fast afterwards. Coppice shoots and root suckers grow very fast.
- Remarks:** An important and common tree in the mixed deciduous woodland of central Africa where it is co-dominant with *Brachystegia spiciformis*. The bark has been used as a cough medicine and to treat snake bite. Honey from the flowers is of the highest quality and has good flow.

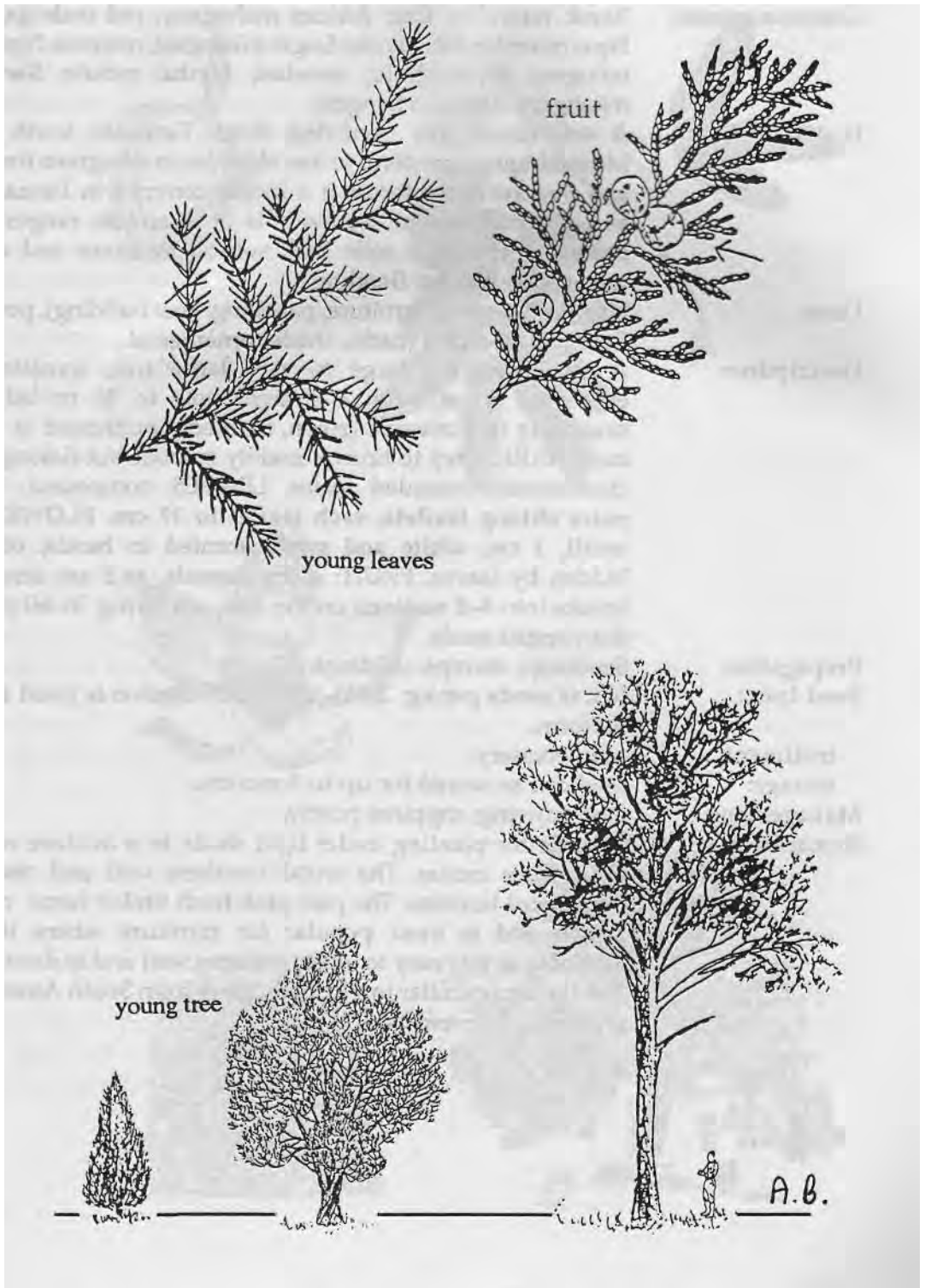


Juniperus procera

Cupressaceae

Indigenous

- Common names:** Arusha: ol darakwa, ol tarakwa; Bara: semit; Chag: nso, mdrawaka, mtarakwa, nderakwa; Eng: East African pencil cedar; Kinga: mselemko, mbechera; Maasai: ol darakwa, oltarakwa; Meru: msingo, nderakwa; Nyak: selemuka; Samb: mwangati, mlalo, mbalu.
- Ecology:** A large, valuable timber tree found in the highland forests of East Africa from Ethiopia to Tanzania, 1,500-3,000 m. It is common in West Usambaras, on the northern slopes of Mt. Kilimanjaro and on isolated mountains of Maasailand. It is the largest juniper in the world, doing best in high-rainfall areas but can survive in quite dry conditions once established.
- Uses:** Firewood, timber (joinery, pencils), poles, posts, flooring, roof shingles, beehives, medicine (bark, leaves, twigs, buds), shade, ornamental, windbreak.
- Description:** An evergreen tree to about 40 m with straight trunk and a pyramidal shape when young. The foliage is finer **and** more open than cypress. **BARK:** thin grey-brown, fissures, peeling with age. **LEAVES:** young leaves prickly to 1 cm, soon replaced by scale-like mature leaves, blue-green, triangular and closely overlapping on the branchlets **FRUIT:** cones; male cones are small and yellow with poller: female purple-blue fleshy "berries" about 8 mm, the pulp containing 1-4 hard seeds.
- Propagation** Seedlings, wildings.
- Seed info.:** No. of seeds per kg: 37,000-47,000. Germination **rate** 30-70% in 25-80 days.
- treatment:** not necessary, but to get improved results immerse in boiling water for 1 minute and soak until the water cools to room temperature.
- storage:** up to a year if stored in a cool, dry place.
- Management:** Fairly fast growing in open stands, slow growing elsewhere. Prune and thin trees for timber and poles.
- Remarks:** Resistant to fungal decay and termites. Large-dimension good timber is difficult to get as mature trees are often hollow due to heart rot. Was established as a plantation tree in Shume (Lushoto) but its slow growth **rate** discouraged further planting.



Khaya nyasica (K. anthotheca)

Meliaceae

Indigenous

Common names: Bond: mtondoo; Eng: African mahogany, red mahogany, Fipa: mtembo; Ha: myofu; Lugu: mkangazi, mwawa; Nguu: mbogwa; Nyak: ilulu, nyaelasi; Nyiha: mbule; Swah: mkangazi; Zigua: mkangazi.

Ecology: A tall forest tree occurring from Tanzania south to Mozambique at medium to low altitudes in evergreen forest and riverine fringe forest. It is locally common in Tanzania as a riverine tree in the foothills of mountain ranges. It prefers deep fertile soils with subsoil moisture and can withstand seasonal flooding.

Uses: Firewood, timber (furniture, panelling, boatbuilding), posts, flooring, medicine (bark), shade, ornamental.

Description: A semi-evergreen large to very large tree, sometimes exceeding 60 m, with a straight bole to 30 m before branching to a massive crown, markedly buttressed at the base. BARK: grey to brown, mainly smooth but flaking in characteristic rounded scales. LEAVES: compound, 2-7 pairs oblong leaflets, each leaflet to 17 cm. FLOWERS: small, 1 cm, white and sweet scented in heads, often hidden by leaves. FRUIT: a dry capsule, to 5 cm across, breaks into 4-5 sections on the tree, scattering 30-60 pale flat winged seeds.

Propagation: Seedlings, stumps, wildings.

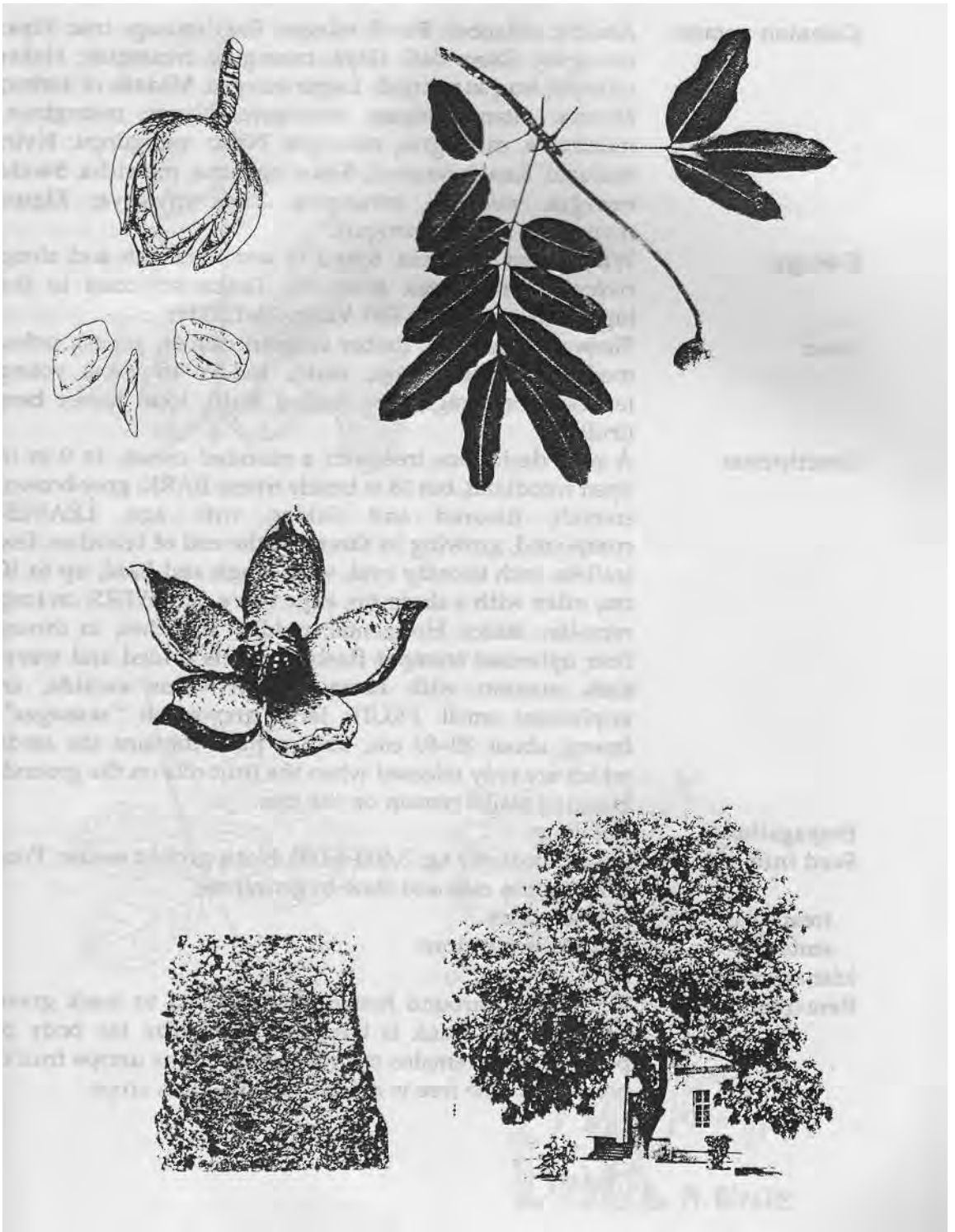
Seed info.: No. of seeds per kg: 2,000-3,800. Germination is good and uniform,

treatment: not necessary.

storage: seed can be stored for up to 3 months.

Management: Fast growing; coppices poorly.

Remarks: Suitable for planting under light shade in a mixture with *Chlorophora excelsa*. The wood weathers well and resists borers and termites. The pale pink fresh timber turns red-brown and is most popular for furniture where it is available as it is easy to work, polishes well and is durable. The timber is similar to true mahogany from South America (*Swietenia macrophylla*).



Kigelia africana (K. aethiopum)

Bignoniaceae

Indigenous

Common names: **Arusha:** oldaoboi; **Bond:** mlegea; **Eng:** sausage tree; **Fipa:** nzungwa; **Goro:** dati; **Haya:** mzengute, mzungute; **Hehe:** mfumbi; **Iraqw:** mangafi; **Lugu:** muegea; **Maasai:** ol darboi; Mwera: mtandi; **Nguu:** mvungwe; **Nyam:** msanghwa, mdungwa, mvungwa, mwiegea; **Nyat:** mungungu; **Nyir:** mulunzi; **Rangi:** musuva; **Suku:** ngwicha, mgwicha; **Swah:** mwegea, mwicha, mvungwa; **Zara:** myigeeya; Zigua: mvungwe; **Zinza:** mzingute.

Ecology: Widespread in Africa, found in wet savannah and along rivers in arid areas, from the Tanzanian coast to the highlands and in the Rift Valley, 0-1,850 m.

Uses: Firewood, charcoal, timber (dugout canoes, yokes), poles, medicine (fruit, leaves, bark), fodder (flowers, young leaves), bee forage, dye (boiled fruit), local honey beer (fruit).

Description: A semi-deciduous tree with a rounded crown, to 9 m in open woodland, but 18 m beside rivers. **BARK:** grey-brown, smooth, fissured and flaking with age. **LEAVES:** **compound, growing in threes**, at the end of branches, few leaflets, each broadly oval, **very rough and hard, up to 10 cm, often with a sharp tip, edge wavy**. **FLOWERS:** on long rope-like stalks. Horizontal, reddish branches, in threes, bear **upturned trumpet flowers, petals folded and wavy, dark maroon with heavy yellow veins outside**, an unpleasant smell. **FRUIT:** large **grey-green "sausages", heavy**, about 30-60 cm, fibrous pulp contains the seeds which are only released when the fruit rots on the ground. Hanging stalks remain on the tree.

Propagation Seedlings.

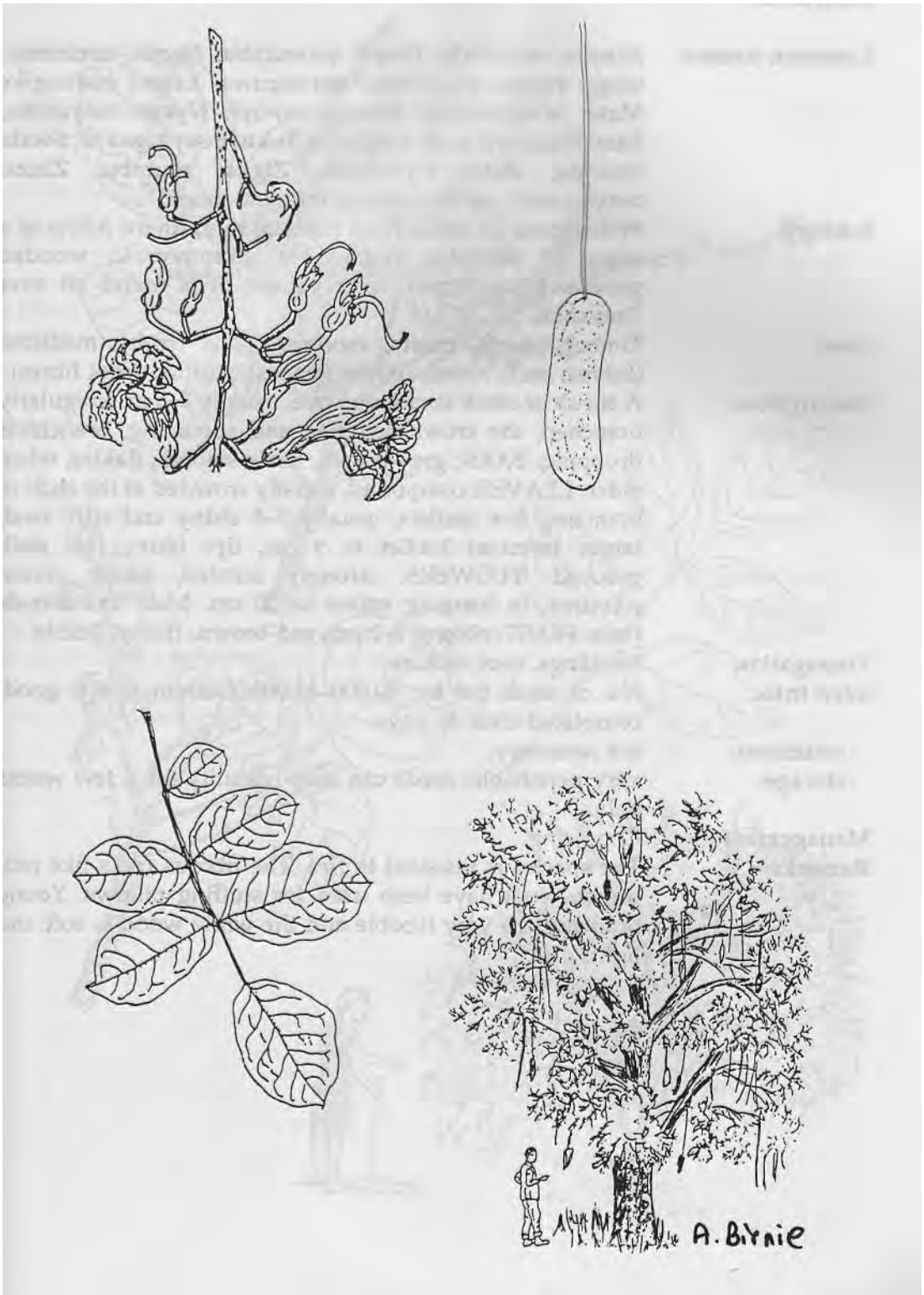
Seed info.: No. of seeds per kg: 3,400-6,000. Not a prolific seeder. Poor germination rate and slow to germinate.

treatment: not necessary.

storage: seed does not store.

Management: Slow growing.

Remarks: Not planted around homesteads. Planted to mark grave sites and the trunk is buried to symbolize the body of people whose remains cannot be traced. The unripe fruit is poisonous. The tree is not competitive with crops.

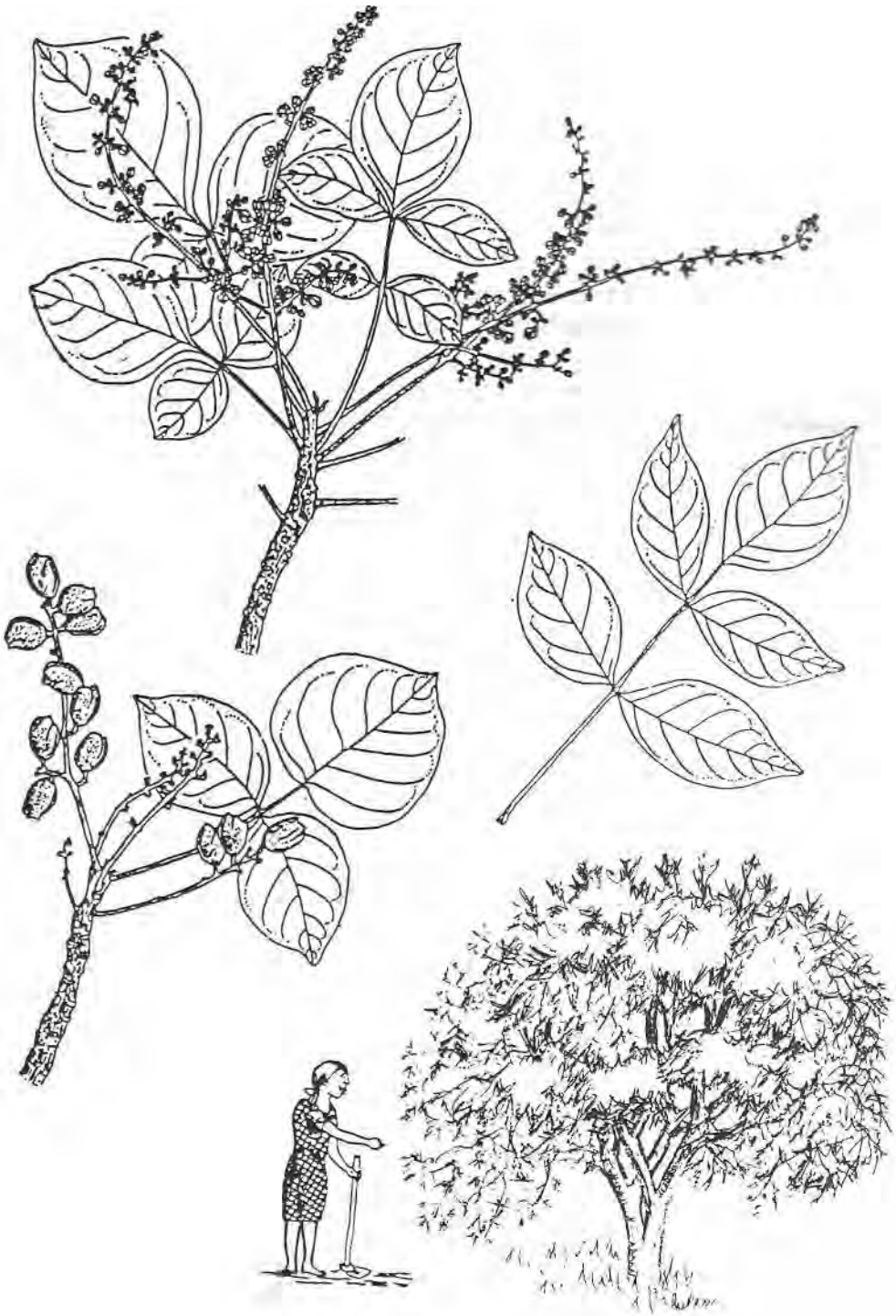


Lannea schweinfurthii var. stuhlmannii

Anacardiaceae

Indigenous

- Common names: Arusha: eravande; Gogo: muwumbu; **Iraqw:** tambaragi, thigii; **Kuria:** mumendo, omosaruwa; **Lugu:** muhingilo; **Mate:** ndelamwana; **Mwera:** mpupi; **Nyam:** mnyumbu; Pare: msighe; **Rangi:** msakawa; **Suku:** msayu, nsayu; **Swah:** mtundu; **Zara:** mpiwipwi; **Zigua:** mumbu; **Zinza:** mnyamendi, mribwampara, muhondobogo.
- Ecology: Widespread in Africa from Somalia to southern Africa at a range of altitudes, 0-1,800 m. Common in wooded grassland, dry forest, river valleys. It is found all over Tanzania.
- Uses: Timber (stools, chairs, mortars), food (fruit), medicine (leaves, bark, roots), fodder (leaves), stuffing (root fibres).
- Description: A shrub or small deciduous tree, usually 3-5 m, irregularly branched, the crown rounded and spreading, branchlets drooping. **BARK:** grey-brown, fairly smooth, flaking when older. **LEAVES:** compound, usually crowded at the ends of branches, few leaflets, usually **3-5 shiny** and stiff, oval, **larger terminal leaflet to 9 cm**, tips blunt, leaf stalk grooved. **FLOWERS:** strongly scented, small, cream coloured, in hanging spikes to 20 cm. Male and female trees. **FRUIT:** oblong **1-2 cm, red-brown**, fleshy, edible.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: 40,000-45,000. Germination is good, completed after 45 days,
- treatment: not necessary.
- storage: very perishable; seeds can keep viability for **a few weeks** only.
- Management: Coppicing.
- Remarks: The species is resistant to fire. The fibrous roots like red-brown wool have been used for stuffing pillows. **Young** branches are very flexible and the white wood is soft **and** light.

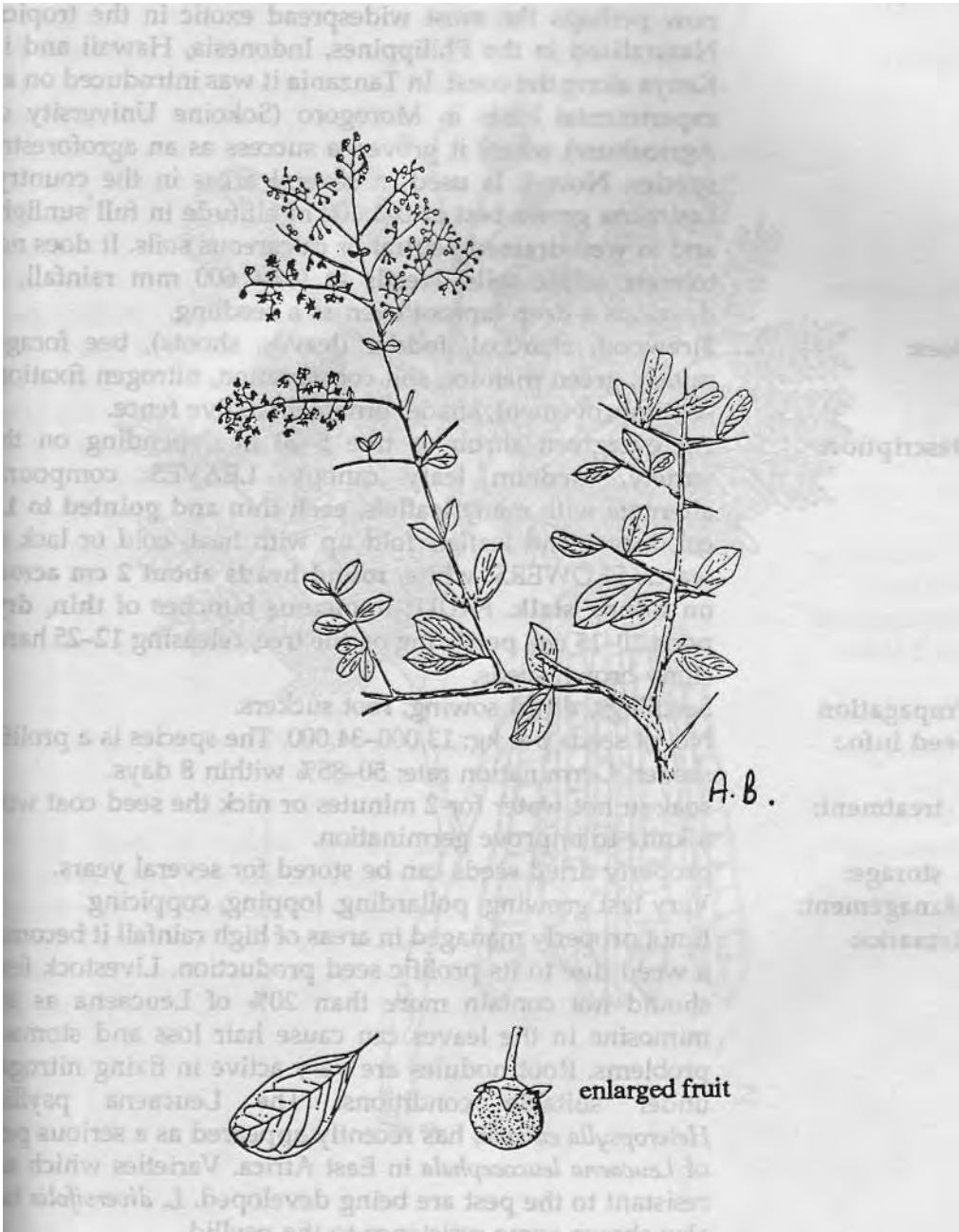


Lawsonia inermis (L. alba)

Lythraceae

Indigenous

- Common names: Eng: henna, Zanzibar bark; Swah: mhina, muina, mkokoa; Zigua: ina.
- Ecology: A shrub widely distributed from North to West and Central Africa. Common at the Tanzanian coast, along river courses and in semi-arid areas.
- Uses: Medicine, fodder (leaves), dye, perfumes, thatching, carriers for donkeys, ornamental.
- Description: A shrub or small tree to 4 m, sometimes spiny. LEAVES: small and oval, about 2-3 cm, opposite, often on short spine-tipped branchlets. FLOWERS: white and small in long branching heads, sweet-scented. FRUIT: round, small brown capsules, splitting into 4 parts.
- Propagation: Seedlings, cuttings.
- Seed info.: No. of seeds per kg: about 100,000. Germination is good: 70% after 3 weeks.
- treatment: not necessary.
- storage: can be stored for only a short period (2 months). Keep seeds insect free.
- Management: Slow growing.
- Remarks: The plant produces a volatile oil with a pleasant odour. An orange-red dye extracted from leaves and young shoots is used to dye clothes and leather, to decorate women's nails and skin, as well as to colour and condition hair ("henna"). The dye is released by using citric or tartaric acid, tea or lemon juice.

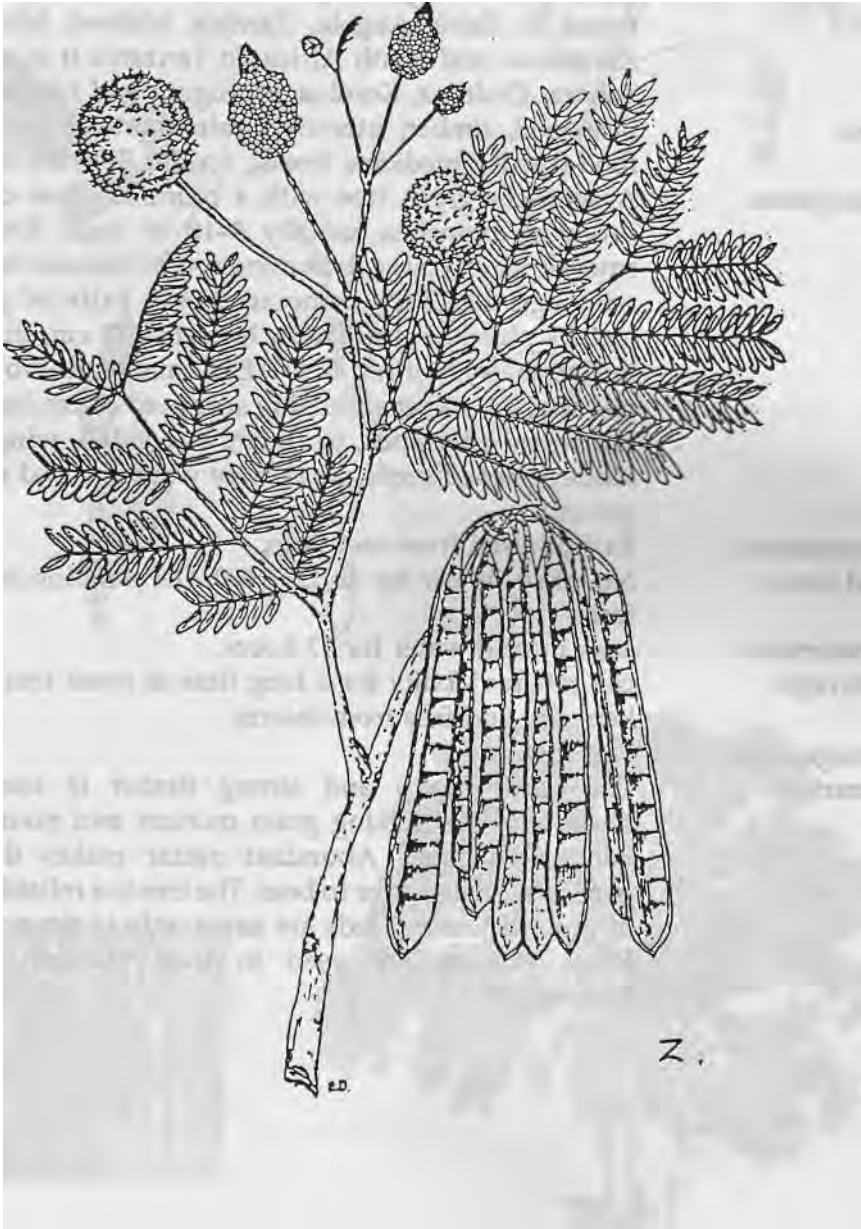


Leucaena leucocephala (L. glauca)

Mimosoideae

Central America

- Common names: Bond: mbegu; Swah: mlusina.
- Ecology: Originally from the drier western side of Central America. now perhaps the most widespread exotic in the tropics. Naturalized in the Philippines, Indonesia, Hawaii and in Kenya along the coast. In Tanzania it was introduced on an experimental basis in Morogoro (Sokoine University of Agriculture) where it proved a success as an agroforestry species. Now it is used in several areas in the country. Leucaena grows best at 0-1,600 m altitude in full sunlight and in well-drained neutral or calcareous soils. It does not tolerate acidic soils. Needs at least 600 mm rainfall. It develops a deep taproot even as a seedling.
- Uses: Firewood, charcoal, fodder (leaves, shoots), bee forage, mulch, green manure, soil conservation, nitrogen fixation, soil improvement, shade, ornamental, live fence.
- Description: An evergreen shrub or tree 5-20 m depending on the variety, medium leafy canopy. LEAVES: compound alternate with many leaflets, each thin and pointed to 1.5 cm, leaves and leaflets fold up with heat, cold or lack of water. FLOWERS: white, round heads about 2 cm across on a long stalk. FRUIT: numerous bunches of thin, dry, pods 10-15 cm, persisting on the tree, releasing 12-25 hard, shiny brown seeds.
- Propagation: Seedlings, direct sowing, root suckers.
- Seed info.: No. of seeds per kg: 13,000-34,000. The species is a prolific seeder. Germination rate: 50-85% within 8 days.
- treatment: soak in hot water for 2 minutes or nick the seed coat with a knife to improve germination.
- storage: properly dried seeds can be stored for several years.
- Management: Very fast growing; pollarding, lopping, coppicing.
- Remarks: If not properly managed in areas of high rainfall it becomes a weed due to its prolific seed production. Livestock feed should not contain more than 20% of Leucaena as the mimosine in the leaves can cause hair loss and stomach problems. Root nodules are very active in fixing nitrogen under suitable conditions. The Leucaena psyllid, *Heteropsylla cubana*, has recently appeared as a serious pest of *Leucaena leucocephala* in East Africa. Varieties which are resistant to the pest are being developed. *L. diversifolia* has also shown some resistance to the psyllid.



Indigenous

- Common names: **Eng:** lilac tree, rain tree; **Gogo:** mpaapala; **Lugu:** mfumbiri, mkunguga; **Nyam:** muvale; **Rangi:** muvare; **Samb:** mfumbii; **Sangu:** libale; **Swah:** mvale.
- Ecology: A tree found in deciduous woodland and wooded grassland, usually along water courses, 150-1,650 m. It is found in Zaire, Angola, Zambia, Malawi, Mozambique, Zimbabwe and South Africa. In Tanzania it is common in Tabora, Dodoma, Kondo, Morogoro and Iringa.
- Uses: Firewood, timber, utensils (grain mortars), tool handles, food (seeds), medicine (roots), fodder (leaves), bee forage,
- Description: A semi-evergreen tree with a rounded open crown and drooping branches, usually 4–10 m high. BARK: grey, smooth when young, becoming rough, fissured and flaking with age. LEAVES: compound, **1-3 pairs** of grey-green leaflets plus a central **larger leaflet to 15 cm**, tip rounded. leaflets hairy at first. FLOWERS: **small pink-blue-violet, pea shaped**, sweet scented in sprays to 30 cm long. FRUIT: flat cream-grey pods, to 15 cm, **one sided, wing like, 1-5** kidney shaped seeds are set free when the pod rots on the ground.
- Propagation: Easily raised from seedlings.
- Seed info.: No. of seeds per kg: about 5,000. Germination is good and fast.
- treatment: soak in cold water for 12 hours.
- storage:** can retain viability for a long time at room temperature if kept dry and free from insects.
- Management: Fast growing.
- Remarks: The hard, heavy and strong timber is used by the Nyamwezi for making grain mortars and pounders, **also** handles of tools. Abundant nectar makes the flowers particularly attractive to bees. The tree is a reliable **indicator** of ground water. Seeds are eaten only in times of **famine**. Roots extracts are used to treat stomach ache and hookworm.

Lonchocarpus capassa

Papilionoideae

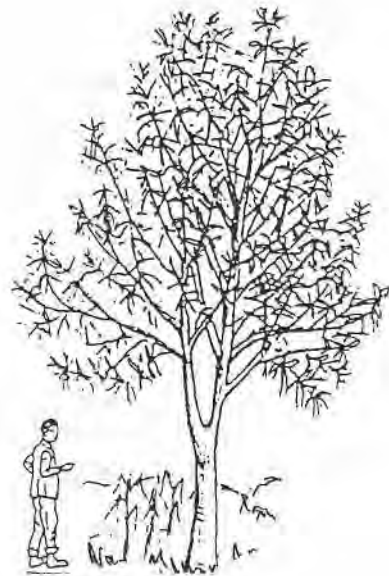


Macadamia tetraphylla

Proteaceae

Northern Australia

- Common names: Eng: macadamia nut.
- Ecology: An evergreen tree introduced in the coffee-growing areas of the Tanzanian highlands for its valuable nuts.
- Uses: Timber, charcoal (shells), food (nuts), windbreak. ornamental, bee forage, oil (used in cosmetics).
- Description: A low-branching evergreen tree to 15 m. BARK: grey, smooth. LEAVES: in fours, dull to olive-green, conspicuously wavy, edged with sharp, forward-pointing spines, to 25 cm long, young leaves and shoots pink-red. FLOWERS: in slender, drooping spikes, 25 cm, white or purple, the leaf stalks persist on the tree like stiff threads. FRUIT: a hard round nut, to 3 cm across, the husk drying black, containing a hard shiny brown nutshell. These fall to the ground and are collected for the white kernel seed within.
- Propagation: Grafting, seedlings.
- Seed info.: No. of seeds per kg: about 500. Germination is good; up to 80% after 3 weeks.
- treatment: nicking will improve germination.
- storage: can be stored for some years if kept well dry.
- Management: Grafting.
- Remarks: The tree can be intercropped with coffee and food crops. A good cash crop.



Maerua triphylla

Capparaceae

Indigenous

Common names: Eng: maerua, small bead bean; Fipa: nkana; Gogo: msinjisa mudo, mwimachigulu; Hehe: kipegero; **Iraqw:** bardiget; Nyam: kalilalila, kalilila; Pare: mdudu, mluhindi; **Samb:** mkundang'ombe; Suku: kidilalila; **Swah:** msingizi; Zara; msempelele, ududu kisazi; Zigua: mniramira; Zinza: mumemeno.

Ecology: A small densely branched evergreen tree or shrub, widely distributed in grassland and woodland from the coast to 2,000 m.

Uses: Bee forage, fodder (leaves), medicine, water purification.

Description: A small tree or shrub, usually to 4 m with a rounded crown. **BARK:** brownish-grey. **LEAVES:** dull green, **both simple** and trifoliate, trifoliate leaves having a larger central leaflet, narrowly **oval**, 2-10 cm long, **tip rounded, often notched**. **FLOWERS:** small, several flowers in a head, green-white, many **stamens prominent**, spreading **out** between 4 green sepals which are joined in a tube below the petals. **FRUIT:** on long **stalks**, variable, usually cylindrical, 5-10 **cm** long, pale yellow to **creamy brown and furry, often constricted between the seeds**.

Propagation Seedlings, root suckers.

Seed info.: No. of seeds per kg: about 14,000. Germination very **good** and fast; 90% after 2 weeks.

treatment: not necessary.

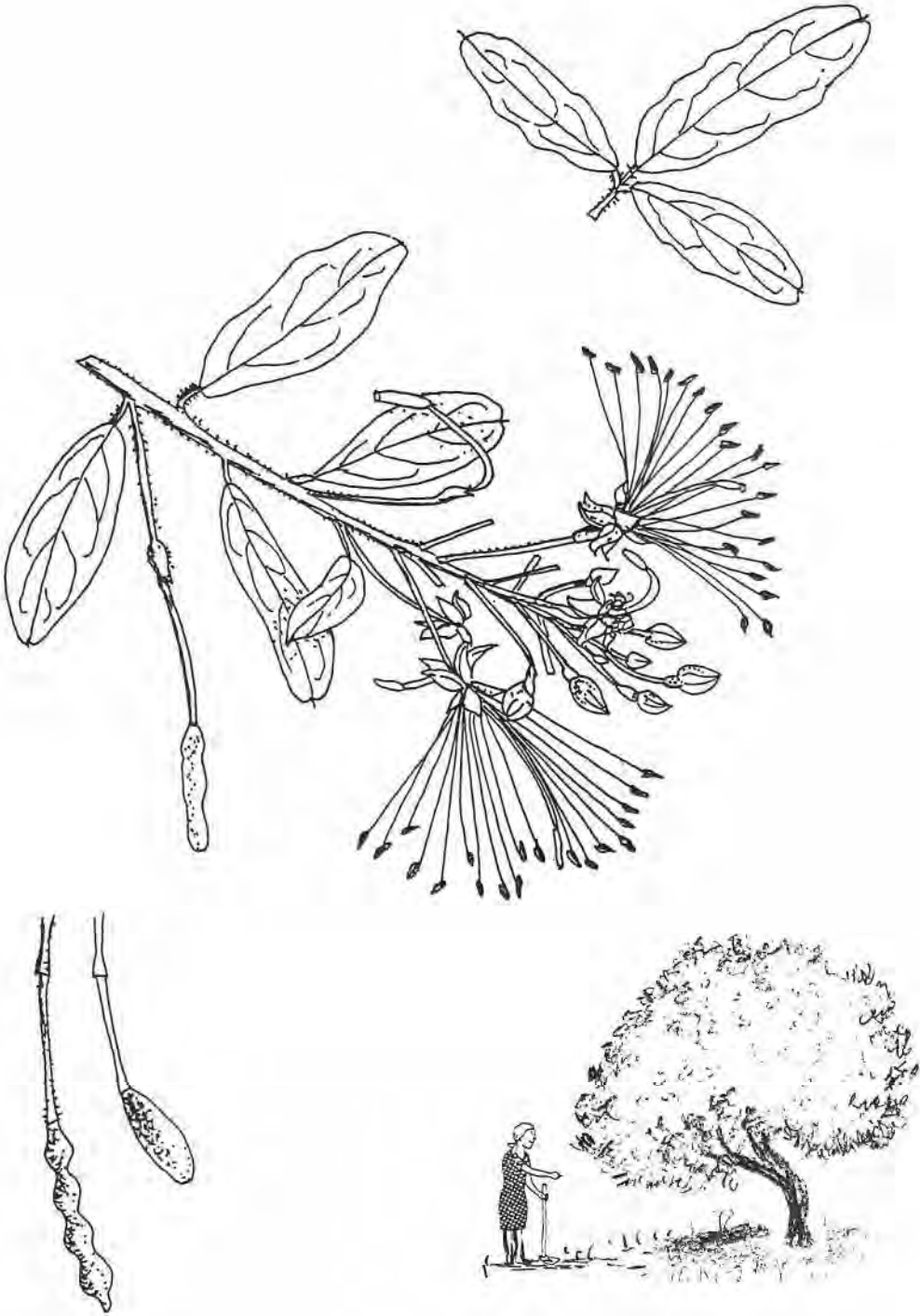
storage: seeds perishable; should be sown fresh.

Management: Coppicing. -

Remarks: The branches and roots of several Maerua species contain toxic substances which may be a health risk when used clear water. The plant has been used as an aphrodisiac and to treat snake bite. It can be used to reclaim land on poor rocky sites.

Maerua triphylla

Capparaceae



Maesopsis eminii

Rhamnaceae

Indigenous

Common names: Ha: mheru; Haya: muhumula; **Kere:** masira, msira, musira; Zinza: msira.

Ecology: A large tree indigenous to East, Central and West Africa. In Tanzania very common on islands in Lake Victoria and in the Bukoba region. It grows in wet tropical and wet montane climates. Requires deep fertile sandy loams and grows best below 2,700 m.

Uses: Firewood, timber (furniture, light construction), poles, veneer/plywood, fodder (fruit), shade (tea and coffee), ornamental.

Description: A leafy semi-deciduous tree 10-30 m, often a clear bole to 10 m, the **branches rather horizontal**, the crown flattened when young but more rounded with age. BARK: pale grey-brown, branchlets dotted with breathing pores, grooved with age. LEAVES: appear compound but alternate on the twig, on **stalks to 1 cm**, each **long and shiny**, pointed, **to 14 cm**, the edge with **characteristic well-spaced rounded teeth**. FLOWERS: small and green in heads beside leaves. FRUIT: oval, to 3 cm long, fleshy and yellow, turning **purple**, with 1-2 hard seeds.

Propagation: Seedlings, wildings, direct sowing.

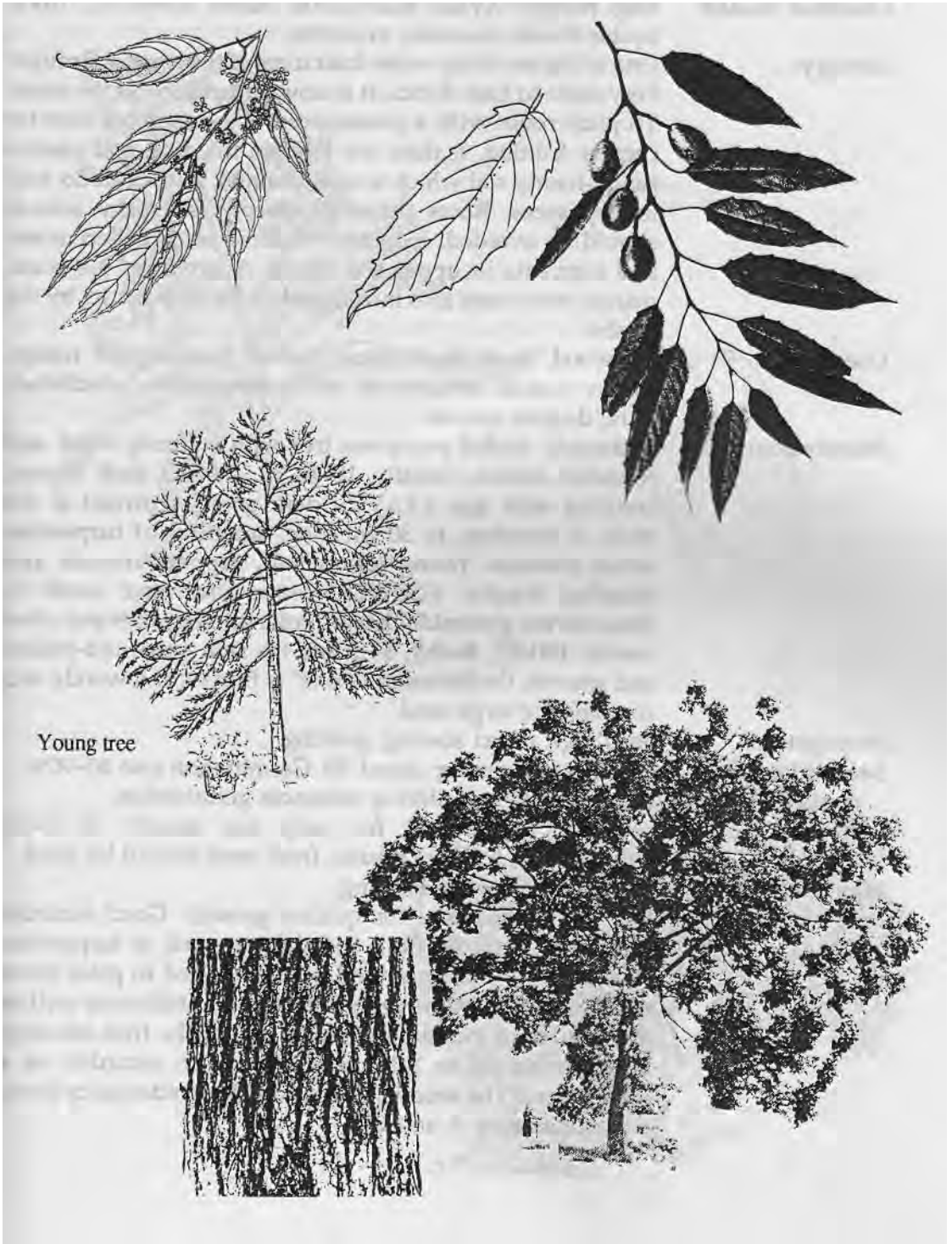
Seed info.: No. of seeds per kg: 500. Low germination rate (20-55%).

treatment: none, soak in cold water for 12 hours, or nick seed.

storage: can be stored for up to 5 months.

Management: Fast growing; coppicing.

Remarks: After its introduction in the Usambara mountains (Amani) the tree has become a weed there. It is one of the fastest growing indigenous trees and can be harvested in 25-30 years, but the timber is poor and rots quickly.



Mangifera indica

Anacardiaceae

Northern India, Burma

Common names: Eng: mango; Nyam: munyembe; **Samb:** mwembe; Suku: nyebe; Swah: muembe, mwembe.

Ecology: One of the most important fruit trees of the tropics. Brought very early to East Africa, it is now naturalized at the coast. Tropical zones with a pronounced dry season are best for regular fruiting. It does not tolerate flooding and prefers sandy-loamy soil which is well drained, but it can do well in dry areas. Roots penetrate deeply, so rocky subsoil should be avoided. Extensive shallow roots collect water and nutrients in upper soil levels. Apart from the coast, mango trees were also introduced in Tabora district by the Arabs.

Uses: Firewood, food (fruit, juice), fodder (leaves), bee forage. shade, mulch, ornamental, soil conservation, windbreak. gum, dugout canoes.

Description: A densely leafed evergreen tree with a sturdy trunk and rounded crown, usually 10-15 m. **BARK:** dark brown, cracking with age. **LEAVES:** dark green, crowded at the ends of branches, to 30 cm long, **smelling of turpentine when crushed. Young leaves soft, copper-coloured and hanging limply.** **FLOWERS:** numerous and small in pink-brown **pyramidal** heads. Pollination by flies and other insects. **FRUIT:** fleshy, 8-15 cm, the skin green-red-yellow and smooth, the flattened "stone" is fibrous and woody and contains the large seed.

Propagation: Seedlings, direct sowing, grafting.

Seed info.: No. of seeds per kg: about 50. Germination rate 60-90%.

treatment: not necessary but nicking enhances germination.

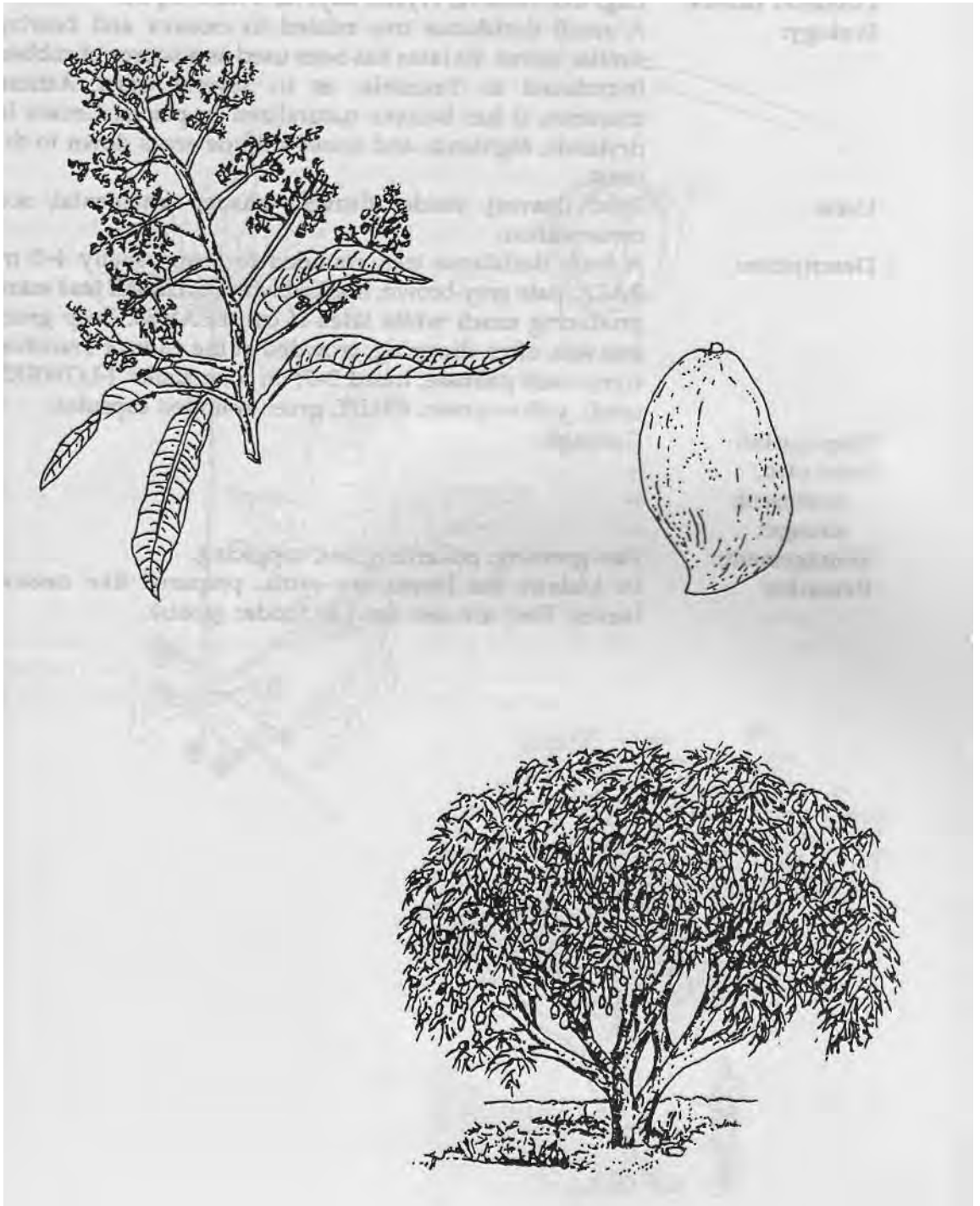
storage: seed can be stored for only one month at room temperature. For best results, fresh seed should be used.

Management: Fairly fast growing; lopping.

Remarks: Use grafted material for quicker growth. Good varieties have fruits without fibre and do not smell of turpentine. Farmers in dry areas should be encouraged to plant more mango trees to improve their family's nutrition as well as as a source of income. Relatively few of the fruit develop, but even so up to 1,000 fruit have been recorded on a mature tree. The seed is surrounded by golden juicy flesh, rich in vitamins A and C.

Mangifera indica

Anacardiaceae



Manihot glaziovii

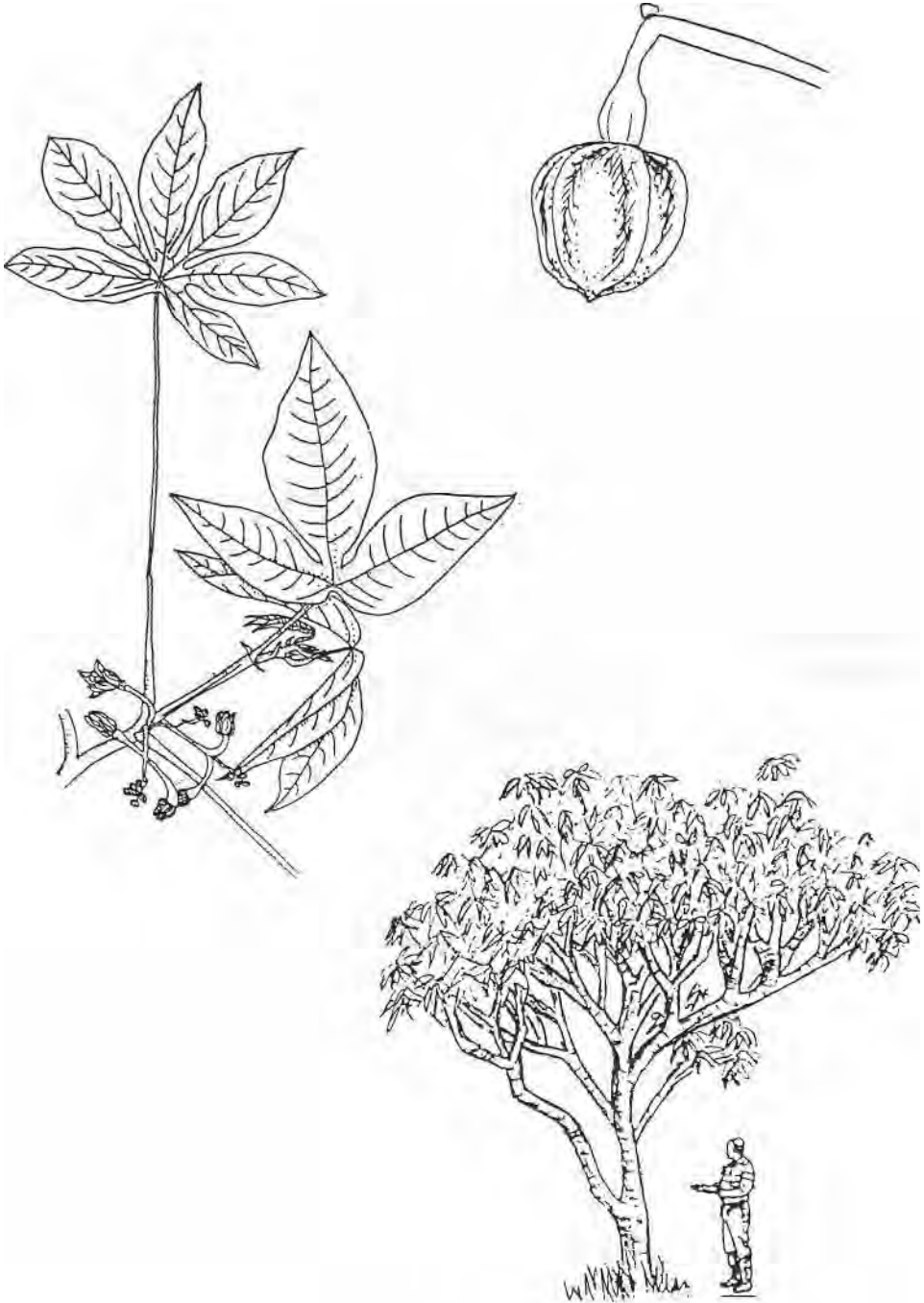
Euphorbiaceae

Brazil

- Common names: Eng: tree cassava; Nyam: kayeva; Swah: mpira.
- Ecology: A small deciduous tree related to cassava and bearing similar leaves. Its latex has been used as a source of rubber. Introduced to Tanzania, as in several other African countries, it has become naturalized in places. Grown in drylands, highlands and lower-altitude areas down to the coast.
- Uses: Food (leaves), fodder (leaves), shade, ornamental, soil conservation.
- Description: A leafy deciduous tree, rounded to 8 m, usually 4-5 m. BARK: pale grey-brown, marked with **horizontal leaf** scars. producing **much white latex if cut**. LEAVES: deep green and soft, often drooping, crowded at the ends of branches. compound palmate, lobed 3-7, on long stalks. FLOWERS: small, yellow-green. FRUIT: green rounded capsules.
- Propagation
Seed info.:
treatment:
storage:
- Management: Fast growing; pollarding and coppicing.
- Remarks: In Malawi the leaves are eaten, prepared like cassava leaves. They are also used as fodder (goats).

Manihot glaziovii

Euphorhiaceae



Manilkara mochisia

Sapotaceae

Indigenous

Common names: Eng: milk berry; Gogo: mkonze; **Haya:** mkunya; **Nyam:** mkonze; **Suku:** mkonze; **Swah:** msapa.

Ecology: A tree commonly found at low and medium altitudes in dry woodlands along the coast and in Acacia and miombo woodlands, especially on termite mounds, 0-2,100 m.

Uses: Firewood, timber (building, dhows), poles, flooring, tools, carving (spoon), food (fruit), bows.

Description A shrub or spreading evergreen tree up to 15 m with dense compact crown. **BARK:** grey and smooth at first, then black and rough with age. **LEAVES:** simple, dark green, leathery, about **6 cm long, tip rounded** or notched, base narrowed to a short stalk, usually at the end of twigs. **FLOWERS:** white or pale yellow, clustered between leaf and branchlet **FRUIT:** rounded and green when young, becoming **yellow when ripe, up to 2.5 cm long**, containing 1-3 seeds in soft edible pulp.

Propagation Seedlings.

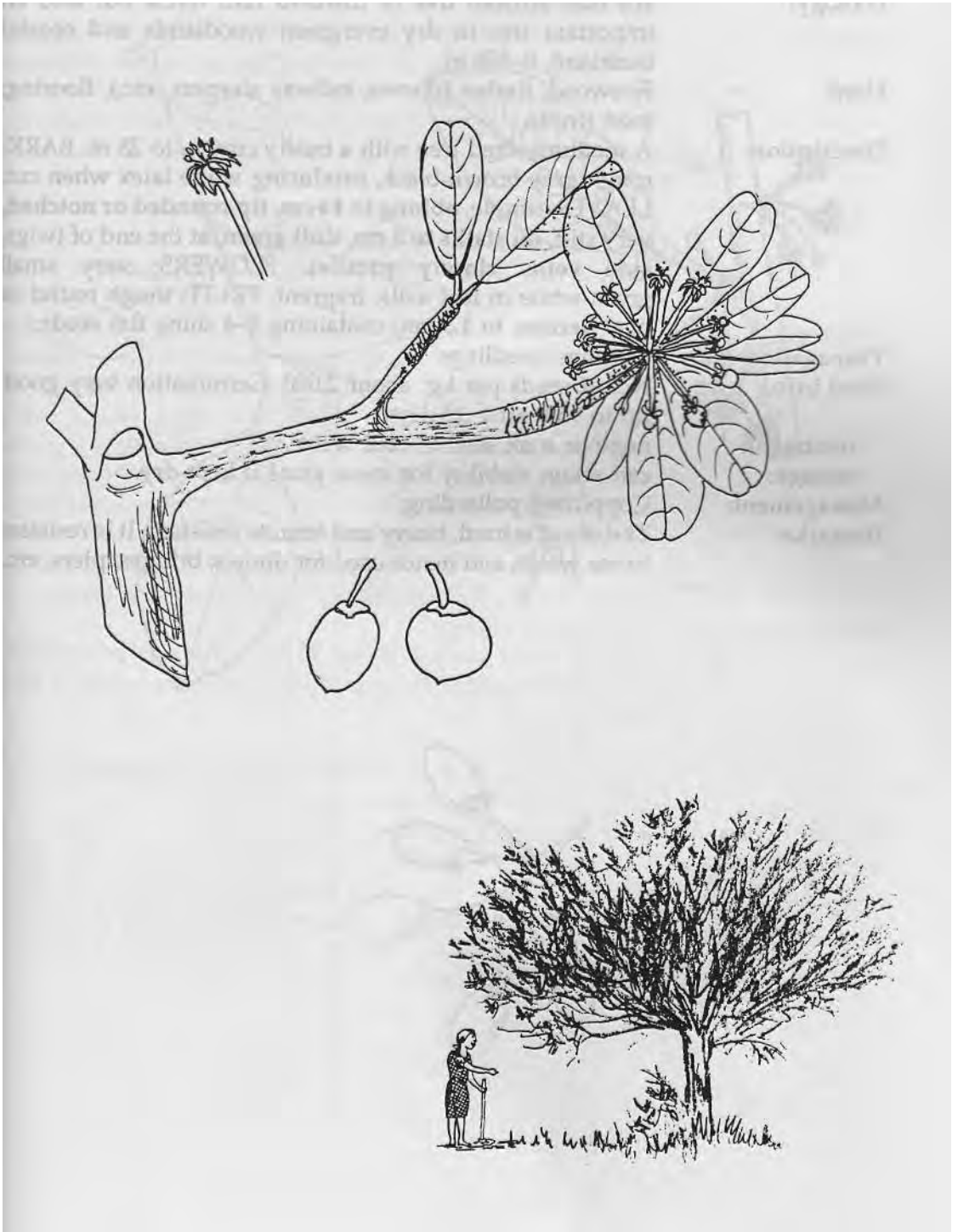
Seed info.: No. of seeds per kg: 3,500-4,000. Germination very good; 95% after 3 weeks.

treatment: not necessary.

storage: can retain viability for at least a year if kept dry.

Management: Slow growing; weed well during the first few years.

Remarks: It has durable timber. The tree is resistant to termites and has potential for agroforestry in semi-arid areas. The hard heavy timber is resistant to sea water and has been used to build dhows.

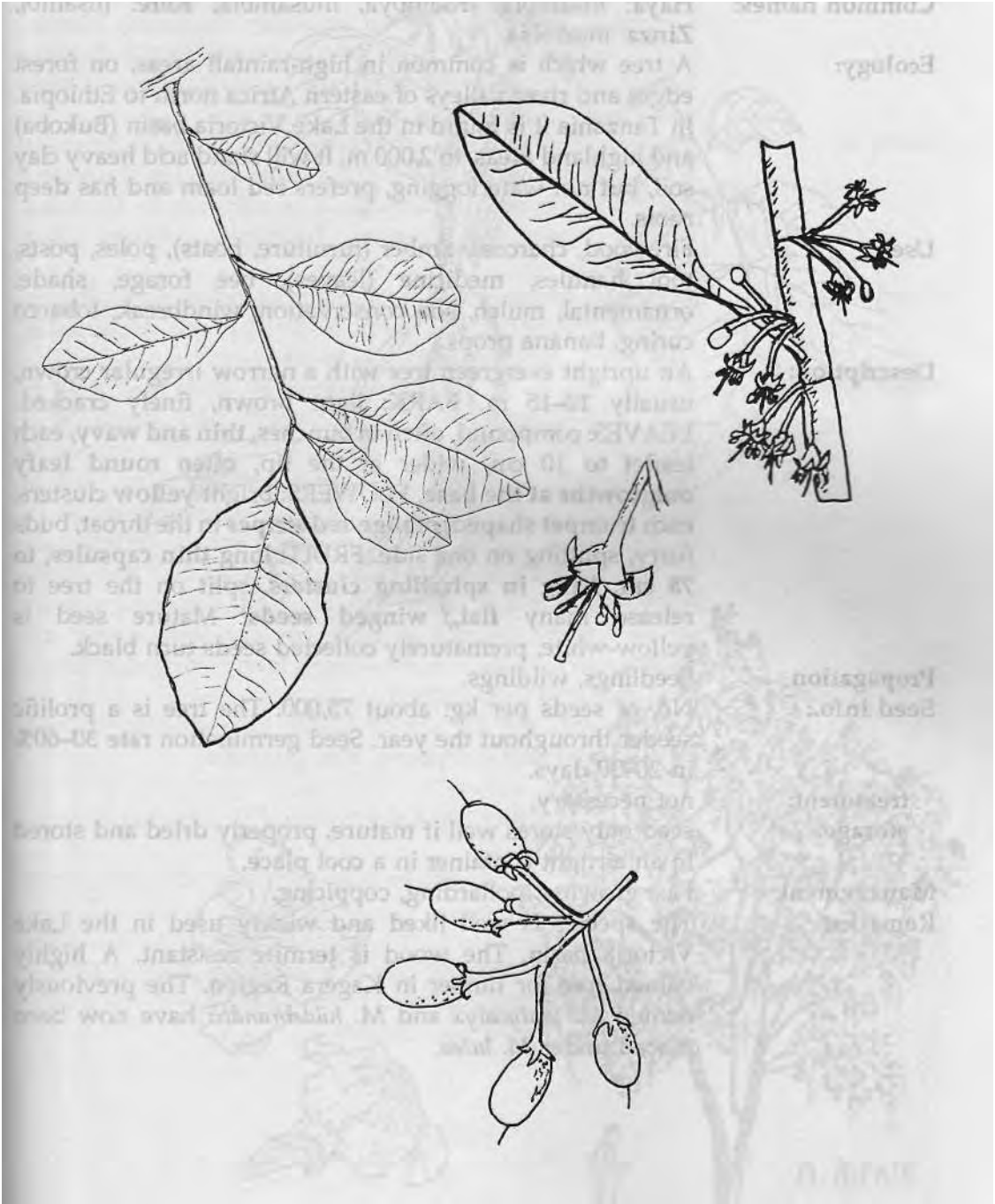


Manilkara sansibarensis (Mimusops cuneifolia) *Sapotaceae*

Indigenous

- Common names: Haya: mkunya; Swah: mgambo, mti-chuma; Zara: mtunda.
- Ecology: An East African tree of lowland rain forest but also an important tree in dry evergreen woodlands and coastal bushland, 0-300 m.
- Uses: Firewood, timber (dhows, railway sleepers, etc.), flooring, food (fruit).
- Description: A medium-sized tree with a bushy crown, to 25 m. BARK: rough grey-brown-black, producing white latex when cut, LEAVES: simple, oblong to 14 cm, tip rounded or notched, very stiff, on stalks to 3 cm, dull green, at the end of twigs; side veins closely parallel. FLOWERS: very small green-white in leaf axils, fragrant. FRUIT: tough round or oval berries, to 1.3 cm, containing \-A shiny flat seeds.
- Propagation
Seed info.: Cuttings, seedlings.
No. of seeds per kg: about 2,000. Germination very good; up to 95% after 30 days.
- treatment: none or soak seed in cold water.
- storage: can retain viability for some years if kept dry.
- Management: Coppicing, pollarding.
- Remarks: The wood is hard, heavy and termite resistant. It is resistant to sea water, and hence used for dhows, bridges, piers, etc.

Manilkara sansibarensis (Mimusops cuneifolia) *Sapotaceae*



Markhamia lutea

Bignoniaceae

Indigenous

- Common names: Haya: msambia, msambya, musambia; Kere: msambi; Zinza: msambia.
- Ecology: A tree which is common in high-rainfall areas, on forest edges and river valleys of eastern Africa north to Ethiopia. In Tanzania it is found in the Lake Victoria basin (Bukoba) and highland areas, to 2,000 m. It will stand acid heavy clay soil, but not waterlogging, prefers red loam and has deep roots.
- Uses: Firewood, charcoal, timber (furniture, boats), poles, posts, tool handles, medicine (leaves), bee forage, shade, ornamental, mulch, soil conservation, windbreak, tobacco curing, banana props.
- Description: An upright evergreen tree with a narrow irregular crown, usually 10-15 m. BARK: light brown, finely cracked. LEAVES: compound, often in bunches, thin and wavy, each leaflet to 10 cm, wider at the tip, often round leafy outgrowths at the base. FLOWERS: bright yellow clusters, each trumpet shaped, orange-red stripes in the throat, buds furry, splitting on one side. FRUIT: long thin capsules, to 75 cm, hang in spiralling clusters, split on the tree to release many flat, winged seeds. Mature seed is yellow-white, prematurely collected seeds turn black.
- Propagation Seed info.: Seedlings, wildings.
- treatment: not necessary.
- storage: seed only stores well if mature, properly dried and **stored** in an airtight container in a cool place.
- Management: Fast growing; pollarding, coppicing.
- Remarks: The species is well liked and widely used in the **Lake** Victoria basin. The wood is termite resistant. A high valued tree for timber in Kagera Region. The previously named *M. platycalyx* and *M. hildebrandtii* have now **been** placed under *M. lutea*.

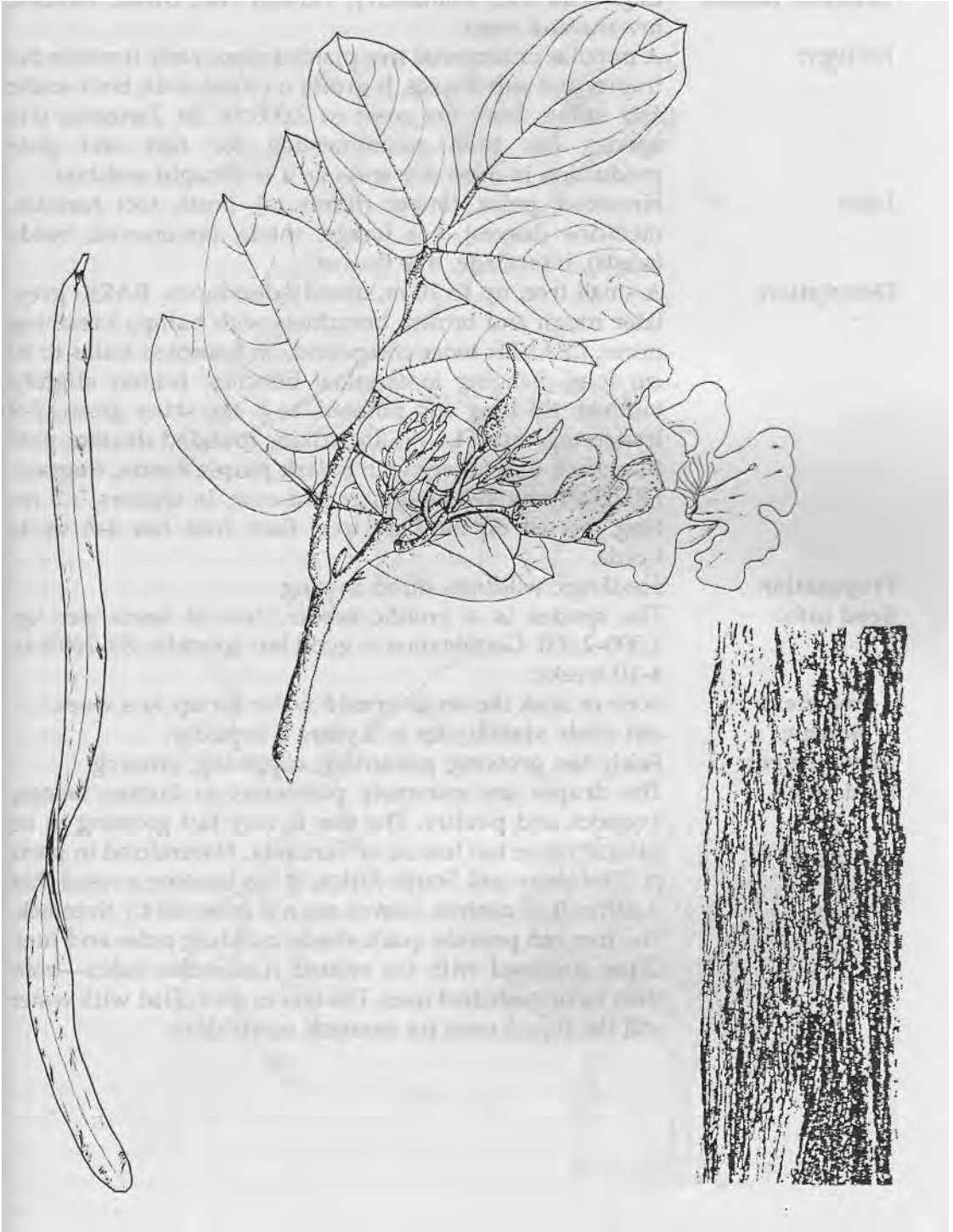


Markhamia obtusifolia

Bignoniaceae

Indigenous

- Common names:** Bende: mpapa; Bond: myuyu; Eng: golden bean tree; Gogo: mguoguo; Ha: mkola; Hehe: mguoguo, mguvani; Mwera: ngeba; Nyam: mbapa; Nyat: mlyati, mulati; Rangi: itunene; Samb: myuyu; Suku: mbapa, mtalabanda; Swah: mtarawanda; Zigua: myuyu.
- Ecology:** A tree occurring at medium to low altitudes from Kenya to South Africa in open woodlands and at margins of lowland evergreen forests. In Tanzania it is common in Mwanza, Tabora, Dodoma, Singida, Morogoro, Iringa, and Ruvuma.
- Uses:** Firewood, timber (furniture), building poles, tool handles, utensils, fodder (leaves), medicine (fruit, roots), ornamental, rope (bark), bird traps (twigs, bark).
- Description:** A much-branched deciduous shrub or small tree, 3-10 m high. **BARK:** light brown-grey, smooth with longitudinal strips peeling off in old trees. **LEAVES:** large, compound with up to 5 pairs of leaflets plus one terminal leaflet, 8-14 cm long, 4–6 cm wide, covered with dense golden hairs. Leaf stalks up to 8 cm long. **FLOWERS:** showy yellow, red-brown lines on 3 of the 5 petal lobes, buds and stalks hairy, at the end of twigs. **FRUIT:** long, flattened capsule up to 8.5 cm, usually smaller, covered with dense soft golden hairs, dehiscent, containing many winged seeds.
- Propagation:** Seedlings and root suckers.
- Seed info.:** No. of seeds per kg: about 32,000. Germination of fresh seed is good and completed after 2 weeks,
- treatment:** not necessary.
- storage:** can retain viability for a short period (3 months) at room temperature.
- Management:** Fairly fast growing; can be planted inside and along farm boundaries, coppicing.
- Remarks:** This tree can be grown with crops on farmlands. It may be bare for many months but is attractive when in flower. Later the fruit capsules often remain on the tree. The timber is very pale, heavy and durable.

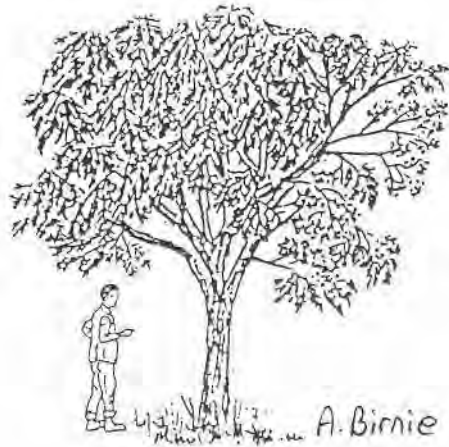
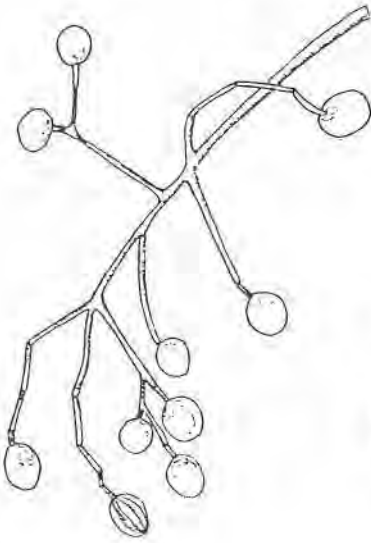


Melia azedarach

Meliaceae

Western Asia, Himalayas

- Common names: Eng: bead tree, Chinaberry, Persian lilac; **Swah:** mmelia, mwarubaini nusu.
- Ecology: A popular ornamental tree planted since early times in the tropics and sub-tropics. It grows on most soils, both acidic and saline, from the coast to 2,000 m. In Tanzania this species has been recommended for fuel and pole production in most dry areas as it is drought resistant.
- Uses: Firewood, poles, timber (furniture), posts, tool handles, medicine (leaves), bee forage, shade, ornamental, beads (seeds), insecticide, dye (leaves).
- Description: A small tree, up to 10 m, usually deciduous. **BARK:** grey, later rough and brown, branchlets with bumpy breathing pores. **LEAVES:** twice compound, on branched stalks to 40 cm long, hanging in terminal bunches, leaflets **slightly toothed, tip long and pointed, to 8 cm**, shiny green, 3-9 leaflets together. **FLOWERS:** striking **rounded clusters**, pale **lilac**, each tiny flower with a **dark purple centre**, fragrant. **FRUIT:** fleshy yellow-orange and oval, in clusters, 1.5 cm long, persist on the bare tree. Each fruit has 4-6 seeds inside.
- Propagation** Seedlings, wildings, direct sowing.
- Seed info.:** The species is a prolific seeder. No. of seeds per kg: 1,500-2,000. Germination is good but sporadic; 85-100% in 4-10 weeks.
- treatment:** none or soak the seeds in cold water for up to a week.
- storage:** can retain viability up to 2 years if kept dry.
- Management:** Fairly fast growing; pollarding, coppicing, pruning.
- Remarks:** The drupes are extremely poisonous to human beings livestock and poultry. The tree is very fast growing in its natural range but less so in Tanzania. Naturalized in parts of Zimbabwe and South Africa, it has become a weed **that** is difficult to control. Leaves are not browsed by livestock. The tree can provide quick shade, building poles and fuel. Often confused with the related *Azadirachta indica*—both trees have medicinal uses. The leaves are boiled with water and the liquid used for stomach complaints.



Milicia excelsa (Chlorophora excelsa)

Moraceae

Indigenous

Common names: Chag: mrie; **Eng:** iroko (West Africa), mvule (East Africa); Haya: muzuli, mwuli; **Hehe:** mpugusi; **Lugu:** mvule, mwule; Mwera: mtalula; Nyak: mwale; **Swah:** mvule; **Zigua:** mzule; **Zinza:** msule.

Ecology: A giant deciduous tree of lowland forest and wet savannah that is logged commercially throughout its range. Widespread throughout tropical Africa, Ivory Coast to Angola, Sudan to Mozambique. Very common in wetter lowlands of Tanzania, at the coast, and in areas around Lake Nyasa and Lake Victoria. It can grow well with mean annual rainfall as low as 700 mm provided it has access to extra water from a perennial stream or underground. It does not tolerate waterlogging and the soils must be well drained and relatively fertile.

Uses: Firewood, charcoal, timber (furniture, boats), shade, ornamental, mulch.

Description: Old trees may have a **straight trunk clear to 21 m** and **2 m in diameter**. The high umbrella crown grows from a few thick branches. Ultimate branches hang down. **BARK:** thick, pale, grey then brown, exudes slightly milky sap, as do the leaves. **LEAVES:** large, **oval to 18 cm**, rather thin, a clearly pointed tip, 10-18 pairs clear side veins, base rounded, often unequal sided, stalk to 4 cm, **leaf edge finely toothed and wavy**. **FLOWERS:** trees are male or female, both with small flowers in spikes, **male flowers in drooping catkins to 15 cm**, female shorter and thicker. **FRUIT:** like a long, green mulberry, 6-7 cm, the soft pulp attracting birds and bats. Fruits ferment rapidly on the ground. Small hard seeds in pulp.

Propagation: Seedlings, stumps.

Seed info.: No. of seeds per kg: about 475,000. The tree is not a prolific seeder and careful seed collection is needed. Germination is slow and poor, up to 45% in 45-60 days.

treatment: not necessary.

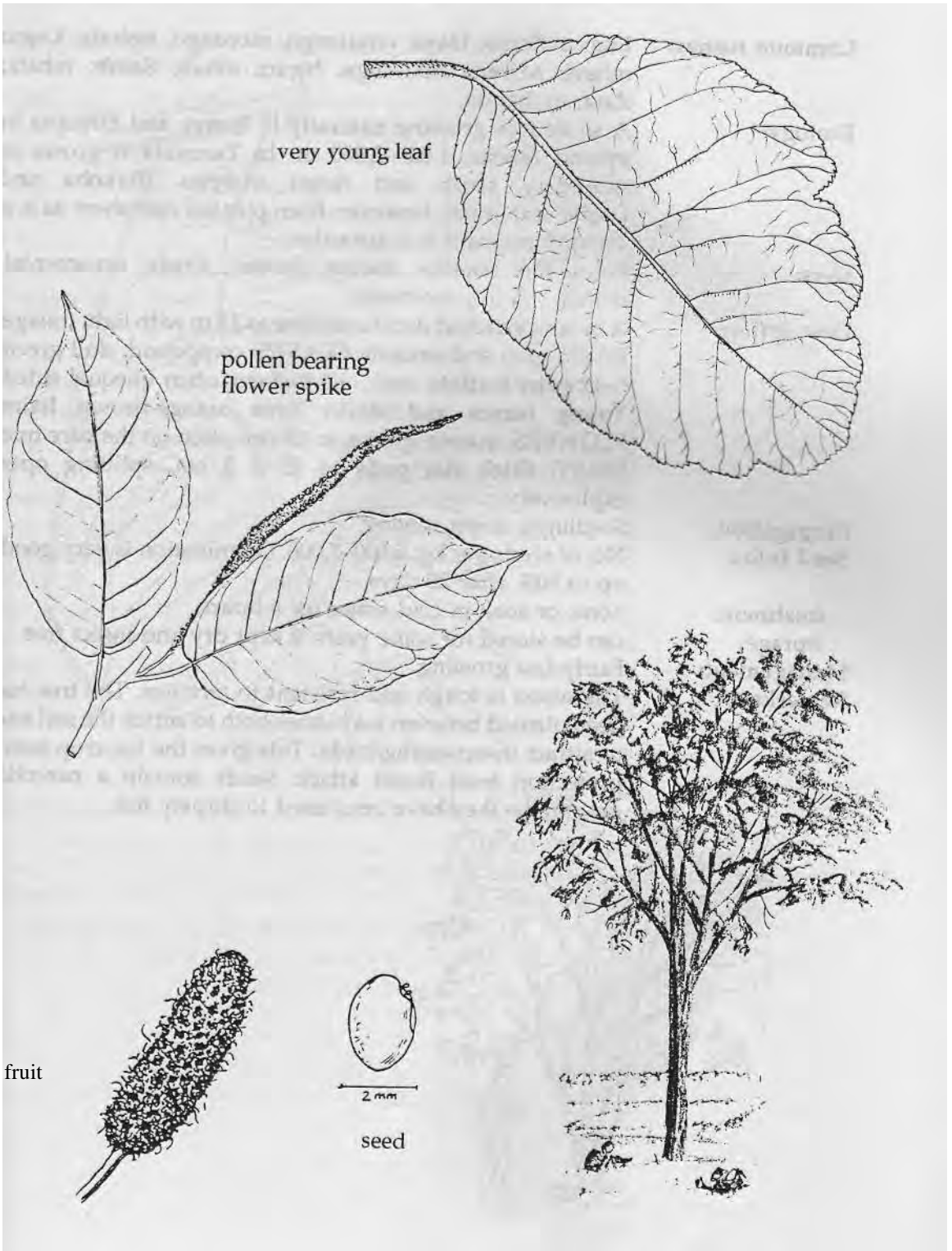
storage: seed loses viability quickly.

Management: Fast growing compared to other hardwood species. The rotation period is 100 years.

Remarks: The wood is hard, durable, termite resistant and resembles teak. Therefore it is highly valuable timber used especially for quality indoor and outdoor furniture. It is a reserved tree in Tanzania and cannot be felled without a licence. Tea estates are now required to leave the tree within their tea plantations.

Milicia excelsa (Chlorophora excelsa)

Moraceae



Millettia dura

Papilionoideae

Indigenous

Common names: **Eng:** millettia; **Haya:** omulongo, morongo, mshafa; **Lugu:** mhavi; **Mwera:** mkuunge; **Nguu:** mhafi; **Samb:** mhafa; **Zara:** muhamvi.

Ecology: A small tree growing naturally in Kenya and Ethiopia in upland forests, 1,000-2,000 m. In Tanzania it grows in secondary scrub and forest margins (Bukoba and Usambara). It has, however, been planted elsewhere as it is drought resistant and attractive.

Uses: Poles, tool handles, fodder (leaves), shade, ornamental, mulch, soil improvement.

Description: A much-branched deciduous tree to 15 m with light foliage. **BARK:** grey and smooth. **LEAVES:** compound, **dull green, 5-12 pairs leaflets**, each one to 5 cm, often unequal sided. **Young leaves and stalks have orange-brown hairs.** **FLOWERS:** **mauve sprays, to 20 cm**, often on the bare tree **FRUIT:** **thick flat pods** to 25 x 2 cm, splitting **open** explosively.

Propagation Seedlings, direct sowing.

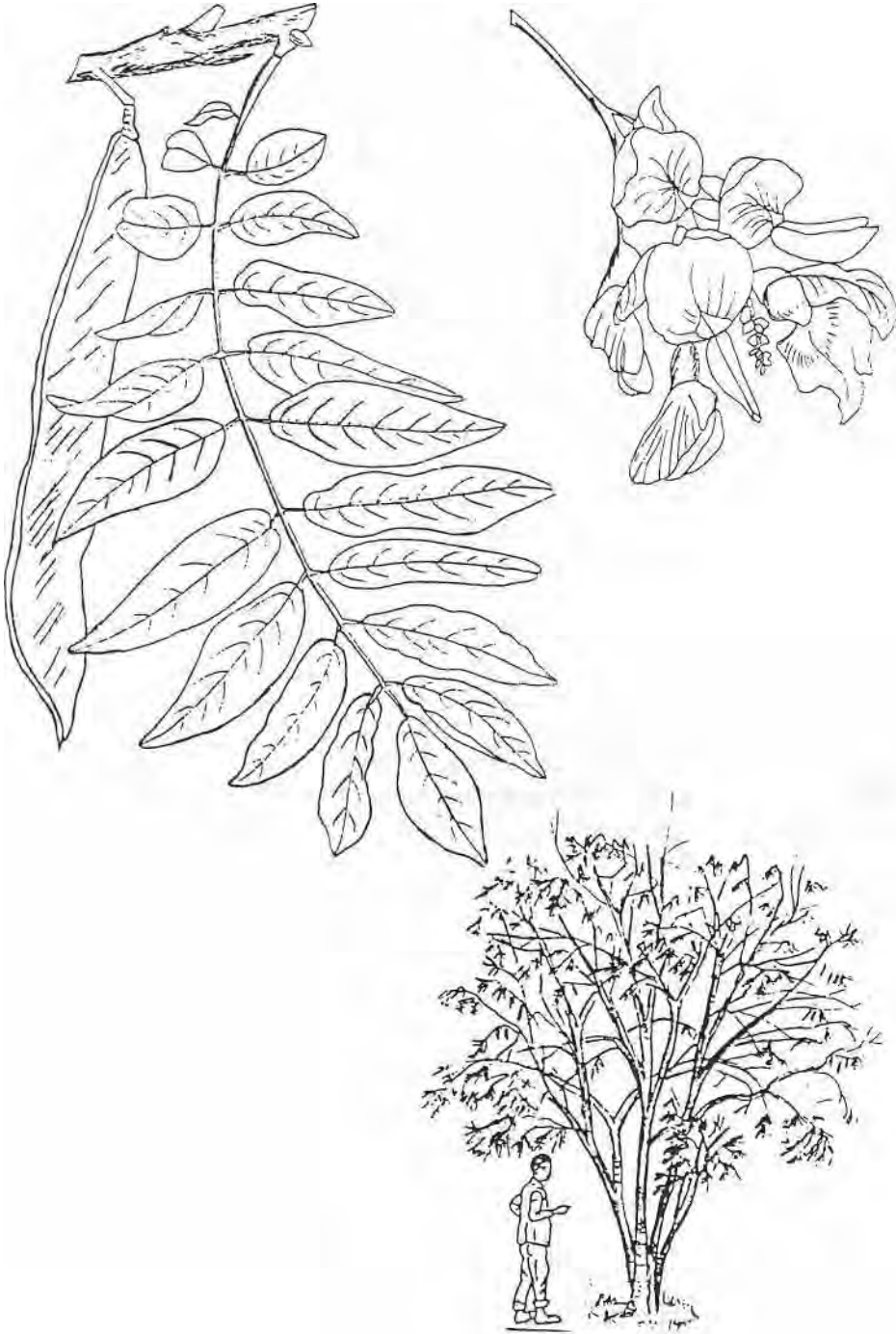
Seed info.: No. of seeds per kg: 6,000-7,000. Germination is very good; up to 80% after 20 days.

treatment: none, or soak in cold water for 6 hours.

storage: can be stored for some years if kept dry and insect free.

Management: Fairly fast growing.

Remarks: The wood is tough and resistant to termites. The tree has been planted between tea bushes both to enrich the soil and to attract insect-eating birds. This gives the tea crop some protection from insect attack. Seeds contain a narcotic, ground up they have been used to stupefy fish.

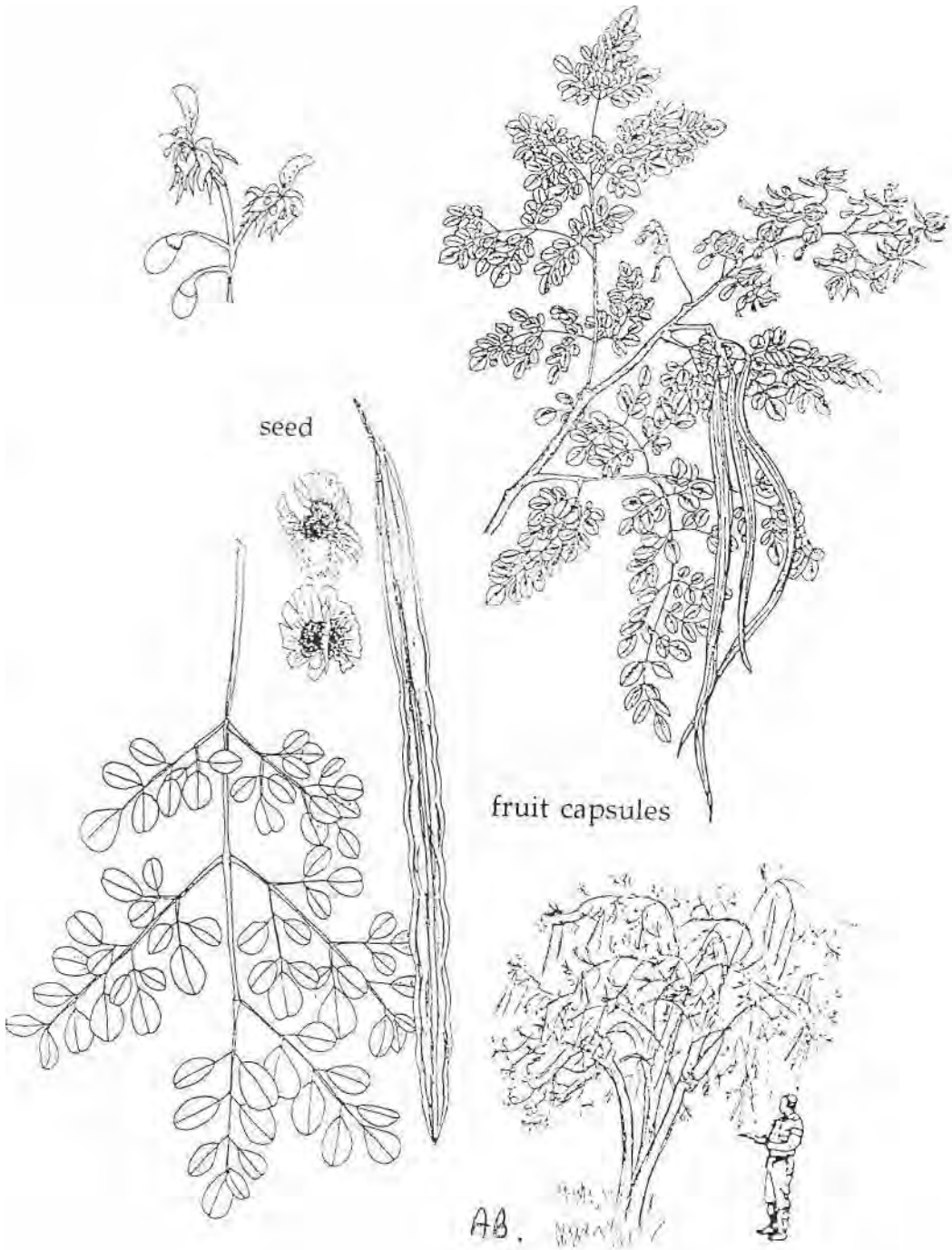


Moringa oleifera (M. pterygosperma)

Moringaceae

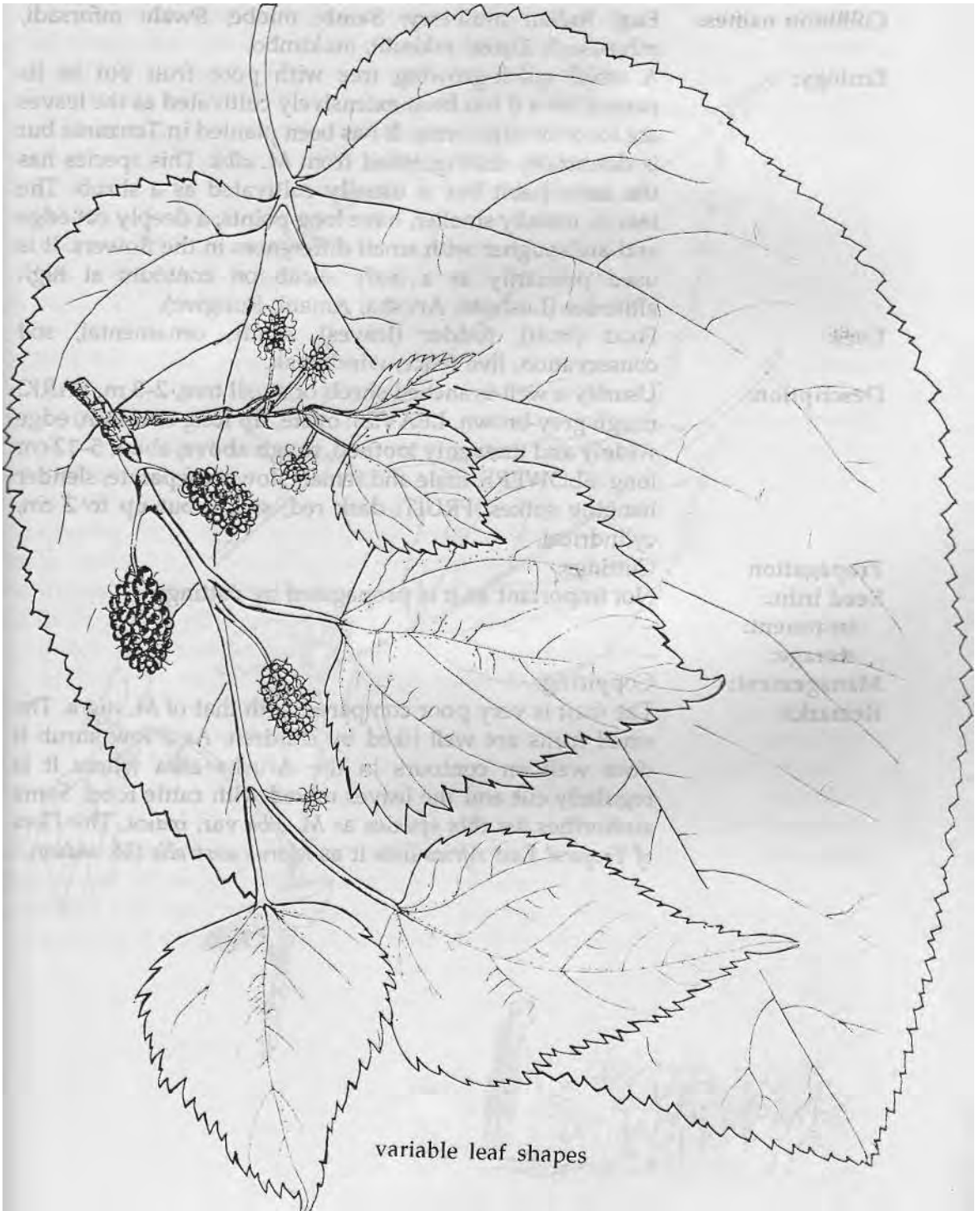
India, Himalayas

- Common names:** Eng: drumstick tree, horse-radish tree; **Lugu:** mlonge, mlonje; **Swah:** mlonge.
- Ecology:** Native to the western Himalayas and India but today planted all over the tropics. Naturalized in coastal areas of East Africa, it prefers low altitudes, usually 0-500 m, on well-drained sandy soils with a high watertable, but is also drought resistant. In Tanzania it has been planted at lower elevations throughout the country.
- Uses:** Food (young leaves, young fruit), spice/flavouring (young roots), medicine, fodder (leaves, young fruit), bee forage, shade, soil conservation, windbreak, fibre, live fence, tannin, oil (seeds), water purification (seeds).
- Description:** A deciduous tree to 10 m, usually smaller, **pale feathery foliage**. **BARK:** grey, thick and corky, peeling in patches. **LEAVES:** pale green, **thrice compound**, the whole leaf 30-60 cm, leaflets **usually oval, tip rounded 1-2 cm long**. **FLOWERS:** **cream**, fading yellow, in long sprays, sweet scented, attracting insects. **FRUIT:** long capsules to 45 cm, **bluntly triangular in sections**, splitting when dry to release **dark brown 3-winged seeds** from the pith.
- Propagation** Direct sowing, seedlings. Cuttings of more than 1 m can be used successfully.
- Seed info.:** No. of seeds per kg: 4,000-5,000. Germination rate 60-70% in 60-75 days.
- treatment:** not necessary or soak in cold water for 6 hours.
- storage:** can be stored for up to a year if kept dry.
- Management:** Fast growing; pollarding, coppicing, lopping.
- Remarks:** It is best suited to moist localities, but is also a useful tree for homesteads in dry areas because of its food value. The ground up seeds have been used successfully in the Sudan, Burundi and Kenya to clear muddy water—a very valuable property. The "Ben oil" from seeds keeps its quality and so can lubricate precision machinery, e.g. watches. It is also used for salad oil, soap and cosmetics.



China

- Common names:** Eng: mulberry, white mulberry; **Samb:** mlobe; **Swah:** mforsadi, mfurusadi.
- Ecology:** A tree native to warm temperate Asia, probably of mountainous China where it can reach over 20 m. Now widely cultivated in tropical Africa where it is much smaller, sometimes naturalized. It has been widely planted in Tanzania for its edible fruit, including drier areas of the country as it tolerates drought and heat once established. It does better in moist climates up to 2,000 m, and is also commonly planted in Arusha and Kilimanjaro Regions where it is frost resistant.
- Uses:** Firewood, timber, tools, food (fruit, leaves), fodder (leaves, shoots), bee forage, soil conservation, ornamental, shade, windbreak, live fence, silkworms (leaves).
- Description:** A small deciduous tree, about 5 m, bole rarely straight, soon branching to a rounded crown. **BARK:** smooth pink-grey when young, long lines of lenticels. Branchlets red-brown, hang low. When cut white latex spills out. **LEAVES:** **very variable** even on the same branch, **broadly ovate to heart shaped or 3 lobed**, 3 clear nerves from the base, 5-15 cm long but **usually small**. Leaf base cordate, often unequal sided, edge coarsely toothed, tip pointed. Some hairs on both sides but **leaves feel smooth above** (not rough), nerves hairy below. A leaf stalk to 5 cm. **FLOWERS:** male and female, often on separate branches, tiny green-white flowers on **hanging spikes** about **1 cm, few or no hairs**. **FRUIT:** compound, to 2 cm with white-yellow-pink sections, may be dark red to black on one side. Edible, sweet and juicy but rather tasteless.
- Propagation** Seedlings, cuttings.
- Seed info.:** Poor germination. No. of seeds per kg: 325,000-700,000.
- treatment:** soak in cold water for 48 hours,
- storage:** can be stored a long time if kept cold.
- Management:** Fast growing, especially when grown from cuttings.
- Remarks:** Leaves are food for silkworms. The yellow-brown **wood**, hard and tough, has been used elsewhere to make hockey sticks. Saplings grown from seed produce fruit in 5-8 years but cuttings in 3 years. The tree can be used as a hedge or to stabilize slopes.



variable leaf shapes

Moras indica

Moraceae

Tropical Asia, North India

- Common names: Eng: Indian mulberry; Samb: mlobe; Swah: mforsadi, mfurusadi; Zinza: mkimbi, mukimbo.
- Ecology: A small quick-growing tree with poor fruit but in its natural area it has been extensively cultivated as the leaves are food for silkworms. It has been planted in Tanzania but is doubtfully distinguished from *M. alba*. This species has the same habit but is usually cultivated as a shrub. The leaves, usually smaller, have long points, a deeply cut edge and are rougher with small differences in the flowers. It is used primarily as a leafy shrub on contours at high altitudes (Lushoto, Arusha, Amani, Rungwe).
- Uses: Food (fruit), fodder (leaves), shade, ornamental, soil conservation, live fence, windbreak.
- Description: Usually a well-branched shrub or small tree, 2-3 m. BARK: rough grey-brown. LEAVES: ovate, tip long and thin, edge widely and unevenly toothed, rough above, about 5-12 cm long. FLOWERS: male and female flowers separate, slender hanging spikes. FRUIT: dark red, small, but up to 2 cm, cylindrical.
- Propagation: Cuttings.
- Seed info.: Not important as it is propagated by cuttings.
- treatment:
- storage:
- Management: Coppicing.
- Remarks: The fruit is very poor compared with that of *M. nigra*. The small fruits are well liked by children. As a low shrub it does well on contours in the Arusha area where it is regularly cut and the leaves mixed with cattle food. Some authorities list this species as *M. alba* var. *indica*. The *Flora of Tropical East Africa* lists it as *Moms australis* (*M. indica*).

Moras indica

Moraceae

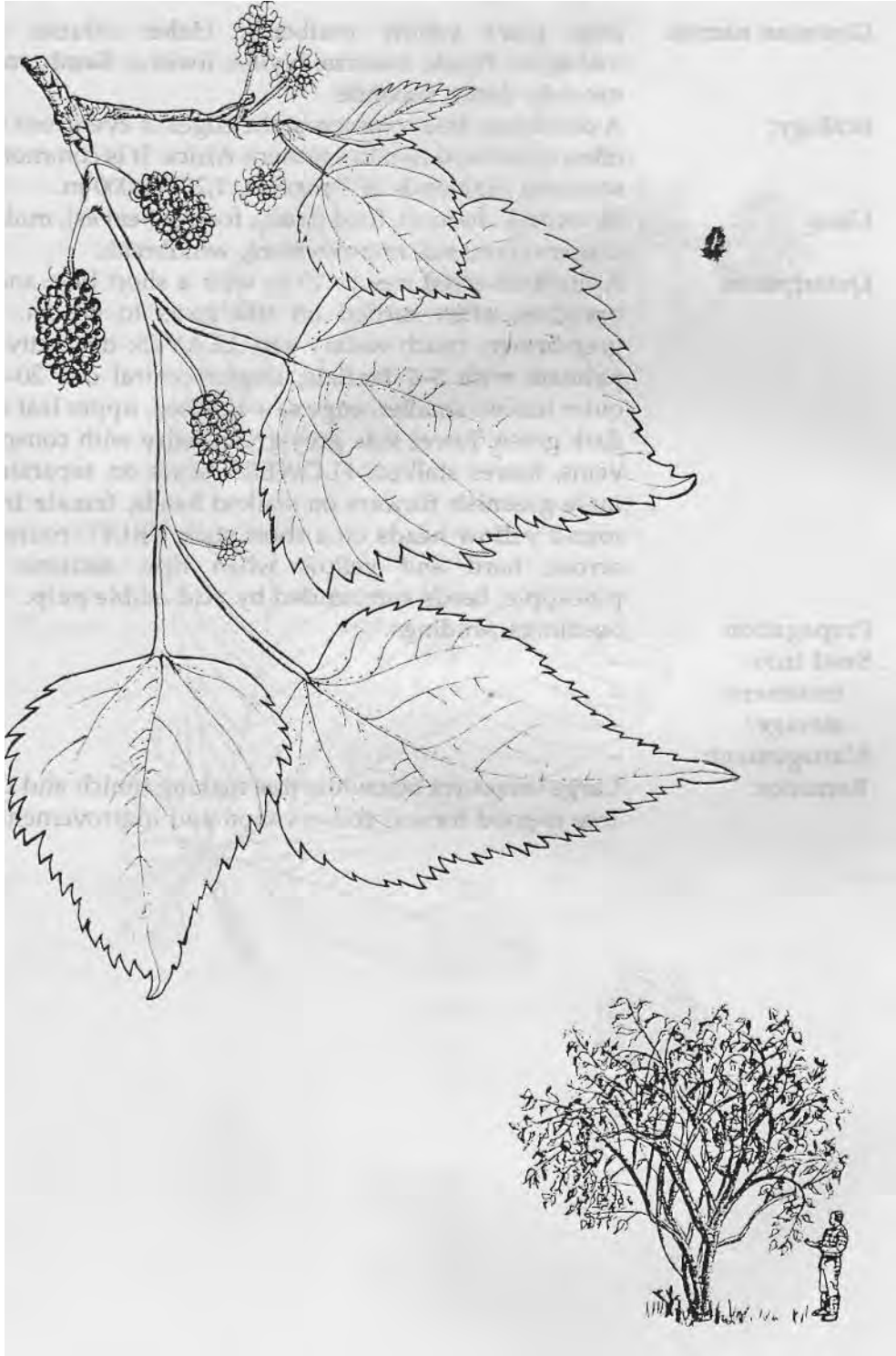


Morus nigra (M. japonica)

Moracem

Western Asia, Persia

- Common names: Eng: black mulberry; Samb: mlobe; Swah: mforsadi.
- Ecology: One of ten *Morus* species all with juicy compound fruit. Widely cultivated in the Middle East and warmer parts of Europe the Black Persian Mulberry is one variety. Both *M. nigra* and *M. alba* have been introduced to Africa, **each** species requiring different conditions. Although temperate in origin, *Morus* species grow surprisingly well in **arid** conditions from sea level to 2,000 m with little attention and taking easily from cuttings. *M. nigra* grows best at lower altitudes and at the coast and is preferred for its abundant sweet fruit and ornamental shape. It is not as widespread in Tanzania as *M. alba*.
- Uses: Firewood, food (fruit), fodder (leaves, fruit), bee forage, medicine (roots), ornamental, live fence.
- Description: A semi-deciduous shrub, usually 2-5 m, or a well-branched tree to 7 m with a spreading rounded crown. BARK: grey-brown, rough with age, resinous gum if cut. LEAVES: **large** and heart shaped, or broadly ovate, not lobed, 10-20 cm, the edge with large teeth, tip pointed, dull green **and** rough above, slightly hairy below. FLOWERS: sexes separate on the same tree, small green-white flowers on drooping spikes, female flowers with long soft hairs, small and crowded. FRUIT: compound, cylindrical, red **then** purple-black when ripe to 2.5 cm long (stains badly).
- Propagation: Cuttings.
- Seed info.: Not important as the tree is propagated from cuttings.
- treatment:
- storage:
- Management: Fast growing.
- Remarks: The tree grows rapidly from cuttings and bears fruit about 3 years. Both goats and cattle browse the leaves and shoots so young saplings need protection. The fruit is a favourite with children but is not grown commercially.



Myrianthus holstii

Moraceae

Indigenous

Common names: Eng: giant yellow mulberry; Hehe: mfutsa; Kinga: mabagala; **Nyak:** mswiza; Nyiha: liwisha; **Samb:** mkonde, mkonde dume, moonde.

Ecology: A deciduous tree common at the edges of evergreen forests, often riverine, down to southern Africa. It is common in **the** southern highlands of Tanzania, 1,200-2,000 m.

Uses: Firewood, charcoal, food (fruit), fodder (leaves), mulch, **soil** conservation, soil improvement, windbreak.

Description: A medium-sized tree to 10 m with a short bole and large branches, often carried on stilt roots to 60 cm. **BARK:** grey-brown, much watery sap. **LEAVES:** distinctive large **palmate with 5-7 leaflets**, largest central one 20-30 cm. outer leaflets smaller, edge **saw-toothed**, upper leaf smooth dark green, **lower side grey-green hairy** with conspicuous veins, leaves stalked. **FLOWERS:** sexes on separate trees. **male greenish flowers** on stalked heads, **female in small round yellow heads** on a short stalk. **FRUIT:** round, 4cm across, hard and yellow when ripe, sections like a pineapple. Seeds surrounded by acid edible pulp.

Propagation

Seed info.:

treatment:

storage:

Management:

Remarks:

Seedlings, wildings.

Large leaves rot below the tree making mulch and thus the tree is good for soil conservation and improvement.

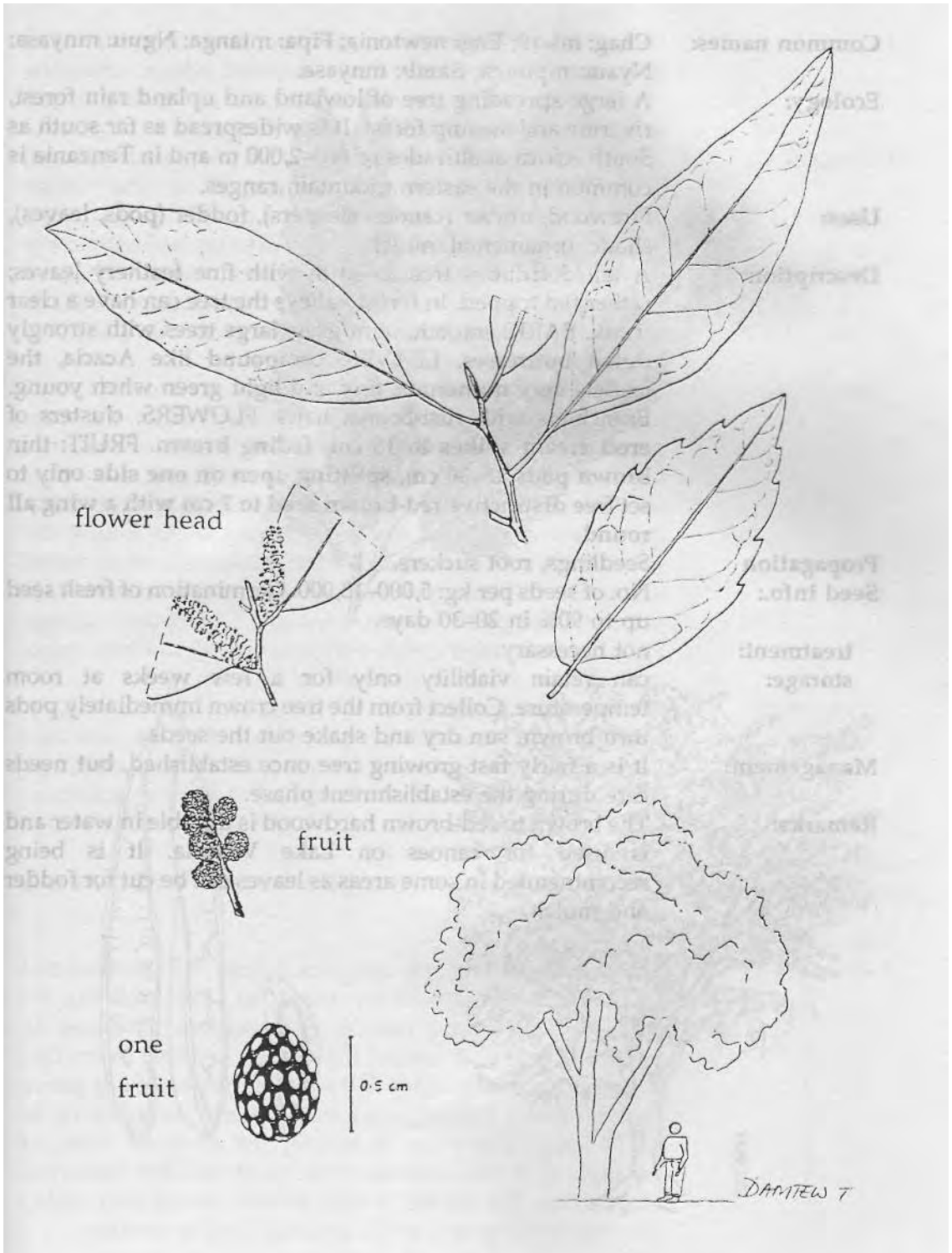


Myrica salicifolia

Myricaceae

Indigenous

- Common names: Chag: mfurukwe, mpache; **Hehe:** ndaitsa, mwefi; **Lugu:** kivumba; Maasai: olgetalasua; **Mate:** nkuguti; Pare: muangwi; **Samb:** mshegheshe.
- Ecology: A tree found in Kenya, Malawi, Zambia and Ethiopia, 1,600-3,300 m, and widespread on many mountain ranges in Tanzania above 1,200 m. Prefers shallow soils, heath and rocky areas.
- Uses: Firewood, timber (local carpentry only), medicine (leaves, seeds, roots, bark).
- Description: An evergreen shrub or much-branched tree up to 15 m high with a compact crown. BARK: dark grey, brown or black, smooth at first becoming rough, fissured and furrowed with age. Young twigs glandular and hairy. LEAVES: simple, alternate, up to 8.5 cm long, dark green above and pale green beneath with toothed margins, **dotted with golden glands, especially below**, giving a **spicy aromatic** smell when crushed. FLOWERS: small, yellow, fragrant and dotted with oil glands, male and female separate. FRUIT: On **a spike**, to **4 cm**, **each fruit berry-like** and round, very small, **purple with white waxy dots all over**.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: about 300,000. Germination is fast, but germination rate poor.
- treatment: treatment is not required.
- storage: can retain viability only for a short time (2 months) at room temperature.
- Management: Slow growing; coppicing.
- Remarks: The tree can easily be confused with young camphor (*Ocotea usambarensis*). Bark extracts are used to treat body pains and fatigue, and seeds and roots are used as an anthelmintic and to treat coughs. The wood is soft and light and of poor quality.

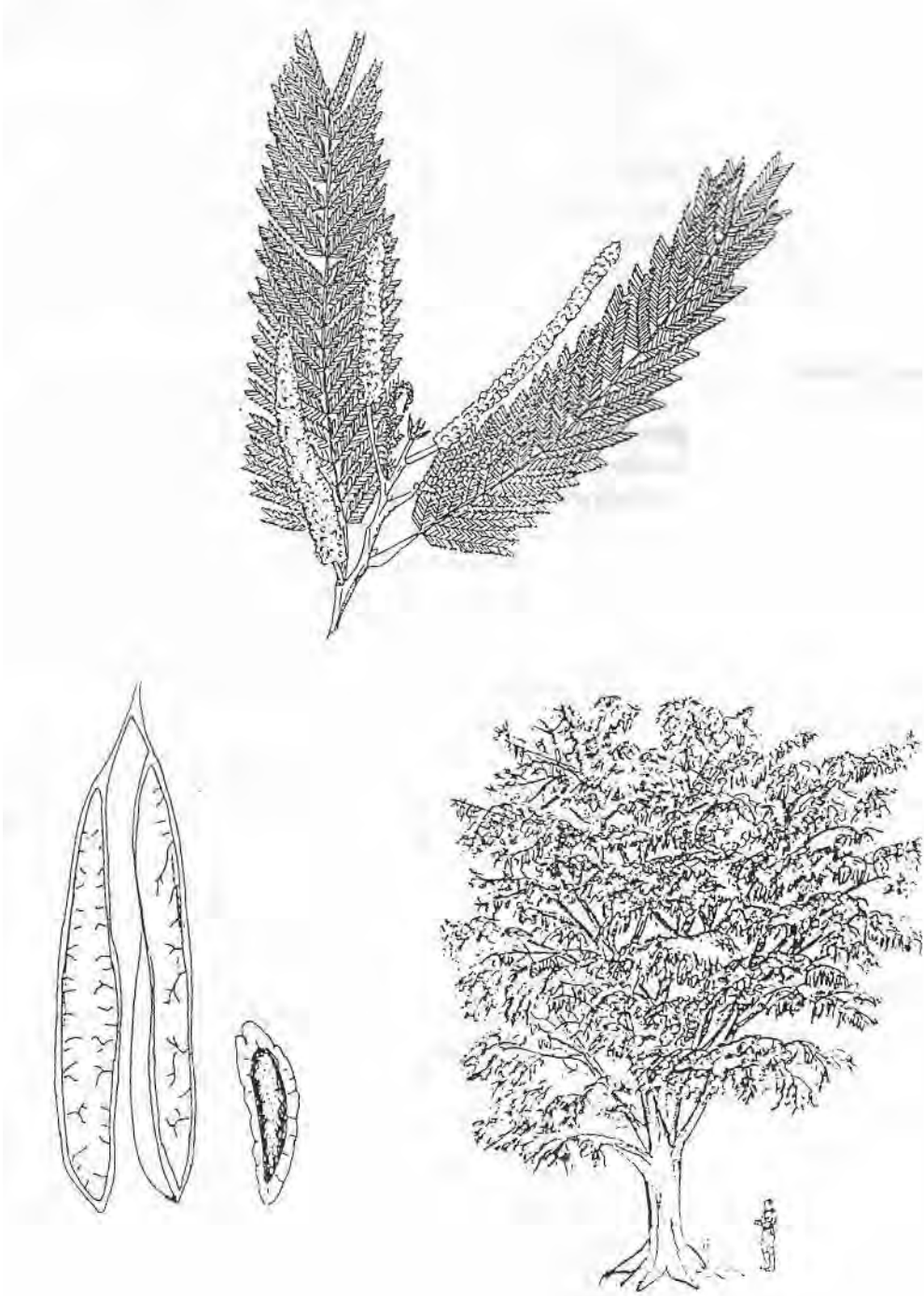


Newtonia buchananii

Mitnosoideae

Indigenous

- Common names: Chag: mkufi; Eng: newtonia; Fipa: mtanga; **Nguu:** mnyasa; Nyam: mpunga; Samb: mnyasa.
- Ecology: A large spreading tree of lowland and upland rain forest, riverine and swamp forest. It is widespread as far south as South Africa at altitudes of 600-2,000 m and in Tanzania is common in the eastern mountain ranges.
- Uses: Firewood, timber (canoes, sleepers), fodder (pods, leaves), shade, ornamental, mulch.
- Description: A tall deciduous tree to 40 m with fine feathery leaves; rather flat topped. In forest valleys the tree can have a clear trunk. **BARK:** smooth, light grey, large trees with strongly fluted buttresses. **LEAVES:** compound like Acacia, the leaflets very numerous, tiny and light green when young. Branchlets with rust-brown hairs. **FLOWERS:** clusters of erect cream spikes to 18 cm, **fading brown**. **FRUIT:** thin brown pods 15-30 cm, **splitting open on one side** only to set free distinctive red-brown seed to 7 cm with a wing all round.
- Propagation Seedlings, root suckers.
- Seed info.: No. of seeds per kg: 5,000-13,000. Germination of fresh seed up to 90% in 20-30 days.
- treatment: not necessary.
- storage: can retain viability only for a few weeks at **room** temperature. Collect from the tree crown immediately pods turn brown, sun dry and shake out the seeds.
- Management: It is a fairly fast-growing tree once established, but needs care during the establishment phase.
- Remarks: The brown to red-brown hardwood is durable in water and is used for canoes on Lake Victoria. It is being recommended in some areas as leaves can be cut for fodder and mulch.

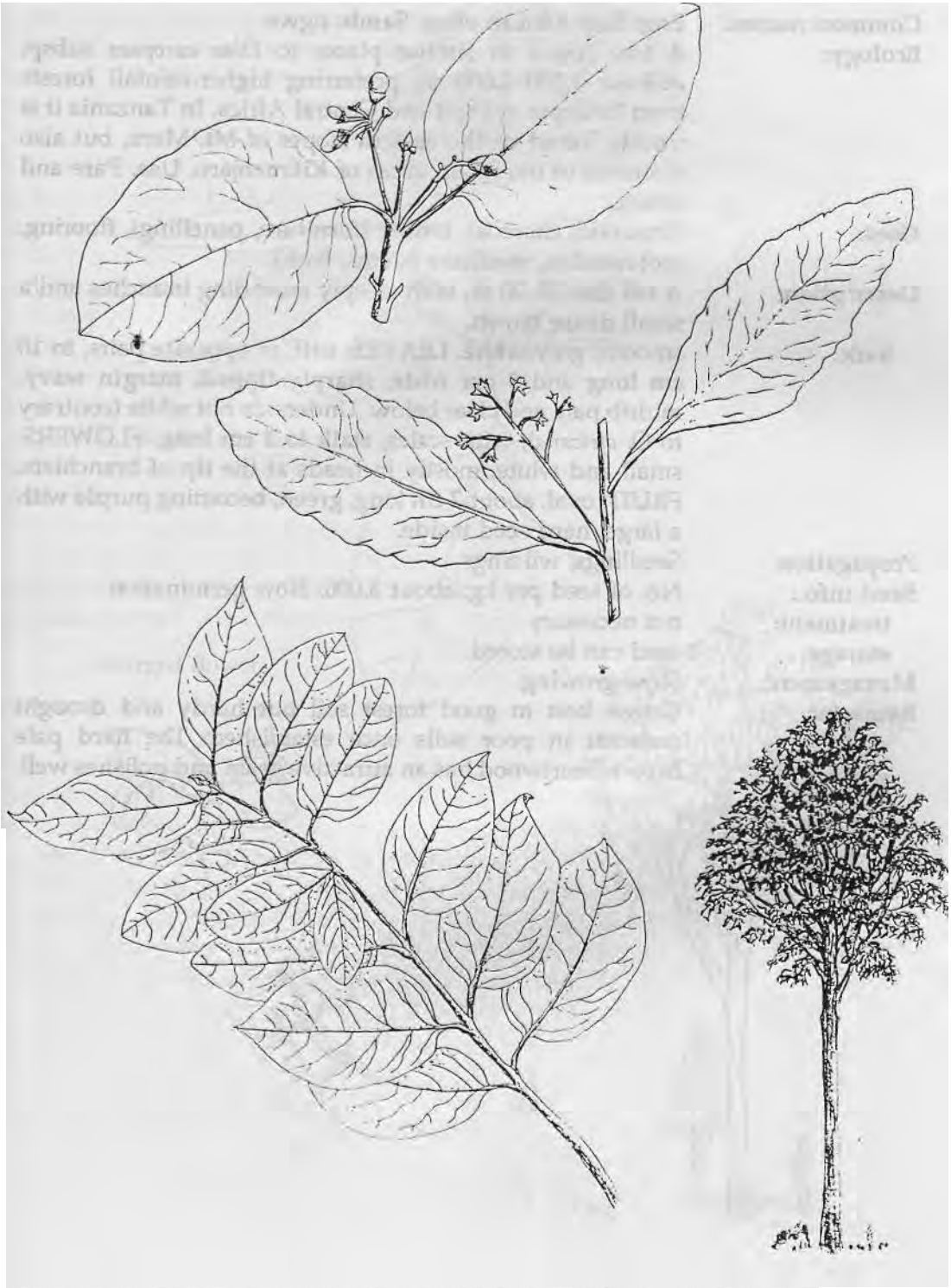


Ocotea usambarensis

Lauraceae

Indigenous

- Common names: Chag: mseri, muwong, mwawong; Eng: camphor, East African camphor wood; Hehe: muheti; **Kinga**: mbawira; Nyak: msibisibi; **Nyiha**: nsebi; **Pare**: maase, maasi; **Samb**: mkulo, mtoa-mada; **Samb** (west): mkenene.
- Ecology: A majestic evergreen timber tree widely distributed throughout East Africa and common in the wetter mountain forests of Tanzania, e.g. Kilimanjaro, the Usambaras, Pares, Ulugurus, and Tukuyu and Iringa. For optimum growth, it requires deep fertile soils with good drainage. Its climatic range is wet montane up to 2,600 m.
- Uses: Timber (joinery, furniture), veneer/plywood, panelling, medicine (roots, inner bark).
- Description: Mature trees may reach 40 m with a massive trunk up to 3 m across, slightly fluted at the base. Young trees are green-grey shapely cones. Leaves and wood are camphor scented but not the bark. **BARK**: grey, granular, then **red-brown**, scaling in **large rectangular flakes**. **LEAVES**: shiny dark green, oval to rounded, **grey-white below**, the veins wavy **and** brown, **the** edge **thickened**, often curled under. **FLOWERS**: separate male and female flowers, 8-10 yellow-white-green flowers, very small, hairy and stalked. **FRUIT**: smooth and green, very small, oval, to 6 mm, calyx cup very small, seeds surrounded by pulp.
- Propagation: Root suckers, seedlings.
- Seed info.: Fruit may be attacked by insects but the tree produces plenty of seed. No. of seeds per kg: 6,600. In best conditions 45% germination in 30-45 days, but it is often sporadic, within 2-3 months,
- treatment: not necessary.
- storage: sow seed immediately after extraction from the fruit as they do not store.
- Management: Fast growing.
- Remarks: In Tanzania, the natural camphor forests in Usambara and Kilimanjaro are intensively managed. The tree can be multiplied by lifting natural root suckers produced in profusion near and around the stumps of felled trees. This is encouraged due to the fact that camphor seed is scarce except during "mast" years which occur every third or fourth year. Camphor is among the reserved trees of Tanzania as it produces one of the most valuable timbers in East Africa. The timber is dark brown, strong and highly resistant to fungi and acids, although not to termites.



Olea capensis subsp. *hochstetteri* (*O. hochstetteri*) *Oleaceae*

Indigenous

Common names: Eng: East African olive; **Samb:** ngwe.

Ecology: A tree found in similar places to *Olea europaea* subsp. *africana*, 1,500-2,600 m, preferring higher-rainfall forests from Ethiopia to West and Central Africa. In Tanzania it is mainly found on the eastern slopes of Mt. Meru, but also scattered in mountain areas of Kilimanjaro, Usa, Pare and Mbulu.

Uses: Firewood, charcoal, timber (furniture, panelling), flooring, tool handles, medicine (stems, bark).

Description: A tall tree 10-20 m, with steeply ascending branches and a small dense crown.

Dark: smooth, grey-white. LEAVES: stiff, in opposite pairs, **to 10 cm long and 3 cm wide, sharply tipped, margin wavy**, midrib pale and clear below. Underside not white (contrary to *O. africana*), with scales, **stalk to 3 cm long**. FLOWERS: small and white, mostly in heads at the tip of branchlets. FRUIT: oval, about 2 cm long, green, becoming purple with a large, hard seed inside.

Propagation: Seedlings, wildings.

Seed info.: No. of seed per kg: about 3,000. Slow germination.

treatment: not necessary.

storage: seed can be stored.

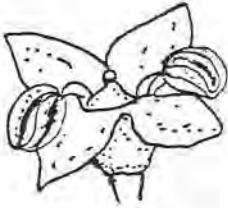
Management: Slow growing.

Remarks: Grows best in good forest soil but hardy and drought resistant in poor soils once established. The hard pale brown heartwood has an attractive grain and polishes well.

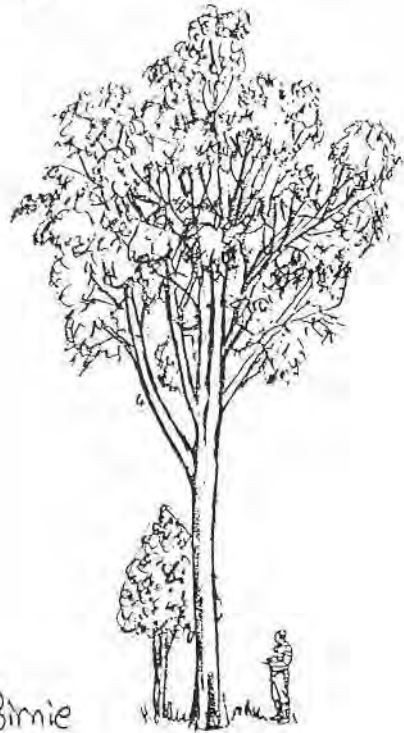
Olea capensis subsp. *hochstetteri* (*O. hochstetteri*) *Oleaceae*



enlarged flower



fruit



A. Birnie

Olea capensis subsp. *welwitschii* (*O. welwitschii*) *Oleaceae*

Indigenous

Common names: Arusha: lolyondo, olmasi; **Chag:** mchiyo, mshio, mudi; Eng: Elgon olive, loliondo; Fipa: sasi; **Iraqw:** sahati; Maasai: ololiondoi, olmasi; **Meru:** olmasi, mshiyo; **Pare:** lolyondo; Swah: loliondo.

Ecology: A tree with attractive timber found in Angola, Zambia, Kenya, Tanzania and Uganda in lowland rain forest to upland dry evergreen forest, 750-2,000 m. In Tanzania, found mainly on the south-eastern slopes of Mt. Meru and scattered on the slopes of Kilimanjaro.

Uses: Firewood (branches), timber (furniture), veneers, medicine (bark).

Description: A tree with a straight bole and small crown, can reach up to 25 m. BARK: pale grey to white and fissured vertically. LEAVES: opposite, large (15 x 5 cm), the **tip drawn out and pointed**, on a **stalk to 3 cm** (not white below contrary to *Olea africana*). FLOWERS: small and white, in profuse sprays to 8 cm long. FRUIT: narrow, oval and small, dark green when mature, remaining on the tree.

Propagation: Seedling, wildings.

Seed info.: No. of seeds per kg: 3,100-3,500. Cracking seed coat and removing it improves germination rate. Germination in 35-90 days.

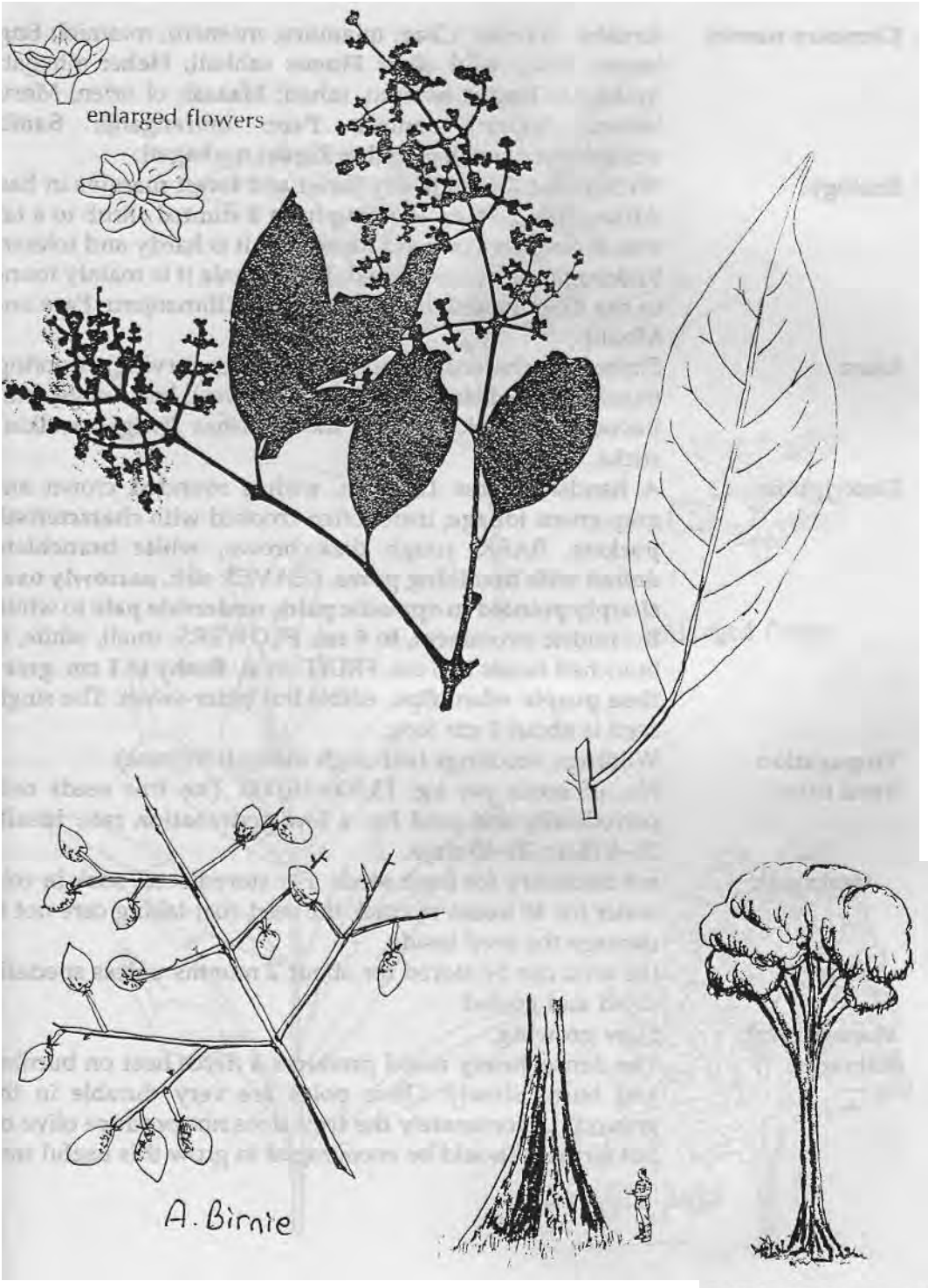
treatment: soak seed in cold water.

storage: seed can be stored up to 3 months but only if dried, stored in airtight containers and kept cool.

Management: Slow growing; lopping, pollarding, coppicing.

Remarks: The tree has a very valuable termite-resistant timber and should be well managed to prevent it becoming rare. In Tanzania it was established in plantations in Usa but today the plantation is totally destroyed by game (elephant browsing). Experience has shown that this species is tolerant to shade when young and grows best when planted alongside other trees—*Grevillea robusta* is used as a nurse tree in Tanzania.

Olea capensis subsp. *welwitschii* (*O. welwitschii*) *Oleaceae*



Olea europaea subsp. *africana* (*O. africana*)

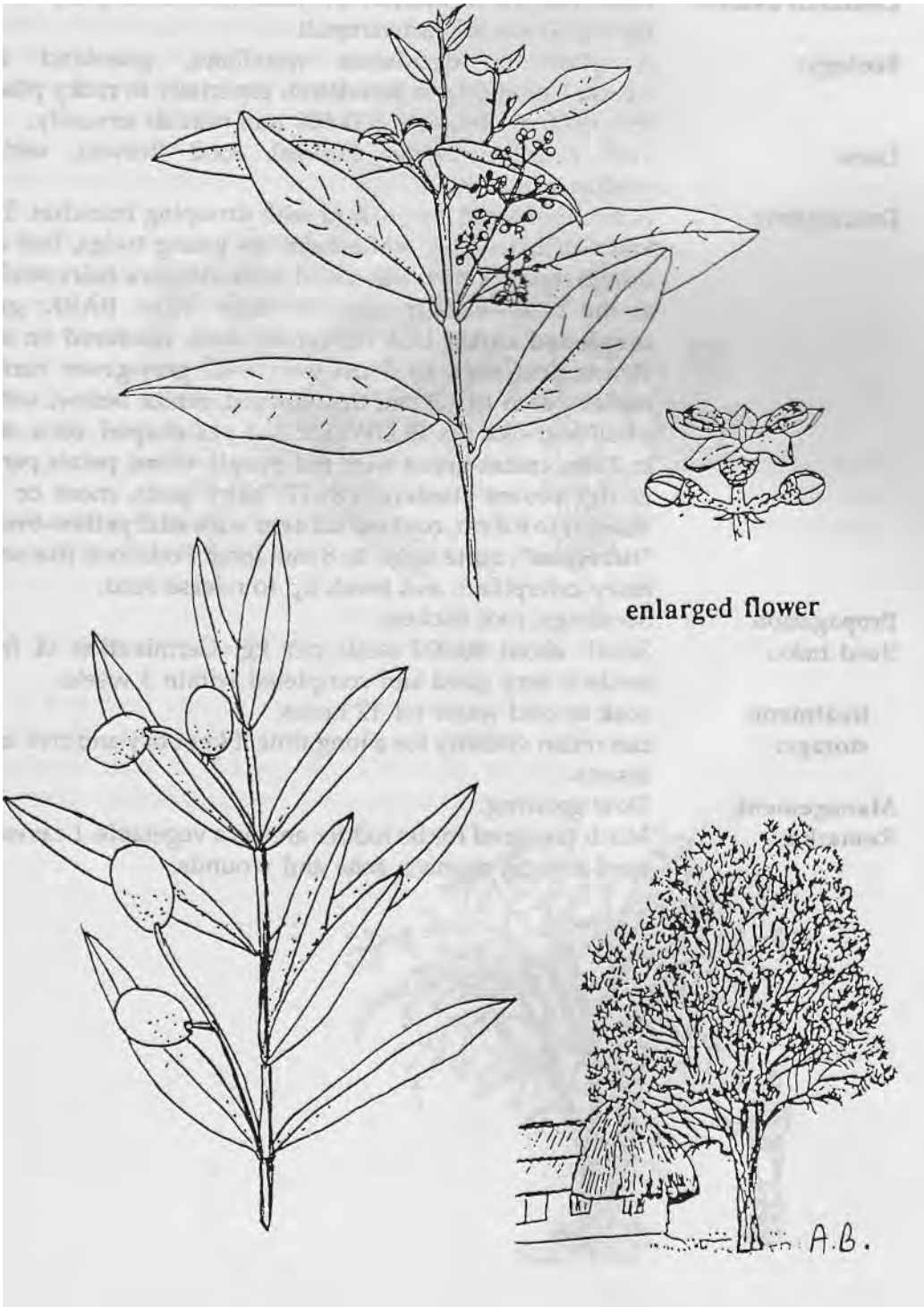
Oleaceae

Indigenous

- Common names: Arusha: ol orien; Chag: mlamuru, msenefu, mtamioi; Eng: brown olive, wild olive; Fiome: sahhati; Hehe: mhagati, muhagati; Iraqw: hlanmo, sahati; Maasai: ol orien; Menz loriene; Nguu: mamala; Pare: muranganji; Samb: mziaghembe, mzilaghembe; Zigua: muhagati.
- Ecology: Widely distributed in dry forest and forest margins in East Africa, 700-3,000 m. Ranging from a stunted shrub to a tall tree, it does well in good forest soil. It is hardy and tolerant to drought once established. In Tanzania it is mainly found in the drier mountain areas of Usa, Kilimanjaro, Pare and Mbulu.
- Uses: Firewood, charcoal, timber (furniture, carving), flooring, panelling, medicine (stems, bark, leaves), bee forage, milk flavouring (smoky wood), toothbrushes (twigs), walking sticks.
- Description: A handsome tree 10-15 m, with a rounded crown and grey-green foliage, trunk often crooked with characteristic pockets. BARK: rough dark brown, white branchlets, dotted with breathing pores. LEAVES: stiff, narrowly oval, sharply pointed in opposite pairs, underside pale to white, the midrib prominent, to 8 cm. FLOWERS: small, white, in branched heads to 5 cm. FRUIT: oval, fleshy to 1 cm, green then purple when ripe, edible but bitter-sweet. The single seed is about 1 cm long.
- Propagation Seed info.: Wildings, seedlings (although difficult to raise). No. of seeds per kg: 13,000-16,000. The tree seeds only periodically and seed has a low germination rate. Ideally 20-60% in 20-45 days.
- treatment: not necessary for fresh seeds. For stored seed, soak in cold water for 48 hours or crack the seed coat taking care not to damage the seed inside.
- storage: the seed can be stored for about 2 months unless specially dried and cooled.
- Management: Slow growing.
- Remarks: The dense, heavy wood produces a fierce heat on burning and burns slowly. Olive poles are very durable in the ground. Unfortunately the fruit does not produce olive oil but farmers should be encouraged to grow this useful tree.

Olea europaea subsp. *africana* (*O. africana*)

Oleaceae



Ormocarpum trachycarpum (O. mimosoides) *Papilionoideae*

Indigenous

Common names: **Hehe:** lungutiwa, mtimbwi; **Nyam:** mkondwampuli; Sang u: kipula; **Suku:** mkondwampuli.

Ecology: A plant of deciduous woodland, grassland and Acacia-Commiphora woodland, especially in rocky places, 950-1,800 m. Requires 600-900 mm rainfall annually.

Uses: Tool handles, fodder (leaves), food (leaves), withes, medicine (leaves).

Description: A shrub or small tree to 6 m with drooping branches. Two kinds of hairs: soft white hairs on young twigs, leaf and flower stalks; sometimes mixed with stiff dark hairs swollen at the base—usually seen on older twigs. **BARK: grey, rough and corky.** **LEAVES:** compound, **clustered on side shoots**, leaf stalk to 5 cm with 9-15 **grey-green** narrow leaflets, each to 1.5 cm, tip rounded, **white below**, with a small hair-like tip. **FLOWERS:** 1-4 **pea-shaped, on a stalk to 3 cm, cream-green with red-purple veins; petals** persist as **dry brown clusters.** **FRUIT:** hairy pods, more or less straight to 6.5 cm, **covered all over with stiff yellow-brown "tubercles"**, quite large, to 8 mm long. Pods look like small hairy caterpillars and break up to release seed.

Propagation Seedlings, root suckers.

Seed info.: Small, about 80,000 seeds per kg. Germination of fresh seeds is very good and completed within 3 weeks.

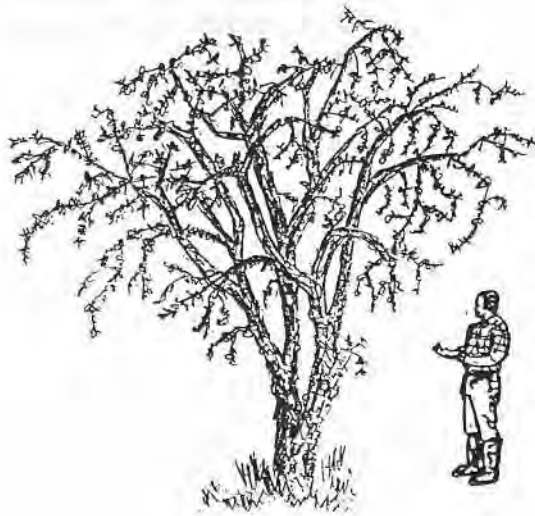
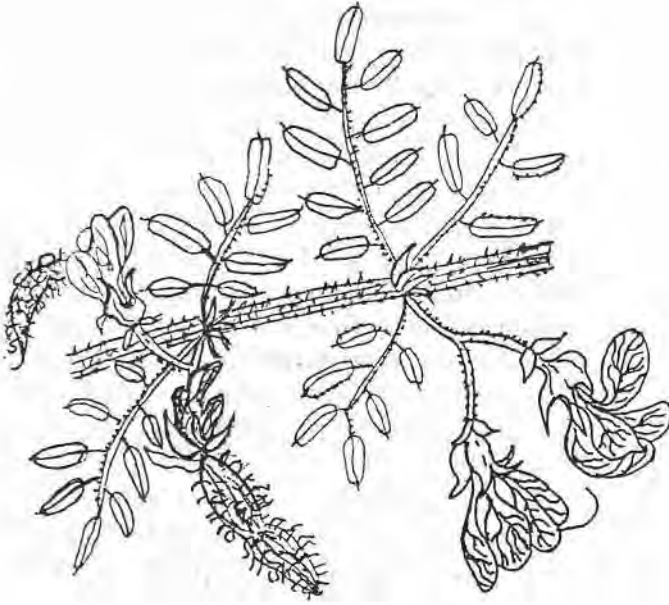
treatment: soak in cold water for 12 hours.

storage: can retain viability for a long time if kept dry and free from insects.

Management: Slow growing.

Remarks: Much favoured for its fodder and as a vegetable. Leaves are used to treat stomach ache and wounds.

Ormocarpum trachycarpum (O. mimosoides) *Papilionoideae*



Osyris lanceolata (*O. compressa*)

Santalaceae

Indigenous

- Common names: Bara: getakhubay; Chag: mberegesa; Eng: African sandalwood; Fipa: mkaisya; Goro: siginyanyi; Hehe: muvambalafidunda, mvavalavidunda; Iraqw: kipaa-atu; Maasai: oloyesyyai; Nyab munyingwampembe, muvabaahi; Pare: mzulu; Samb: mzuru; Swah: msandali.
- Ecology: An indigenous plant in highland forest and bush.
- Uses: Firewood, timber, utensils (pestles), medicine (bark, roots), perfume (wood, roots).
- Description: An evergreen shrub or small tree up to 6 m. BARK: light grey-brown or black. LEAVES: alternate, green with a bluish flush, leathery, tapering to the base, edge tightly rolled under, a fine sharp tip. The short thick stalk runs down to the stem forming a ridge. FLOWERS: small, pale green-yellow in short terminal heads. FRUIT: small, red, turning purple-black, fleshy oval, about 1.5 cm long.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: 10,000-11,000.
- treatment: no pre-treatment is required, but nicking the base of the seed increases germination speed. Germination reaches 60% after 6 weeks.
- storage: the seeds cannot be stored.
- Management: Very slow growing. Requires the shade of nurse trees at the early stage of growth.
- Remarks: An endangered tree having been heavily exploited in the past for extraction of perfume. Farmers should be encouraged to plant this tree species on their farmlands. Bedsteads are made from the fragrant timber. Roots and bark provide a blood tonic.

Osyris lanceolata (O. compressa)

Santalaceae

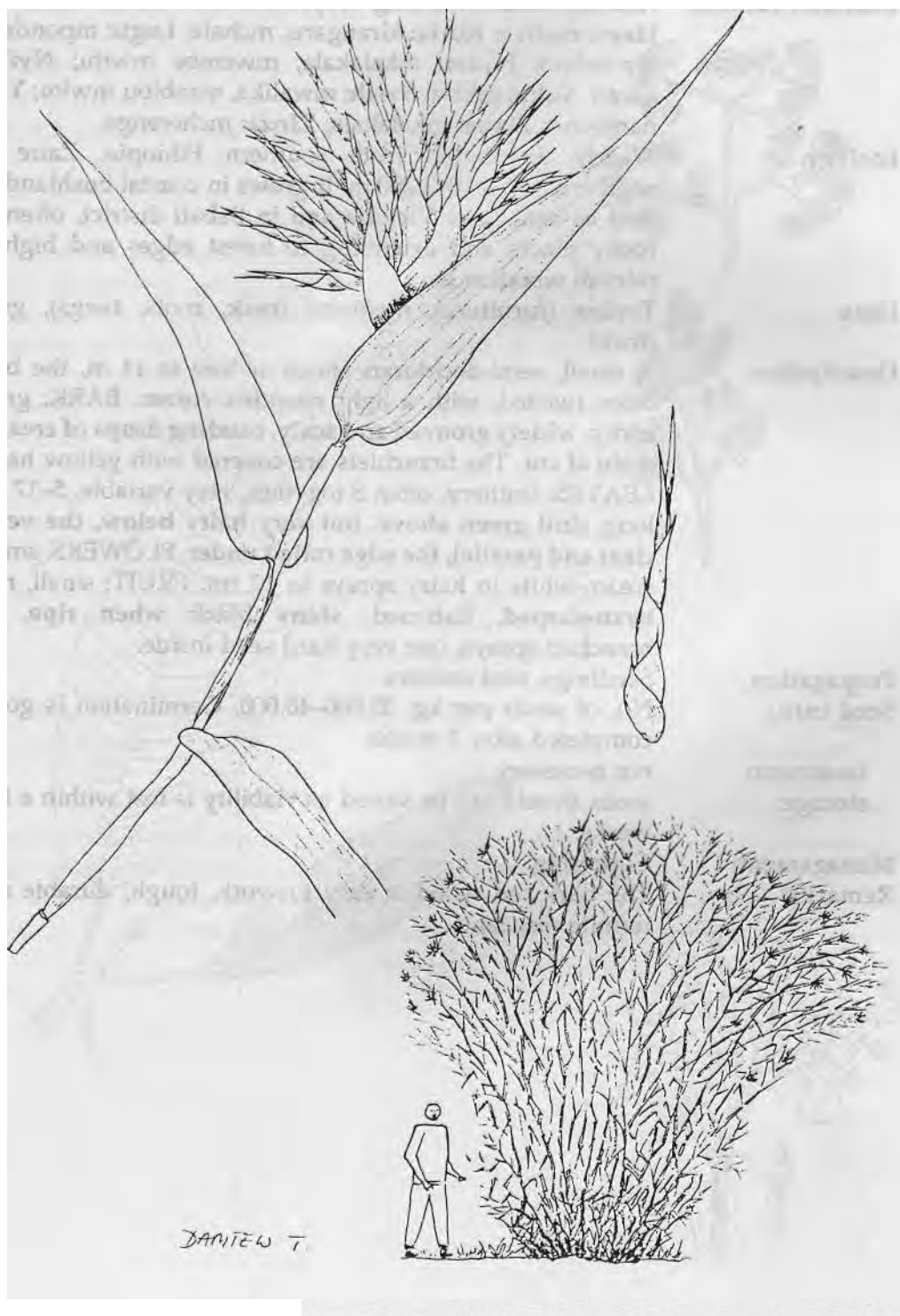


Oxytenanthera abyssinica

Gramineae

Indigenous

- Common names:** Bond: lasi; Eng: lowland bamboo, wild bamboo, wine bamboo; Hehe: kitindi, mulanzi; Kinga: mlanzi; Lugu: mlanzi; Mako: mbunga; Mwera: mpunga, mwanzi; Nyam: mlanzi; Samb: lasi; Swah: mwanzi; Zigua: lazi.
- Ecology:** In continental Africa the lowland bamboo grows in Ethiopia, Uganda, Zimbabwe and Zambia as well as Tanzania. It is the most hardy of three African bamboo species growing on wooded hillsides, riverbanks and damp places, often on very poor soils. In Tanzania it is common in Iringa, Njombe, Lindi, Kisarawe and Mbeya, 500-1,600m.
- Uses:** Poles (building), drink (young shoots tapped), fodder (leaves), soil conservation, basketry (trays, etc.), dry fencing, boundary marker.
- Description:** A tall grass to 7 m or more in dense clumps arching over. Unusual in having solid stems, up to 10 cm in diameter at the base. LEAVES: Blue-green, base rounded, the tip long and spiny, usually 15 x 2.5 cm but up to 30 x 5 cm. Irritating dark brown hairs on the leaf sheath. FLOWERS AND FRUIT: spikelets narrowed, pointed, 2.5 cm in dense rounded clusters 6 cm across. Flowering takes place about every 7 years. The clumps die down but shoot up a year later from the rhizomes.
- Propagation:** Cuttings, rhizomes like sugarcane, suckers.
- Seed info.:** Seed is rare.
- treatment:**
- storage:**
- Management:** A fast-growing bamboo; needs thinning.
- Remarks:** Potential for agroforestry and for production of alcohol /wine. Like most bamboo, each plant flowers only once and then dies. Fences may be damaged by termites and borers but the plant survives fire in its natural habitat



Ozoroa insignis (Heeria reticulata)

Anacardiaceae

Indigenous

Common names: Arusha: olkunonoi; Eng: tropical resin tree; **Goro**: burthi; Haya: muhva; Kuria: kirangaru, mchale; **Lugu**: mpondela, mpondelo; Nyam: mkalakala, mwembe mwitu; **Nyiha**: karati; Suku: mkala; Swah: mwalika, mzabibu mwitu; Yao: nambono; Zigua: mkalakala; **Zinza**: mcherenge.

Ecology: Widely distributed from southern Ethiopia, Zaire to southern Africa, 0-2,200 m. It grows in coastal bushland as well as near Lake Victoria and in Babati district, often in rocky places and extending to forest edges and higher-rainfall woodlands.

Uses: Timber (furniture), medicine (bark, roots, twigs), gum (fruit).

Description: A small, semi-deciduous shrub or tree to 14 m, the bole often twisted, with a light rounded crown. BARK: grey, corky, widely grooved and scaly, **exuding drops of creamy resin** if cut. The branchlets are covered with yellow hairs. LEAVES: leathery, often 3 together, very variable, 5-17 cm long, dull green above, **but very hairy below, the veins clear and parallel, the edge rolled under.** FLOWERS: small, cream-white in hairy sprays to 17 cm. FRUIT: small, red, bean-shaped, flattened, shiny **black when ripe**, on branched sprays, one very hard seed inside.

Propagation Seedlings, root suckers.

Seed info.: No. of seeds per kg: 35,000-40,000. Germination is good, completed after 3 weeks,

treatment: not necessary

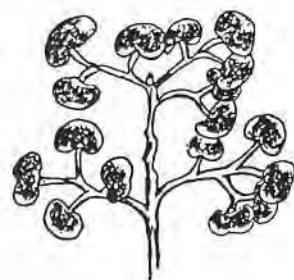
storage: seeds should not be stored as viability is lost within a few weeks.

Management: Coppicing.

Remarks: The dark red wood is easy to work, tough, durable and termite resistant.

Ozoroa insignis (*Heeria reticulata*)

Anacardiaceae



Pappea capensis (Pappea ugandensis)

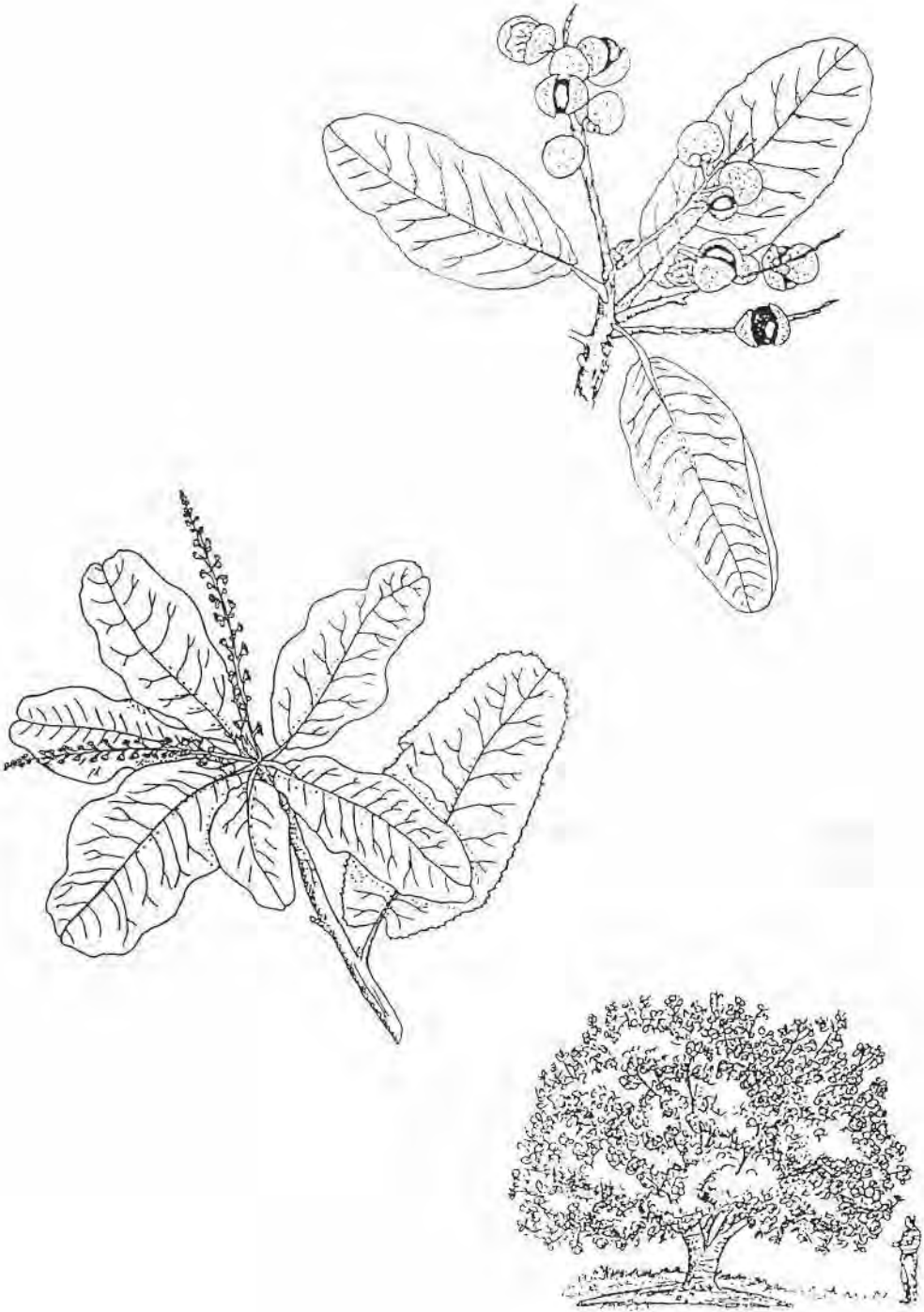
Sapindaceae

Indigenous

- Common names: Arusha: orimigomi; Eng: pappea; **Fipa:** mwunza, mwikalatulo; Gogo: mtori, muanga; **Goro:** getakhubay; Hehe: mhungulu; **Kuria:** momange; **Maasai:** ol dimigomi; Nyat: mjaghamba; Rangi: iyarampimbi, mtula-ikufa; Swah: mubamba-ngoma; **Zigua:** mnenge; **Zinza:** muliwa-mpango.
- Ecology: Widely distributed at medium to high altitudes in drier forest, savannah and open woodland, often among rocks. It extends south to southern Africa.
- Uses: Firewood, timber, posts, food (fruit, leaves), medicine (oil, bark), fodder (fruit), bee forage, shade, ornamental, oil.
- Description: A small, leafy, semi-deciduous tree, usually to 6 m, with a short trunk branching low down to form a spreading rounded crown. **BARK:** pale to dark grey, smooth, with horizontal markings. **LEAVES:** distinctive, **oblong** in shape, usually in terminal clusters, dull dark green, stiff and wavy, the edge sometimes **spine-toothed**, base rounded. **FLOWERS:** green-yellow in spikes to 12 cm, male flowers at the end, female at the base of the spike. **FRUIT:** round, furry green capsules about 1 cm across, split to reveal a **bright orange-red jelly (the aril)** covering the shiny black seeds. This juicy flesh is edible, slightly acid but pleasantly flavoured.
- Propagation: Seedlings.
- Seed info.: Up to 20% germination in 2-4 weeks with fresh seed,
treatment: no treatment needed,
storage: fresh seed is best.
- Management:
- Remarks: The brown wood is hard and tough with a twisted grain. The oil from the seeds has various medicinal uses, e.g. for ringworm and as a purgative. It can also be used as soap. The leaves are considered good fodder for cattle and game, especially in arid areas.

Pappea capensis (*Pappea ugandensis*)

Sapindaceae



Indigenous

- Common names:** **Bende:** mbula; **Eng:** fever tree; **Fipa:** mwula; **Haya:** munanzi; **Hehe:** msawola, msawula; **Iraqw:** amafa-aa; **Kere:** muhasi; **Mate:** mbula; **Nyak:** mbula; **Nyam:** mbula, mubula, muvula, muwula, mnazi ya porini; **Nyiha:** maula; **Rangi** mafaa, mumora; **Suku:** mnazi; **Zara:** mbula; **Zinza:** munazi.
- Ecology:** A tree occurring north to Kenya and Senegal and south to the Transvaal in all types of woodland and evergreen thicket, 0-1,900 m. In Tanzania it grows on sandy soils in open deciduous woodland near the coast, in Kondoa district and around Lake Victoria.
- Uses:** Firewood, charcoal, timber (building rafters, furniture), poles, food (fruit, seed), medicine (fruit, bark), fodder (leaves, fruit), shade, ornamental, beehives (bark), tannin.
- Description:** A large evergreen tree to 15 m with a tall **straight trunk, erect branches and dense, rounded crown.** **BARK:** rough, dark grey-brown, **young shoots covered with woolly yellow hair**, old bark flaking off in large squares. **The sap** is reddish. **LEAVES:** **oval and alternate**, with clear **parallel veins**, shiny green above but **hairy grey-white below**, to 8 cm long, tip blunt or notched, on a short stalk. **FLOWERS** small, white-pink, in short **flat-topped heads** to 6 cm across. Flower stalks and calyx with yellow-brown woolly hairs. **FRUIT:** oval to 5 cm, with grey scales over a pitted **yellow-red-brown skin.** The fibrous yellow flesh is sweet but sharp and contains a hard stone with one edible seed kernel.
- Propagation:** Seedlings, wildings
- Seed info.:** No. of seeds per kg: 250-350. Germination is poor and very slow—up to 6 months.
- treatment:** not necessary.
- storage:** seed can be stored.
- Management:**
- Remarks:** At certain times of the year the trees give off a very unpleasant smell. The wood is light but borer proof, making very good rafters and fences. In Zambia it is considered an indicator of a high watertable and is often left in fields. The tree is fire resistant. The fruit can be eaten raw or cooked with porridge. The flesh is rich in vitamin C and the seed kernel is rich in oil.



Parkinsonia aculeata

Caesalpinioideae

Tropical America

Common names: Eng: Jerusalem thorn.

Ecology: The natural range for *P. aculeata* is semi-arid areas from the southern United States to Argentina. Cultivated in dry tropical areas of Africa and south Asia, it is almost naturalized from the coastal lowlands up to 1,400 m. It prefers moist sandy loams, but will also thrive in dry sandy and rocky soils as well as alkaline and saline ones. It can grow in dry areas as well* as in wetter parts at higher altitudes, 200-1,000 mm annual rainfall.

Uses: Firewood, charcoal, medicine, fodder (pods, leaves), bee forage, shade, ornamental, mulch, soil conservation, live fence.

Description: A spiny shrub or small tree, usually 5-8 m, light, feathery foliage and a low crown, sometimes deciduous in the dry season. BARK: distinctive yellow to cream-brown, smooth. LEAVES: groups of **thin, winged leaf stalks to 30 cm** with well-spaced tiny **leaflets**. The branchlets have sharp thorns to 1 cm beside the leaves. FLOWERS: very fragrant, **bright yellow with orange stamens on spikes** to 15 cm. FRUIT: bunches of woody pale-brown **Pods, cylindrical, narrow, but constricted between** seeds. Pods contain 6 or more dark brown oval seeds and remain on the tree.

Propagation: Seedlings, direct sowing.

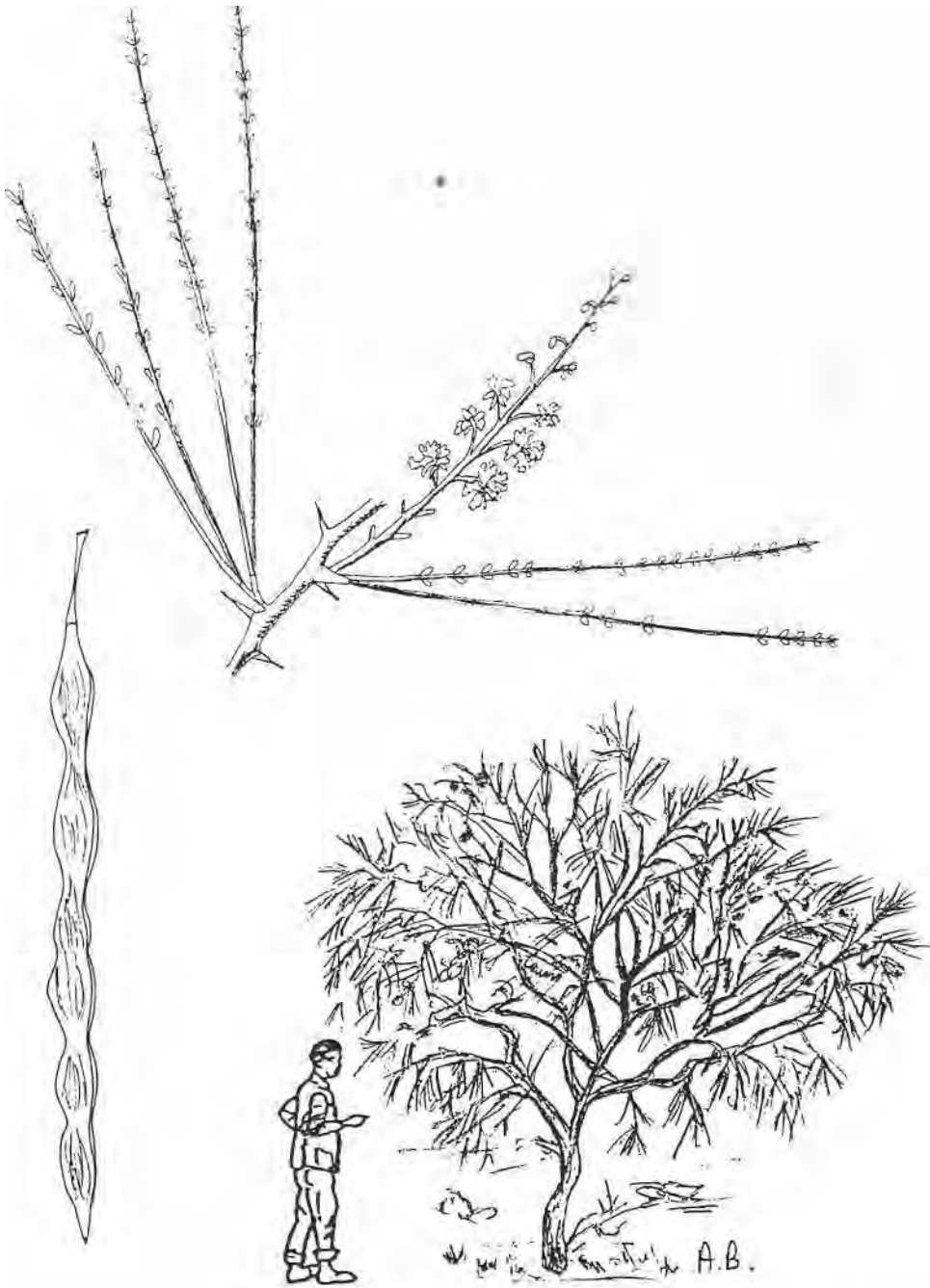
Seed **info.:** No. of seeds per kg: 11,000-15,000. The species is a prolific seeder. Germination 30%-70% or more in 2-10 days.

treatment: soak seed in hot water and allow to cool overnight, or nick seed coat with a sharp knife.

storage: seed stores well for long periods in cool, dry, air-tight containers.

Management: Fast growing; pollarding.

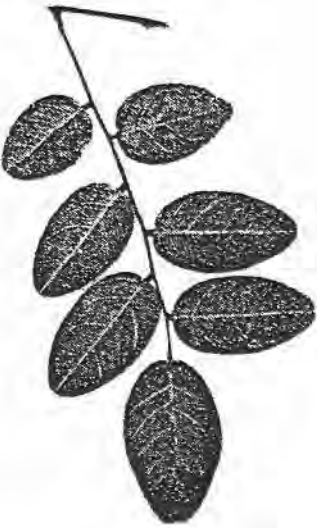
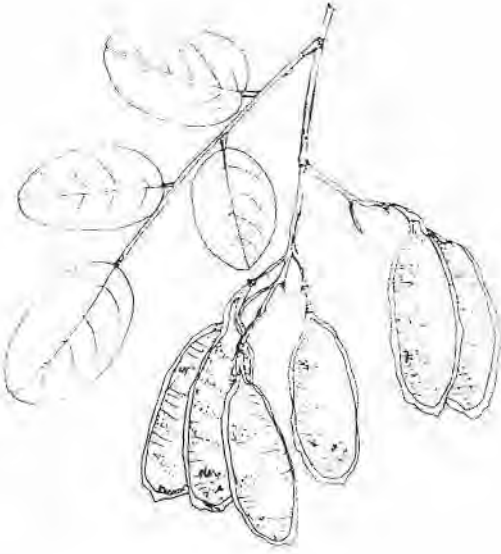
Remarks: Seedlings are susceptible to attack by termites and so young seedlings should be protected. Extensively used in arid and semi-arid Kenya. The tree can become a serious weed due to its prolific seeding, but it is a good species for reclamation of degraded sites.



Pericopsis angolensis (*Afrormosia angolensis*) *Papilionoideae*

- Common names: Eng: East African afrormosia; Haya: umubanga; Lugu: mmanga; Mate: muwanga; Nyam: mbanga, muvanga; Suku: mbanga; Swah: mbanga, muvanga; Zinza: mbanga,
- Ecology: A tree common in *Brachystegia* woodland or wooded grassland, 500-1,650 m. Also found in Zaire, Zambia, Angola, Mozambique, Malawi, South Africa and Zimbabwe. In Tanzania it is common in Mwanza, Tabora, Dodoma, Handeni, Morogoro, Iringa, and Lindi.
- Uses: Firewood, charcoal, timber (construction, carving, quality furniture), flooring, poles, fence posts, fodder, medicirt (leaves), nitrogen fixation.
- Description: A semi-deciduous tree, usually 10 m but up to 20 m, branches spreading to an open crown. BARK: smooth, pale grey-white, darker when older, flaking to show red-brown underbark. LEAVES: compound with 4-10 pairs leaflets plus a central leaflet, each to 6 cm, oval, tip rounded, leathery, blue-green, paler below. FLOWERS: pink-purple in sprays to 15 cm, flower stalks and buds pale brown. hairy. FRUIT: flat pods in heavy clusters, 24 cm long, pale green then yellow-brown with narrow wings on both edges. Inside 1-3 flat orange-brown seeds.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: 3,000-3,500. Germination rate is **very** high and fast.
- treatment: not necessary.
- storage: can keep viability for a long time if kept dry and free from insects.
- Management: Fairly fast growing; coppicing.
- Remarks: The timber is very durable and resistant to termites and borers as well as attractive and taking a high polish. Buried tool handles have been found in Zambia and dated at about 100 years old. Leaves can be applied to wounds, including snake bites.

Pencopsis angolensis (*Afromosia angolensis*) *Papilionoideae*



Persea americana

Lauraceae

Tropical America

- Common names: Eng: avocado pear; Swah: mparachichi, mwembe mafuta.
- Ecology: The natural range for avocado is from Mexico south to Venezuela. Best grown in deep fertile sandy loams, but will grow in a wide variety of soils provided they have good drainage. The climatic range is moist plateau, wet lowland and transitional wet montane. In Tanzania it is planted by farmers in the northern areas and along the coast, 0-2,200 m. It is also a horticultural tree in most agricultural centres in the country.
- Uses: Food (fruit), oil (cosmetics), shade.
- Description: A densely leafed evergreen tree to 10 m. BARK: grey-brown. LEAVES: large, alternate, to 20 cm long, glossy dark green above, veins very clear, young leaves pink then bright green. FLOWERS: small and abundant in large terminal heads, pale yellow, only 1 in 5,000 producing fruit. FRUIT: large, round to pear shaped, to 25 cm, hanging heavily on the tree, the central seed surrounded by a thick layer of yellow-green flesh.
- Propagation: Grafting materials (improved varieties), seedlings, wildings, direct seeding.
- Seed info.: No. of seeds per kg: about 15. Germination is good and takes about 6 weeks,
- treatment: not necessary.
- storage: use fresh seed.
- Management: Requires no management once established, can be side pruned to obtain desired shape. Fast growing.
- Remarks: The fruit is very nutritious, rich in fat, protein and vitamins. Bark leaves and seeds are toxic to browsing livestock. Difficult to intercrop due to its dense shade, but beans can be planted with young trees. It also competes for nutrients through its dense shallow root system. Trees growing under good conditions may need stimulation to form flowers and fruit. Cut the roots in a trench around the tree or narrowly ring-bark the trunk. There are some 300 named varieties of avocado and grafting is necessary to maintain quality.

Persea americana

Lauraceae



Phoenix reclinata

Palmae

Indigenous

Common names: **Arusha:** olpiroo; **Bara:** millan; **Eng:** wild date **palm;** **Goro:** intsanti; Haya: makindu; **Iraqw:** thiaanthi; **Suku:** bukindu.

Ecology: A palm usually growing in dense clumps beside swamps and rivers from the coast to 3,000 m. Found throughout tropical Africa, it will grow on open rocky hillsides and cliffs as well as in rainforests in high rainfall areas, but only along water courses in dry country.

Uses: Firewood, timber (local doors, general), food (fruit), ornamental, soil conservation, fibres (leaves, leaf bases), roofing (leaves), basketry, mats (leaves), dye.

Description: The mature palm trunk may reach 10 m, slender and **often bent over ("reclinata")**, about 25 cm in diameter, covered with very rough leaf scars. LEAVES: to 2.7 m long, growing out from a fibrous leaf sheath, the crown of about 25 leaves arching over, leaflets narrow, **folded, bright shiny green, to 30 cm, stiff and pointed.** FLOWERS: male and female on different trees. FRUIT: yellow-brown, **about 2 cm, edible.** Seedlings, suckers.

Propagation:

Seed **info.:** No. of seeds per kg: about 27,000. Germination is very good but takes about 2 months.

treatment:

storage:

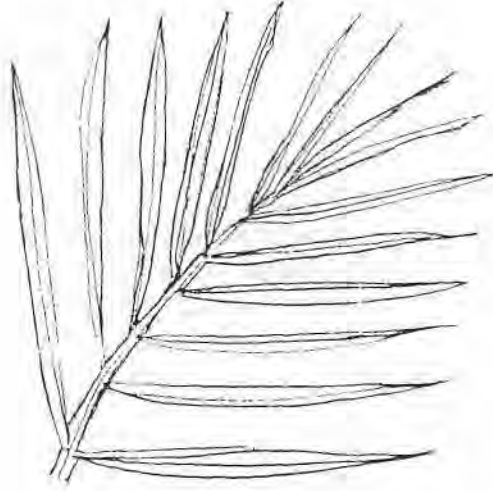
not necessary.

seed stores well if kept dry, cool and insect free.

Management:

Remarks:

Strong fibres from the leaves are used all over Africa **for** making baskets, mats, etc.



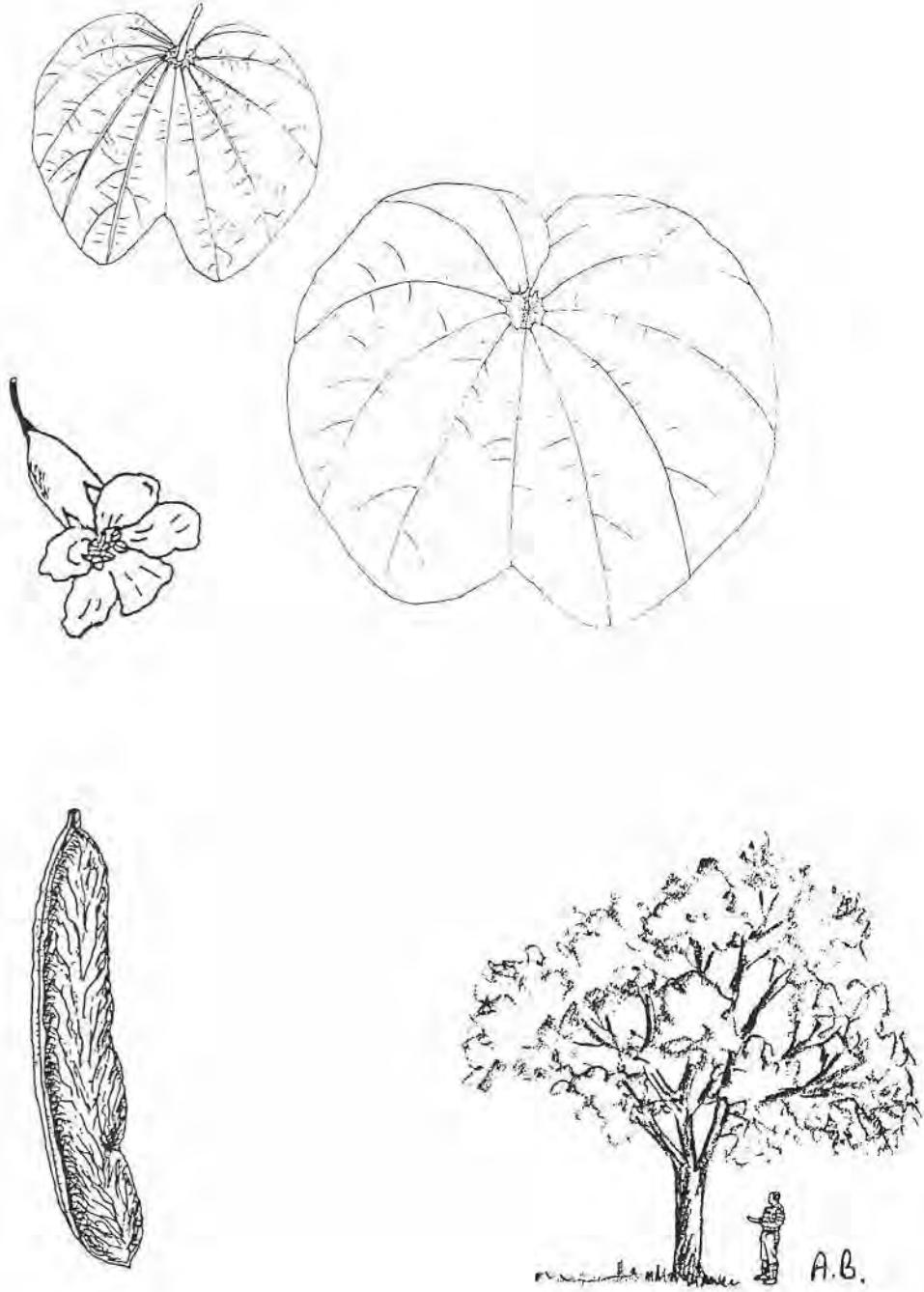
A. Birnie

Piliostigma thonningii (*Bauhinia thonningii*) *Caesalpinioideae*

Indigenous

- Common names:** Bende: mfumbe, mnsakansaka; Eng: camel's foot tree; Fiome: galapi; Fipa: nakifumbe, mfumbe, msindamboga; Goro: galapi; Haya: mtindambogo; Hehe: muhela, mkombalwike; Maasai: ol sagararmi, os sangararam; Mate: chitembe, titimbo; Mwera: mguwauwa; Nyam: mshindambogo, mtindambogo; Nyat: musasu; Samb: mgonambogo, msegesese, msegesese; Sangu: mkombalwike, muhela; Suku: mtindwa-mbogo; Swah: mkichikichi, mubamba-ngoma; Zigua: msegesese; Zinza: msindaga.
- Ecology:** A dense semi-deciduous small tree or shrub found all over sub-humid Africa from west to southern Africa in wooded grassland, usually 0-1,850 m, in various soils. In Tanzania it is found at the coast, in the Rift Valley, Sukumaland and in the Lake Victoria zone.
- Uses:** Firewood, charcoal, posts, timber (construction of houses and *boma*), food (pulp from pods, fresh bark, leaves), medicine (leaves, bark, roots, pods), fodder (pods, young leaves), bee forage, shade, ornamental, mulch, soil conservation, dye (bark, pod, seed), tannin, fibres, rope (bark, root fibres).
- Description:** A rounded tree 3-5 m, branches twisted (occasionally climbing). **BARK:** thick, dark and rough, fibrous within, dark red if cut. **LEAVES:** large and bi-lobed, a small bristle in the deep notch, leathery pale green to 12 cm long, lower surface brown, hairy in between many raised veins. **FLOWERS:** white, fragrant, in heads, 10-20 cm, male and female separate. **FRUIT:** very many flat brown and woody pods, 15-20 cm long, decaying on the ground to free many seeds. Pulp surrounding the seed can be eaten.
- Propagation:** Seedlings. Collect pods from the tree as soon as they turn brown. Seeds are soon attacked by insects. Sun dry pods, then cut and break them up in a mortar.
- Seed info.:** No. of seeds per kg: about 7,300. The tree produces many seeds with good germination rate after 60-75 days,
- treatment:** soak in cold water for 24-48 hours. Nick seed coat with a knife for best germination results,
- storage:** several years if kept dry, cool and insect free.
- Management:** Fairly fast growing on good sites; coppicing.
- Remarks:** A good tree for intercropping; often left in shambas and frequently growing with *Annona senegalensis*. Pods and seeds give a blue dye and roasted seeds black dye. Medicinal uses are important to rural people.

Piliostigma thonningii (*Bauhinia thonningii*) *Caesalpinioideae*



Pinus caribaea

Pinaceae

Central America

Common names: **Eng:** Caribbean pine, pitch pine, slash pine; **Swah:** msindano.

Ecology: In its natural range it grows at low elevations **and** has now become an important commercial plantation tree in many tropical lowlands below 1,000 m. There are three geographic varieties. In Tanzania it is grown in the coastal lowland areas and around Lake Victoria at Buhindi and Rubya. The tree does better on free-draining soils and is drought resistant.

Uses: Firewood, timber (heavy and light construction), poles, plywood, pulp (long fibre), fibreboard, resin.

Description: An evergreen tree with a straight bole and regular **spreading crown** up to 30 m high. The bole can reach over 1 m in diameter. **BARK:** thick, brown-grey, rough and flaking, **resinous if cut**. **LEAVES:** needles, usually in **threes**, erect, flexible, dark green up to 21 cm long, usually less **sharp pointed**. **FLOWERS:** male and female flowers produced separately on the same tree. Male flowers on the upper part of branchlets, female on the lower part. **FRUIT:** cones, greyish brown at maturity, **spiny, about 8 cm** long. Seedlings.

Propagation:

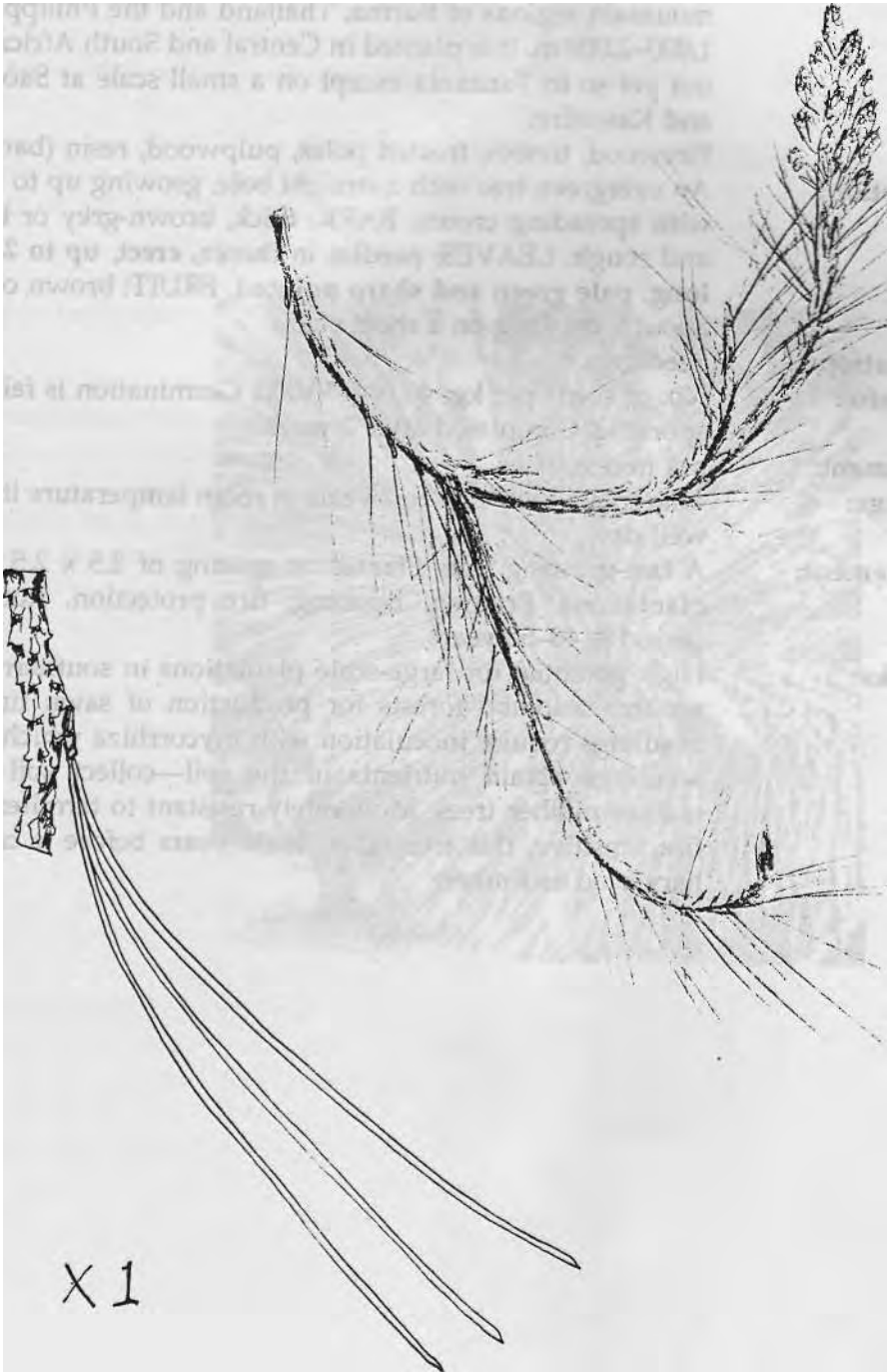
Seed info.: No. of seeds per kg: about 30,000. Germination sporadic, up to 6 weeks. Germination rate 35%.

treatment: not necessary.

storage: can retain viability for a long period at room temperature if kept dry.

Management: Fast growing; pruning, thinning, fire protection. Rotation period 35-45 years.

Remarks: Difficult to get seed as trees in the established plantations and seed stands do not produce cones. The timber is strong, moderately light weight and fairly durable, easy to season, saw and preserve. Mycorrhiza are necessary for sapling growth so add soil from next to established trees. Both thinnings and pruned branches provide valuable fuel. In some countries the tree is used as pulp for the paper industry.



Pinus kesiya (*P. insularis*)

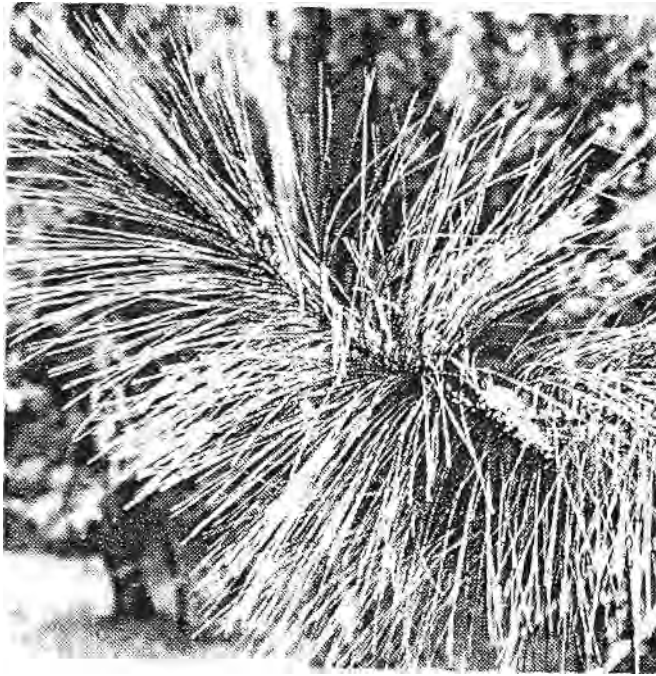
Pinaceae

South-East Asia

- Common names:** Eng: kesiya pine; **Swah:** msindano.
- Ecology:** In the natural range it is common in mist belts in high mountain regions of Burma, Thailand and the Philippines, 1,000-2,000 m. It is planted in Central and South Africa but not yet so in Tanzania except on a small scale at Sao Hill and Kawetire.
- Uses:** Firewood, timber, treated poles, pulp wood, resin (bark).
- Description:** An evergreen tree with a straight bole, growing up to 30 m with spreading crown. **BARK:** thick, brown-grey or black and rough. **LEAVES:** needles in **threes, erect, up to 25 cm long, pale green and sharp pointed.** **FRUIT:** brown cones, about 7 cm long on a short stalk.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: 40,000-50,000. Germination is fair but sporadic. Completed after 2 weeks.
- treatment:** not necessary.
- storage:** can remain viable up to 2 years at room temperature if kept well dry.
- Management:** A fast-growing tree. Planted at spacing of 2.5 x 2.5 m in plantations. Pruning, thinning, fire protection. Rotation period is 40-50 years.
- Remarks:** High potential for large-scale plantations in southern and western miombo forests for production of sawn timber. Seedlings require inoculation with mycorrhiza which help seedlings obtain nutrients in the soil—collect soil near mature mother trees. Moderately resistant to termites, but fire sensitive, this tree takes 25-30 years before it can be harvested as timber.

Pinus kesiya (P. insularis)

Pinaceae



Pinus oocarpa

Pinaceae

Central America

- Common names: Eng: pine; Swah: msindano.
- Ecology: This tree is widely grown in Central and South Africa, 1,000-2,400 m, but is not commonly planted in Tanzania except on a small scale at Sao Hill. It grows on light, medium and heavy neutral or slightly acid soils and tolerates shallow soils:
- Uses: Timber, ornamental.
- Description: An evergreen conifer with a light crown, up to 25 m high. BARK: Grey-^eddish-brown. LEAVES: needles in threes, fours or fives, drooping, 15-25 cm long.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: about 36,000. Germination is good, completed after 2 weeks.
- treatment: not necessary.
- storage: can retain viability up to 2 years at room temperature if kept dry.
- Management: Fairly fast growing; pruning and thinning.
- Remarks: Potential for planting in woodlots and in plantations. Can withstand severe fire. Like other pines it requires mycorrhiza.

Pinus oocarpa

Pinaceae



Pinus patula

Pinaceae

Mexico

Common names: **Eng:** Mexican weeping pine, patula pine, spreading-leaved pine, Tecote pine; Swah: msindano.

Ecology: Probably the most widely planted pine tree in tropical Africa. It is tolerant of most soils but does best in acidic soils. While growing best with over 1,000 mm rainfall and at temperatures of 12-20°C, it can grow in more adverse conditions at altitudes of 1,650-3,000 m. In Tanzania it has been grown on large-scale commercial plantations around Kilimanjaro, Usambara, Iringa and Mbeya.

Uses: Firewood, timber (boxes, general purpose), posts (treated with wood preservative), pulpwood, shade, ornamental.

Description: An evergreen tree to 35 m with light green "weeping" foliage and a long straight trunk, branches more or less horizontal turning up at the tips. **BARK:** grey to dark brown, fairly smooth, papery red-brown on young branches. **LEAVES:** long slender needles, **soft but hard** tipped, 15-23 **cm** long, **in bundles of three**. **CONES:** female: small hard red spheres, mature in two years to shiny **brown** cones, base **oblique, to 10 cm long in clusters of 2-5** without stalks. Male: on the same tree, **short terminal catkins**, yellow-brown, producing clouds of dust-like pollen. Seeds develop below the cone scales and are released over a long period.

Propagation: Seedlings. Collect seeds by shaking cones in a basket, rub off wings with wet hands and sieve out debris. Dry in the sun.

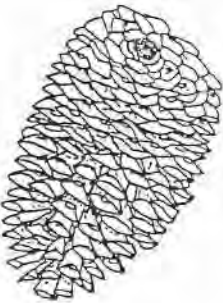
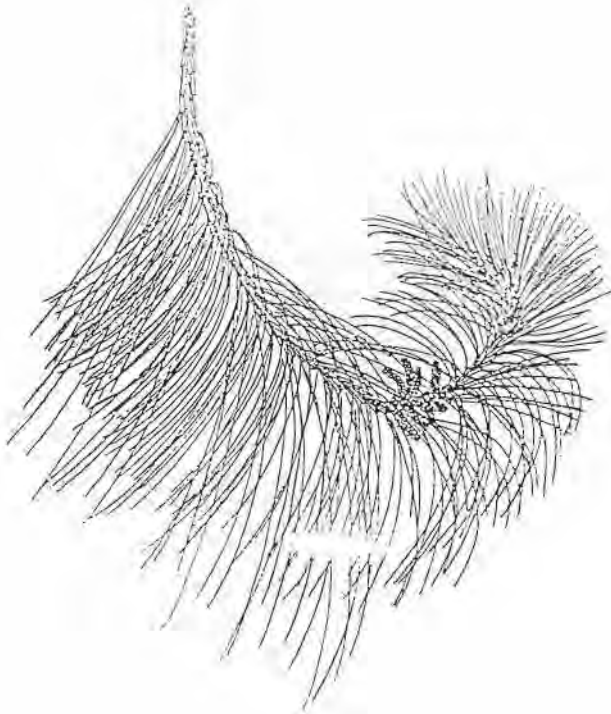
Seed info.: No. of seeds per kg: 110,000-170,000. Seeds germinate in 35-60 days and germination rate is 75-85%.

treatment: not necessary.

storage: seed can be stored for about 6 months at room temperature in air-tight containers, but for several years if cooled.

Management: Fast growing; pruning, thinning for trees being grown for sawn timber. Rotation period for timber is 30-40 years.

Remarks: It represents about 30% of all plantation trees in Tanzania. It should not be grown near crops due to the shallow root system. The timber is easily worked, fairly light and soft, and pale brown in colour.

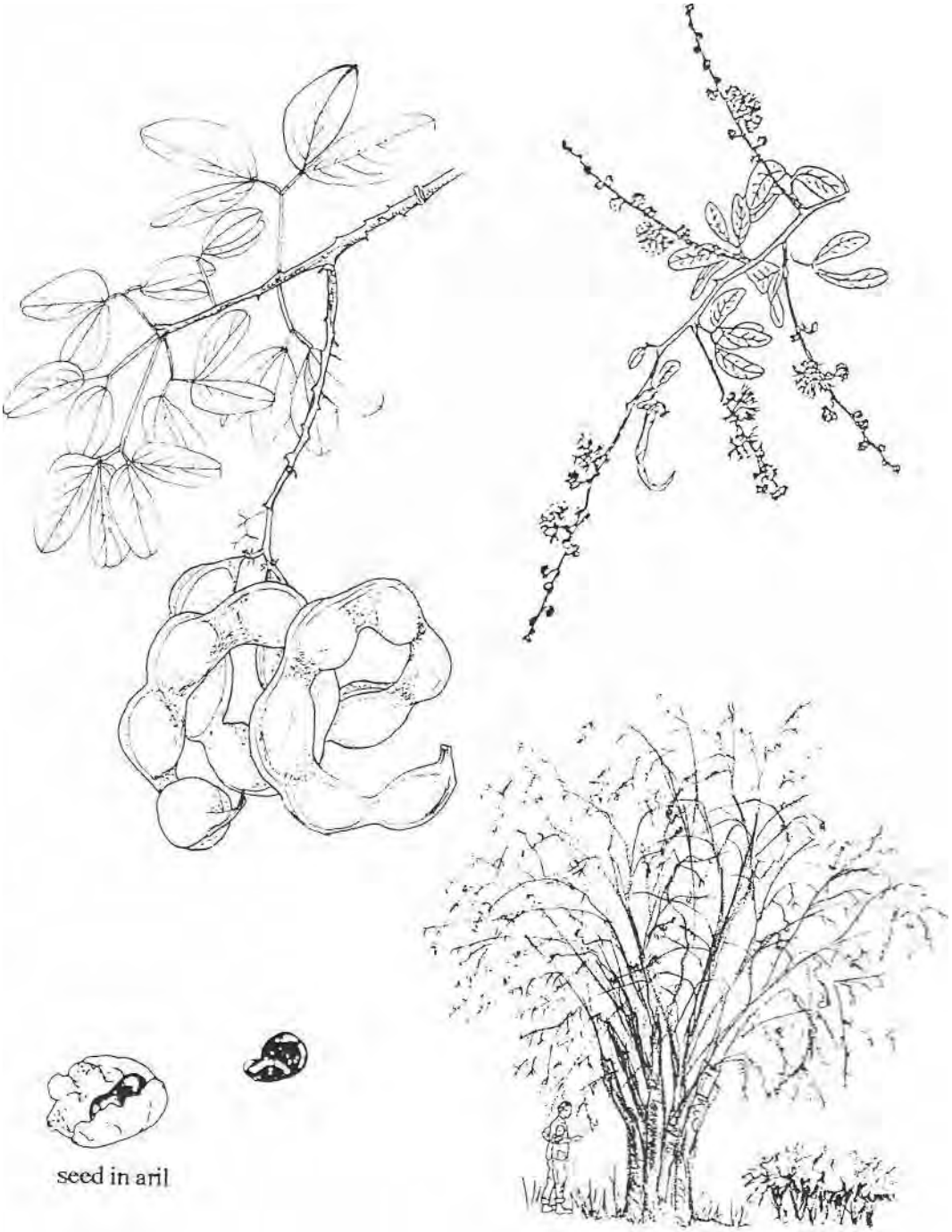


Pithecellobium duke

Mimosoideae

Central and South America

- Common names: Eng: Madras thorn, Manila tamarind; Swah: mkwaju wa kihindi, maramata.
- Ecology: The natural range for *P. duke* is Mexico, Central America, and northern South America. It is tolerant of most soils including very poor sands and wet salty soils. It tolerates arid and semi-arid conditions. In Tanzania *P. dulce* has been extensively planted for shade and as a hedge plant, mainly along the coast, 0-1,600 m.
- Uses: Firewood, timber (general construction), poles, food and drink (fruit pulp), fodder (leaves, pods, seeds), bee forage, soil conservation, shade, ornamental, windbreak, tannin, gum (bark), oil (seeds), soap (oil), live fence.
- Description: A thin shapeless shrub or tree 4–15 m, armed with short spines at the base of each leaf pair. BARK: pale and smooth with horizontal marks, bole short, young branches thorny, drooping. LEAVES: thin stalks bear two pairs of leaflet; each to 5 cm, asymmetric oval, the tip rounded or notched. FLOWERS: small, cream-yellow on a short stalk, bunches of green-white stamens, 1 cm across. FRUIT: heavy pods, about 12 cm, spirally twisted, constricted between seeds. red when mature, splitting to release glossy black seeds almost covered with the fleshy red and white edible aril. A sweet pulp surrounds the seeds.
- Propagation: Seedlings, direct sowing, cuttings.
- Seed info.: No. of seeds per kg: 7,000-26,000. Germination is very good and fast, 95% after 2 weeks.
- treatment: none, or soak in cold water for 6 hours.
- storage: can be stored up to one year if kept dry and free from insects.
- Management: Fast growing; coppicing, trimming (for live fence).
- Remarks: The species has the potential of becoming a weed if not well managed. It is popular as a spiny hedge but often confused with *Acacia Senegal*. It is extremely drought resistant and fast growing, coppicing well and can withstand heavy browsing or cutting for fodder.



Podocarpus falcatus (P. gracilior)

Podocarpaceae

Indigenous

- Common names: **Arusha:** olpiripiri, olviriviri; **Chag:** mvavavi; Eng: East African yellow wood, podo; **Iraqw.** dukmo, nokim; Meru: owiriwiri; **Rangi:** mpoda, mponde; **Samb:** mse mawe.
- Ecology: Podocarp trees are mainly found in the southern hemisphere. They are conifers, more closely related to Juniperus than to pines. The fruits, technically cones, look more like large berries on a fat stalk (*podocarpus* = footed stalk). They are also known as yellow-woods. *P. falcatus* is a large tree of upland rainforest in a restricted range, 1,500-2,400 m. In Tanzania it occurs on Mt. Kilimanjaro, the Usambaras and at Mbulu.
- Uses: Firewood, timber (furniture, boxes, plywood, panels), poles, medicine (bark), shade, ornamental.
- Description: An evergreen tree with a straight bole, to 25 m or more. **BARK:** grey to **dark brown, cracking and scaling** into irregular rectangles. **LEAVES:** narrow, **shiny dark green, 2-5 cm**, gradually tapering. Young leaves are larger and **brighter giving a green flush**. **CONES:** 1-3 male catkins, **yellow-brown about 2 cm**, female cones hard, **ovoid to 2 cm**, very slow to develop, **green with dull purple bloom**, outer shell thin but inner flesh eaten by monkeys and birds.
- Propagation: Seedlings, wildings.
- Seed info.: No. of seeds per kg 500-1,100. Ideally seeds germinate in 50-90 days at an average rate of 30%. Purple-brown fruits can be shaken down. Remove the pulp by soaking **in water** then rub or float out debris.
- treatment: crack the hard seed coat before sowing and remove the outer seed coat—not necessary when stored for a long time.
- storage: seed can be stored for up to two years.
- Management: Slow growing, hardy once established.
- Remarks: The species is now rare due to over-exploitation. The light wood is of high quality and can be used for furniture and panelling. But it needs preservatives and careful seasoning to prevent warping.

Podocarpus falcatus (P. gracilior)

Podocarpaceae

Podocarpus latifolius (P. milanjanus)

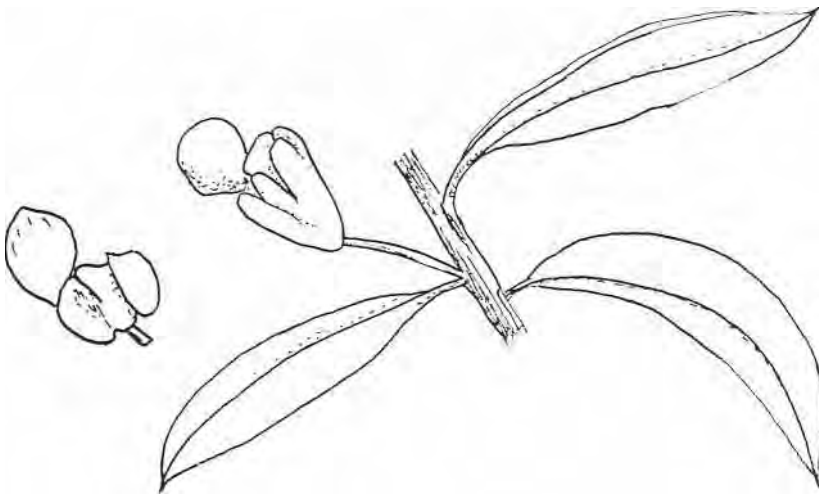
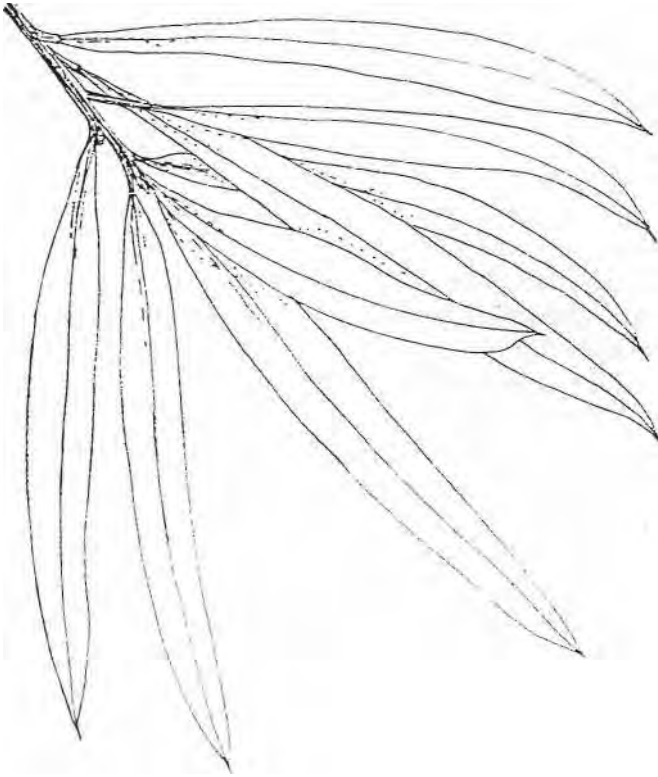
Podocarpaceae

Indigenous

- Common names: Bara: laganehel; Chag: msoso, mtongoso, mtokosi, mtosi tawaso; Eng: podo; Fipa: mfulanyebele; Hehe muvembanyigo; Iraqw: dukmo, nuki; Kinga: mkensi; Lugu muanziri; Meru: mseso; Nyak: nyalulasi; Nyiha: siegi Rangi: mwarinyani; Samb: mse, mse-mawe, msena-mawe msekichanga.
- Ecology: The natural range for *Podocarpus latifolius* is from Kenya through Central Africa to South Africa. In Tanzania it occurs mainly in the wetter montane forests of Usambara Kilimanjaro, Pare, Mbulu and Southern Highlands (Iring) and Mbeya). It requires deep, fertile and well-drained soil and the climatic range is wet montane, 900-3,200 m.
- Uses: Firewood, timber (furniture, boxes), poles, plywood, medicine (roots), shade, ornamental.
- Description: A forest tree, to 35 m, evergreen, conical when young, the trunk large and buttressed in old trees. BARK: red-brown to grey-brown, narrowly grooved, peeling in long fibrous strips. LEAVES: spirally arranged at the tips of branches very shiny, curved, tough, to 15 cm, with a pointed tip larger and paler when young. CONES: male trees have small catkins, pinkish, to 5 cm; female trees produce soft fleshy "fruits" about 1 cm ovoid, green-purple with a grey bloom. The stalk below the foot is characteristic swollen, soft and red, 1-2 cm, soon falling. Woody seeds smaller than those of *P. falcatus*.
- Propagation: Seedlings, wildings.
- Seed info.: No. of seeds per kg: 2,000-2,300. Ideally seeds germinate in 30-40 days with a germination rate of 60-80%.
- treatment: remove the red swollen receptacle, then spread out the fruit. in the shade. Sow seed within 4 days to avoid loss of viability as seeds are very sensitive to drying out. Crack the woody seed shell to speed up germination.
- storage: seed can be stored for up to a year but only at very low temperatures mixed with damp sawdust in open containers
- Management: Slow-growing.
- Remarks: The tree is regarded as too slow growing for large-scale planting. The pale straight-grained timber is easy to work and polish and resistant to insect attack if treated.

Podocarpus latifolius (P. milanjanus)

Podocarpaceae



Podocarpus usambarensis

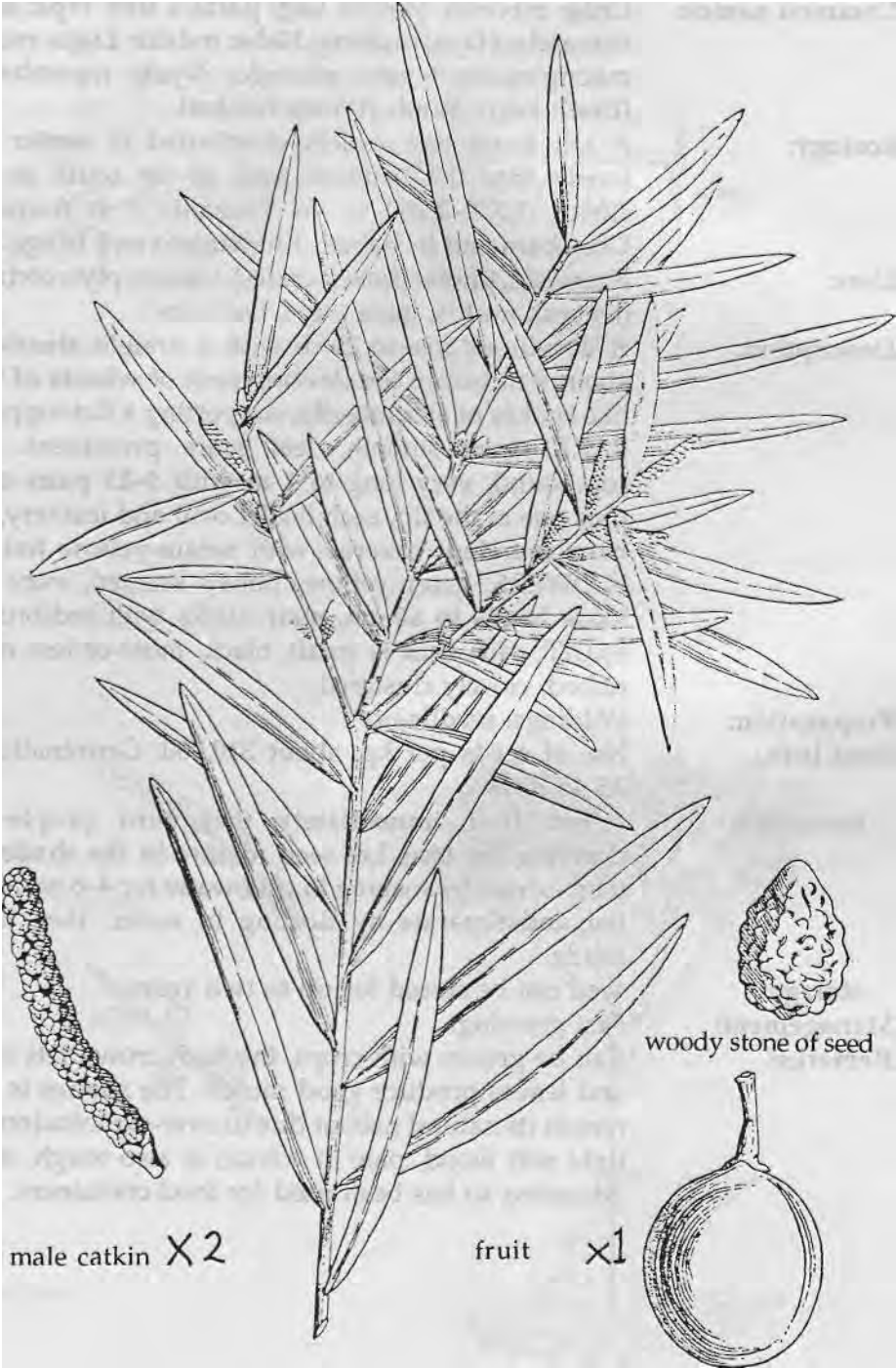
Podocarpaceae

Indigenous

- Common names:** Bara: laganehel; Chag: msosi, mtokosi; Eng: podo; Haya: msisimu, mziziru; Hehe: muvembanyigo; Iraqw: noki; Lugu: muanziri; Maasai: ol wiriwiri; Nguu: kisasalala; pare: mshunga; Samb: mse, msemawe; Swah: mpodo.
- Ecology:** A tree growing in highland rain forests, 950-2,700 m. In Tanzania it is found in Kilimanjaro, Pare, Usambara, Iringa, Mbulu, Njombe and Uluguru.
- Uses:** Firewood, timber, poles, tool handles, utensils (spoons, combs, mortars), ornamental.
- Description:** A large, evergreen, much-branched tree up to 60 m high with compact crown. **BARK:** pale grey to pale brown smooth when young, becoming rough and flaking with age. **LEAVES:** small, narrow, shiny green, to 5 cm long. Adult leaves parallel sided, but narrowed abruptly to the tip. **CONES:** spherical, up to 3 cm across, green at first turning purple-green after ripening, with thin pulp surrounding one seed.
- Propagation:** Seedlings, wildings.
- Seed info.:** No. of seeds per kg: 200-210. Germination is fair but slow even after complete removal of the seed coat, reaching 60% after 9 weeks.
- treatment:** not necessary, but cracking the woody shell-like covering may hasten germination.
- storage:** can retain viability for 2 years at room temperature.
- Management:** A slow-growing species. It needs nurse trees in the first 15 years of establishment. Rotation period 50-75 years.
- Remarks:** There are two varieties in Tanzania: *P. usambarensis war usambarensis* found in highland areas, and var. *dawei* found in ground-water forests in Minziro Forest Reserve in Bukoba and extending to Masaka in Uganda. *War usambarensis* has a thicker seed shell.

Podocarpus usambarensis

Podocarpaceae

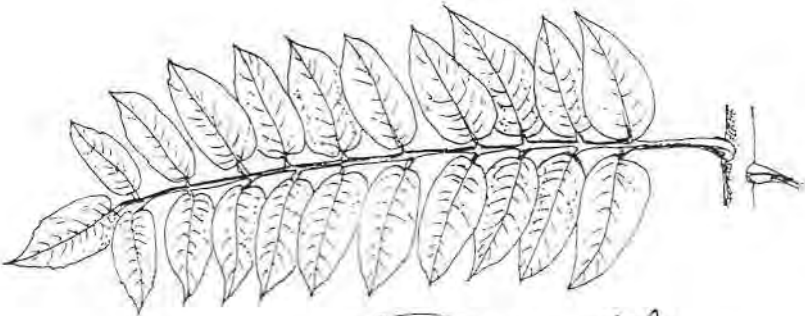


Polyscias fulva (*P. kikuyuensis*)

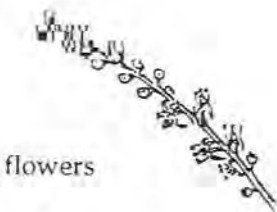
Araliaceae

Indigenous

- Common names:** Chag: mborori, yaroro; Eng: parasol tree; Fipa: mnyumaji, namatata; Haya: mufaria; Hehe: mdeke; Lugu: malamadza mkong'onelo; Nguu: mkongo; Nyak: mpembati; Samb (East): kogo; Samb (West): fumbati.
- Ecology:** A tall forest tree widely distributed in wetter highland forests into the bamboo zone as far south as southern Africa, 1,750-2,750 m. In Tanzania it is found in East Usambara and in Babati, Kilimanjaro and Iringa.
- Uses:** Firewood, timber (boxes, crates), veneer, plywood, medicine (leaves), mulch, mole traps, beehives.
- Description:** A deciduous tree to 25 m with a straight slender bole to about 9 m before the development of whorls of branches; like spokes of an umbrella, supporting a flat-topped crown. **BARK:** grey smooth, leaf scars prominent. **LEAVES:** compound, very long to 1 m with 9-13 pairs of leaflets plus one at the tip, each leaflet oval and leathery, 9-20 cm, base rounded, covered with cream-yellow hairs below. **FLOWERS:** green-yellow, honey scented, very small in loose heads to 60 cm, main stalks with red-brown hairs. **FRUIT:** each fruit is small, black, more-or-less oval, often ribbed, closely clustered.
- Propagation:** Wildings, seedlings.
- Seed info.:** No. of seeds per kg: about 310,000. Germination 75% in 35-45 days.
- treatment:** collect fruit immediately they turn purple-black by climbing the tree. Let seed mature in the shade 1-2 days then extract by soaking in cold water for 4-6 hours, squeeze out and separate by floating in water, then dry in the shade.
- storage:** seed can be stored for up to two years.
- Management:** Fast growing.
- Remarks:** Can be grown with crops, the high crown lets in sunlight and leaves produce good mulch. The species is becoming rare in its natural habitat due to over-exploitation. The very light soft wood, pale in colour, is also tough, strong and odourless so has been used for food containers.



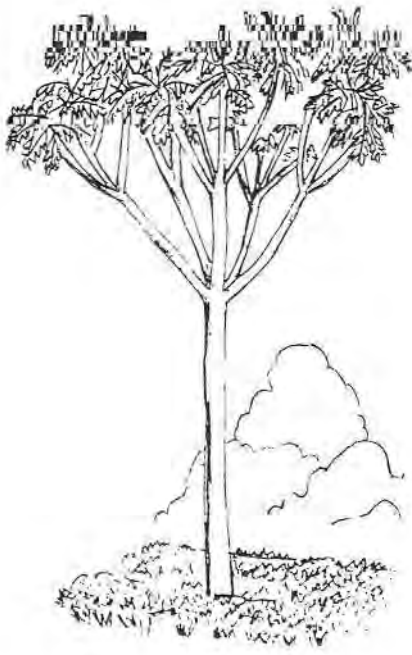
A.B.



flowers



fruit



DARTNER ?

Prosopis chilensis

Mimosoideae

Argentina, Chile, Mexico, Texas

- Common names: Eng: mesquite.
- Ecology: A small tree native to North and South America from Argentina and Chile to Mexico and Texas, 0-3,000 m. It grows in a wide range of soils, including gravelly or rocky sands. Its climatic range is dry plateau. It tolerates some waterlogging but is sensitive to weed competition.
- Uses: Firewood, charcoal, timber, poles, posts, food (fruit), fodder (leaves and pods), bee forage, shade, ornamental, nitrogen fixation, soil conservation, soil improvement, tannin, gum. live fence.
- Description: A fairly small tree or shrub, 8-15 m, light, drooping foliage. BARK: grey, cracked. LEAVES: alternate, compound, about 1 cm, oblong, tip pointed. FLOWERS: greenish-yellow spikes. FRUIT: about 10 cm long pods, yellow when ripe. becoming black, numerous, up to 25 seeds within a sweet pulp.
- Propagation: Seedlings, direct sowing.
- Seed info.: No. of seeds per kg: 32,000. Germination 30-90% in **10-30** days. Seeds can be extracted by exposing pods to termites. Sun dry pods, cut in pieces, then soak for 24 hours, crush and extract seed, dry in the sun.
- treatment: nick the seed or soak in cold water for 24 hours.
- storage: seed stores well both in pods and when extracted as it is not attacked by insects.
- Management: Fairly fast growing; coppicing.
- Remarks: The tree can become a weed in wetter areas. Pods contains much sugar and are excellent animal feed, sometimes ground to a powder concentrate.

Prosopis chilensis

Mimosoideae



Prosopis juliflora

Mimosoidecu

Central America, Mexico

Common names:	Eng: algarroba, mesquite.
Ecology:	A thorny shrub or tree cultivated all over the tropics. Grows well in arid areas producing deep roots and tolerating extreme heat in sandy, rocky or poor and saline soils, 0-1,500 m. Soils must be well drained.
Uses:	Firewood, charcoal, timber, poles, posts, carvings, food (leaves, pods), fodder (leaves, pods), bee forage, medicine, nitrogen fixation, soil conservation, windbreak, live fence.
Description:	Often a shrub but can become a shapely tree to 15 m, the bole short, young branches green. BARK: thick, rough green-grey, scaly with age, some with pairs of thorns to 5 cm. LEAVES: compound, stalks to 6 cm, with 2-3 pairs of pinnae and 8-15 pairs of leaflets; leaflets oblong narrow, 1 [⁄] 5 cm long, no terminal leaflet. FLOWERS: gold-yellow, densely crowded in spikes 5-10 cm, fragrant. FRUIT: yellow pod, 10-20 cm, Hard seeds difficult to extract from pod.
Propagation:	Seedlings, direct sowing.
Seed info.:	No. of seeds per kg: 30,000-35,000. Germination rate 40%-80%. Seeds can be extracted by exposing pods to termites, or cut dry pods into pieces, soak overnight, extract mechanically, dry in the sun, pound in a mortar then winnow to separate the chaff.
treatment:	nick seed coat with a knife to improve germination.
storage:	the seeds store well both in pods and when extracted as they are not attacked by insects.
Management:	Fairly fast growing; lopping, pollarding and coppicing.
Remarks:	The tree may become a weed on wetter sites. It sets seed after 3-4 years. The sweet pod contains both glucose and protein, making valuable fodder. The dense hard wood burns with great heat.

Prosopis juliflora

Mimosoideae



Prunus africana (Pygeum africanum)

Rosaceae

Indigenous

Common names: Arusha: ol gujuk, olkonjuku; Chag: mkonde-konde, msendo, mudy, muuri; Eng: red stinkwood; Fipa: mfila; Fiome: gwaami; Hehe: mwiluti; Iraqw: gwaami, gwami; Kinga: mpembati; Maasai: olkonjuku; Meru: kondekonde; Nguu: mdundulu; Nyiha: ligambo; Rangi: wami; Samb: mkomahoya; Zinza: mufubia.

Ecology: A useful timber tree widespread from West to southern Africa, usually in high rainfall areas, 1,500-2,300 m. In forests the high foliage is open, the branches often pendulous, but in grassland the tree is more rounded and compact. It is a common tree on mountains.

Uses: Firewood, charcoal, timber (construction), poles, utensils (mortars), medicine (leaves, bark), bee forage, shade, ornamental, mulch, windbreak.

Description: An evergreen tree to 25 m. BARK: rough, dark, scaling irregularly, branches corky, branchlets dotted **with** breathing pores. LEAVES: glossy dark green above, oval to 10 cm, margin with shallow rounded teeth, leaf stalk typically pink, to 2 cm. Crushed leaves have a bitter almond smell. FLOWERS: very small, fragrant, green-white in short sprays, on stalks to 8 cm. Flowering is uneven during the year. FRUIT: rounded, about 1 cm, dark red. often bi-lobed, containing one or two seeds surrounded by pulp.

Propagation: Seedlings, wildings.

Seed info.: No. of seeds per kg: 3,600-5,000. Ideally 60-80% germination in 35-50 days. Collect only dark brown ripe fruits from the crown of the tree or the ground. Remove the pulp by soaking for 24 hours, then wash over a wire mesh. Spread in a thin layer in an airy shaded place to dry—but for 4 hours only.

treatment: not necessary, but remove pulp from the seed.

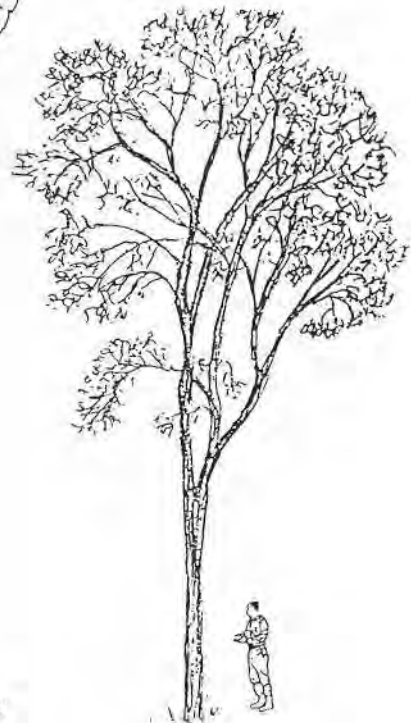
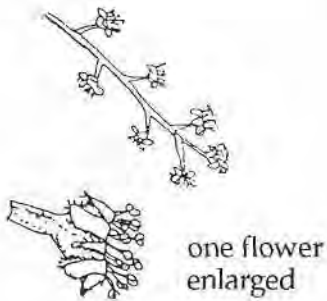
storage: seed does not store; fresh seed should be used. Moist leaves around the seed minimize moisture loss during temporary storage and transport.

Management: Fairly slow growing.

Remarks: Wildings are commonly used for large-scale planting. The fruit are eaten by monkeys and birds so seed is spread by this means. The heartwood darkens to a dense red. It is hard and medium weight, not durable in the ground, but a useful timber for furniture, poles, etc.

Prunus africana (*Pygeum africanum*)

Rosaceae



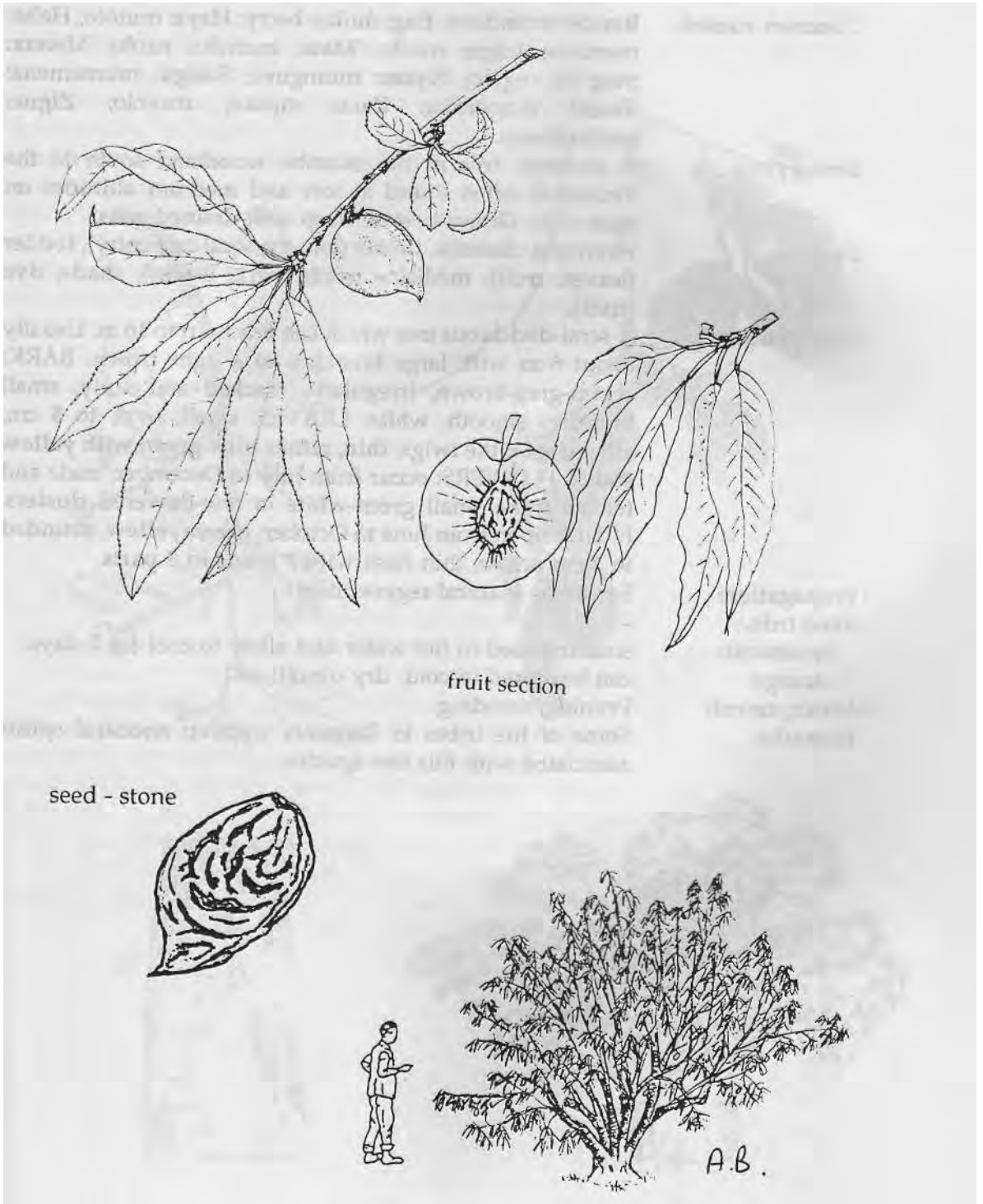
A. Birnie

Prunus persica

Rosaceae

China, South-West Asia

- Common names: Eng: peach; **Samb:** mfyoksi.
- Ecology: A small fruit tree of temperate climates, so in Tanzania it is grown in homesteads of the highland areas like the Uluguru Mountains, 1,000-2,000 m. It will also grow in quite dry soils.
- Uses: Firewood, food (fruit), ornamental, boundary marking.
- Description: A shrub or small tree up to 8 m with well-branched crown, normally pruned in cultivation. BARK: grey and smooth, young twigs angular and red. LEAVES: narrow **oval**, alternate, 6-15 cm long, smooth and with **finely toothed** margins, paler below with raised midrib, shortly stalked. FLOWERS: usually solitary, **5 pink petals** surround central stamens; abundantly produced when the tree is leafless. FRUIT: round and fleshy, yellowish when ripe, to 7 cm across, the skin covered with **short hairs** which rub off. Inside a hard **pitted stone** contains a single seed.
- Propagation: Seedlings, cuttings, grafting, wildings.
- Seed info.: No. of seeds per kg: 200-250. Germination is good but takes up to 6 weeks.
- treatment: not necessary, but soaking in cold water for 12 hours enhances germination.
- storage: can retain viability up to a year at room temperature.
- Management: A fast-growing tree; grown in fruit gardens and around *home compounds and on farmlands*. Pollarding to encourage branching. Shoots of one year bear fruit the following year, so pruning has to be done accordingly.
- Remarks: The tree can produce large quantities of small rather hard fruit which are eaten raw or cooked. A fungus, "peach curl", affects the leaves.



Pseudolachnostylis maprouneifolia

Euphorbiaceae

Indigenous

Common names: **Bende:** mtunduru; Eng: duiker berry; **Haya:** mutoto; **Hehe:** memena; **Lugu:** msolo; **Mate:** muholo, nzolo; Mwera: mng'olo, ngolo; Nyam: mtunguru; **Sangu:** mumemena; Swah: muguruka; **Zara:** mpulu, msyolo; Zigua: mselenkanga.

Ecology: A common tree in the miombo woodland south to the Transvaal, often found at low and medium altitudes on light soils. Grows best on deep well-drained soils.

Uses: Firewood, charcoal, timber (joinery, local carpentry), fodder (leaves, fruit), medicine (roots, bark, leaves), shade, dye (fruit).

Description: A semi-deciduous tree which can reach up to 16 m. Usually about 6 m with large branches to a light crown. **BARK:** cream-grey-brown, irregularly cracked and scaly, **small** branches smooth, white. **LEAVES:** small, oval, to 8 cm, **alternate** on the twigs, **thin, rather blue-green with yellow stalks.** **FLOWERS:** occur from July to December, male and female trees; small green-white in few-flowered clusters. **FRUIT:** ripen from June to October, **green-yellow, rounded to 2 cm** across, thin flesh with **3 seeds in 3 parts.**

Propagation: Seedlings (natural regeneration).

Seed info.:

treatment:

soak the seed in hot water and allow to cool for 2 days.

storage:

can be stored in cold, dry conditions.

Management:

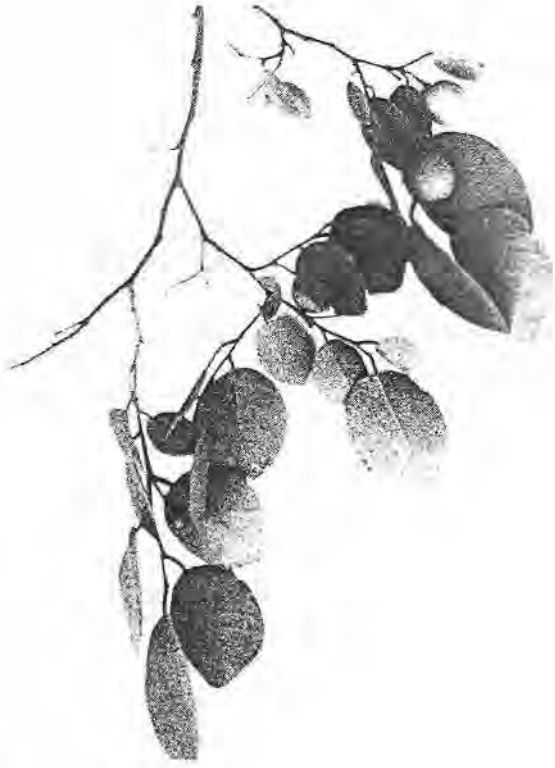
Pruning, weeding.

Remarks:

Some of the tribes in Tanzania worship ancestral spirits associated with this tree species.

Pseudolachnostylis maprouneifolia

Euphorbiaceae



Psidium guajava

Myrtaceae

South and Central America

Common names: Eng: guava; **Swah:** mpera.

Ecology: Originates from South America, probably Brazil. Now grown throughout the tropics, including tropical and sub-tropical America, the warmer sub-tropics elsewhere and throughout Africa south of the Sahara. In Tanzania it is grown mainly along the coast at present, but village conditions over much of the interior are equally suitable. It grows at most altitudes in a variety of soils and is drought hardy but cannot tolerate waterlogging, 0-2,000.

Uses: Firewood, tool handles, posts, food (fruit, jam, jelly, juice), medicine (bark, leaves, roots), shade, soil conservation, live fence.

Description: A small evergreen tree to 8 m, branching irregularly. BARK: smooth light brown, young shoots **4-sided**. LEAVES: **opposite, oval, to 15 cm**, side veins clear and parallel, **hairy below**. FLOWERS: white, 1-3 together, many stamens, each about 2 cm across. FRUIT: yellowish, rounded and heavy to 6 cm, the calyx lobes persistent. Flesh gritty, sweet, pink, white or yellow, hard angular seeds within. Bats distribute seed.

Propagation: Seedlings, wildings, root suckers, direct sowing.

Seed info.: No. of seeds per kg: about 500,000.

treatment: not necessary,

storage: seed can be stored.

Management: Fast growing; pollarding, lopping, pruning, coppicing.

Remarks: The tree may become a weed on good sites, very often colonizing unused sites. It is best planted away from crops due to root competition. Trees begin to bear fruit after 2 years and continue fruiting up to 30 years. Improved varieties (fruit size and quality) exist. The fruit are rich in vitamin C. The wood is termite resistant. Commercial cultivation is carried out in India where seedless varieties have been developed.

Psidium guajava

Myrtaceae

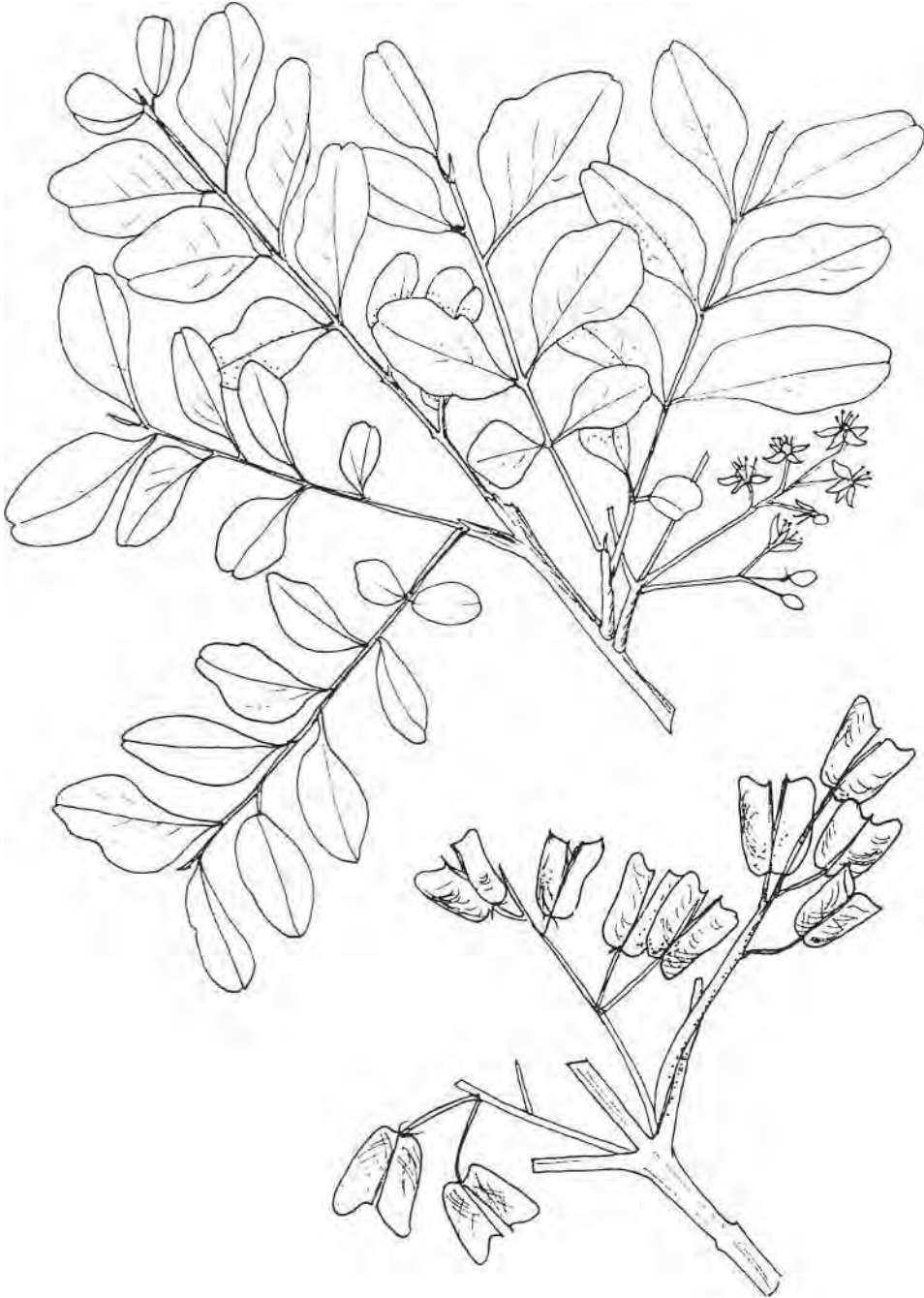


Ptaeroxylon obliquum

Ptaeroxylaceae

Indigenous

- Common names: Eng: sneezewood; **Samb:** mwandala.
- Ecology: Found in a variety of habitats in South Africa, low-altitude woodland to evergreen montane forest, often with Juniperus. A tree of evergreen forests in the West Usambara Mountains.
- Uses: Firewood, timber, medicine (sawdust).
- Description: A shrub or tree 5-16 m high. BARK: pale grey or white, smooth when young, rough and dark with age, becoming longitudinally fissured and flaking. LEAVES: compound, opposite with a slightly winged **leaf stalk** with 3-7 pairs of leaflets. Leaflets unequal sided, dark green, about 2.5 cm long, tip rounded or notched, on a stalk to 2.5 cm. FLOWERS: male and female flowers produced on different trees with young leaves. Flowers **white or pale** yellow, sweet scented, beside leaves; petals yellow, anthers orange-yellow. FRUIT: a capsule, about 2.0 x 1.5 cm, grey-brown, splitting into two to release a pair of winged seeds, persistent on tree.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: about 30,000. Seeds winged. Germination is good and fast,
- treatment: not necessary.
- storage: can retain viability for only a few months at room temperature.
- Management: Fairly fast growing; coppicing.
- Remarks: Smoke from the burning wood is used as a traditional pesticide for stored grains in West Usambara and as a medicine for headache. The sawdust is pungent and irritating but sometimes used as a snuff to cure headaches.



Pterocarpus angolensis

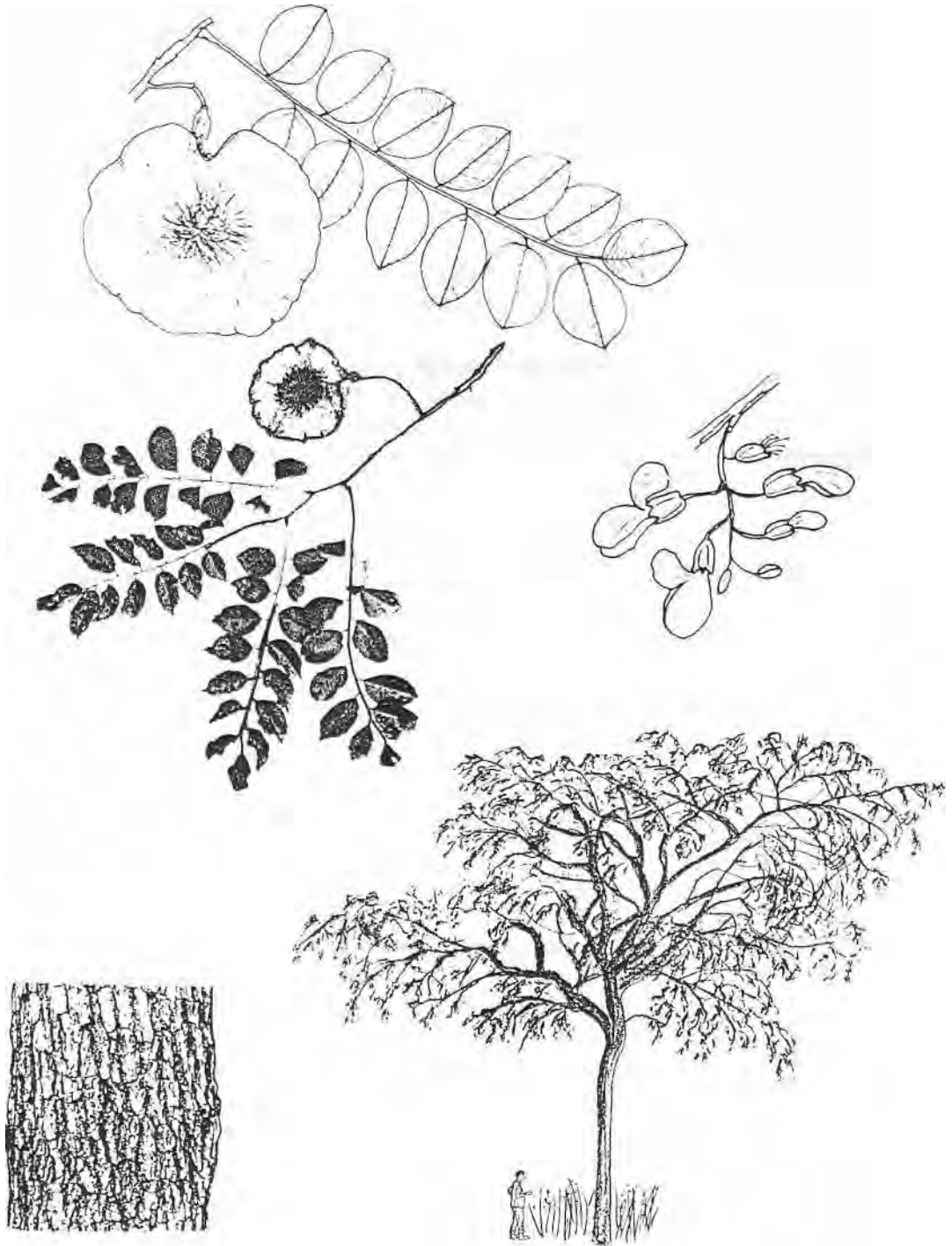
Papilionoideae

Indigenous

- Common names: Eng: African teak, bloodwood; Fipa: asananga; Gogo: mpagata; Ha: mninga; Lugu: mhagata, mlambadanda; Mwera: mtumbati, mtumbati jangwa; Nyam: mninga; Subi: mninga; Swah: mninga; Zara: mninga, mtumbati; Zigua: muhagata.
- Ecology: One of the most useful and valuable of African timber trees, widespread in woodland and wooded grassland throughout central and southern Africa. In Tanzania it is widespread in Kilwa, Lindi, Morogoro and Tabora, preferring well-drained soils.
- Uses: Firewood, charcoal, timber (construction, quality furniture), tool handles, carving, poles, medicine (bark, roots, flowers, sap, seed), fodder (shoots, leaves), bee forage, ornamental, nitrogen fixation, soil conservation, boats and canoes.
- Description: A medium-sized to large deciduous tree, up to 20 m with a straight bole and an open crown. BARK: dark grey to brown, rough and longitudinally fissured. LEAVES: the tree remains bare for many months. Leaves compound 5-9 pairs of leaflets plus a central leaflet, thin and oval to 7 cm, the short stalks hairy, base rounded, tip pointed. FLOWERS: orange-yellow, pea-shaped, in large, branched sprays, 10-20 cm long, before the new leaves. FRUIT: very distinctive, round pod, densely covered with stiff brown hairs. The pod contains 1 seed and has a papery wavy wing, up to 3 cm wide. It does not split open.
- Propagation: Seedlings, truncheons (large woody cuttings).
- Seed info.: No. of seeds per kg: 3,400-5,000. Germination is usually 30-70%.
- treatment: not necessary.
- storage: seed can be stored.
- Management: Pruning, coppicing.
- Remarks: This is one of the most well known woods in southern tropical Africa. It is very fire resistant. The durable heartwood is a beautiful golden red-brown, easily worked and takes a high polish. The sapwood is susceptible to insect damage. As a nitrogen-fixing tree the leaves have been found to contain 50% more nitrogen than those of *Julbernardia globiflora*, which has no nodules, growing alongside.

Pterocarpus angolensis

Papilionoideae



Rauvolfia caffra

Apocynaceae

Indigenous

Common names: **Bende:** mhetwefwe; **Chag:** msesewe; **Eng:** quinine tree; **Gogo:** mkongo; Hehe: muveriveri; **Lugu:** mlolo; **Maasai:** olchapukalyan, oljabokaryan; **Meru:** msesewe, oltawakalyan; Nguu: mlengwelengwe; **Nyak:** mpugupugu; **Rangi:** msumai; **Samb:** ng'weeti; **Swan:** mkufi, mwembemwitu.

Ecology: Widely distributed in riverine *Brachystegia* woodland, lowland forests, dry and wet montane forests of the highlands of eastern and southern Africa, 500-2,100 m. It is a characteristic feature of areas where there is ground water.

Uses: Firewood, timber, utensils (grain mortars), beehives, flavouring (bark, for beer), medicine (bark, roots), bee forage, shade (in coffee), ornamental.

Description: A much-branched evergreen tree up to 35 m high with a straight bole reaching 1.5 m diameter and with a leafy, spreading crown. **It resembles mango**, but is more oval and less dense, branches often whorled. **BARK:** light brown or greyish-white with irregular fissures. **LEAVES:** thinly leathery, arranged in **whorls of 3-5 towards the ends of branchlets, shiny, dark green** above, 6-32 cm long and 1.5-7.5 cm wide, tip drawn out. If removed, thin white **latex** drips out. **FLOWERS:** small, **white, tubular, sweet scented**, in large **dense clusters, to 20 cm across**. **FRUIT:** rounded and smooth, about 1.3 **cm** across, green at first changing to **blackish-purple** and wrinkled when ripe, 1-2-seeded.

Propagation: Easily grown from seedlings, wildings.

Seed info.: No. of seeds per kg: 4,500-5,000. Germination is fast and good, up to 80% after two weeks.

treatment: not necessary.

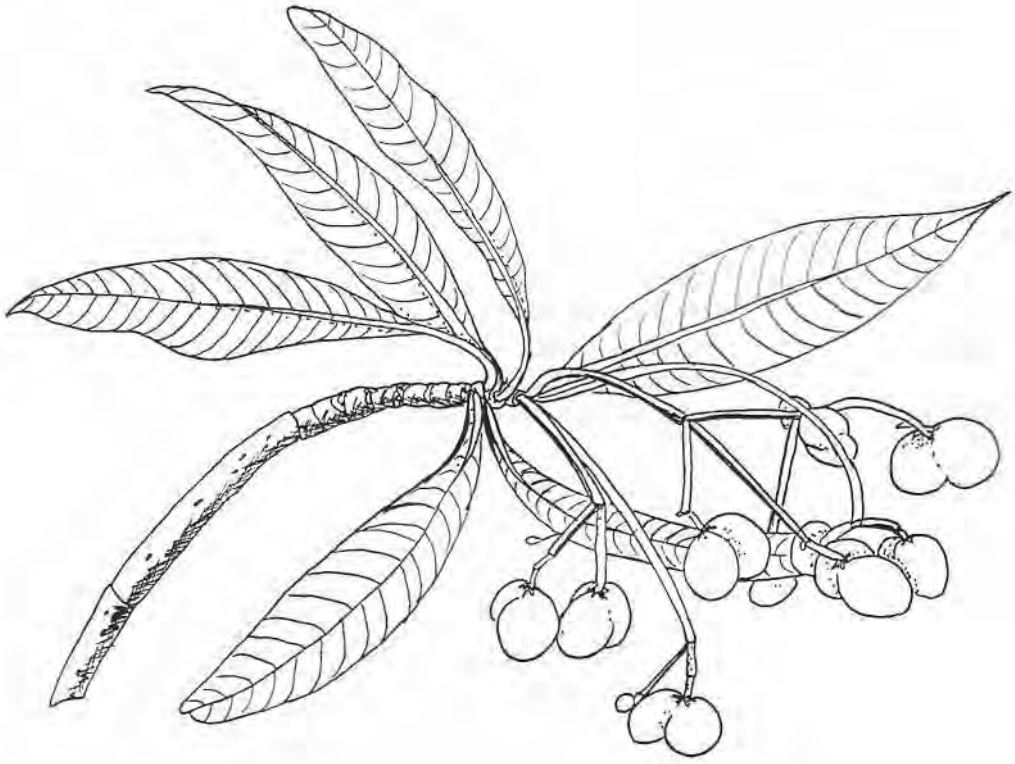
storage: can retain viability only for a short period (1 month) at room temperature.

Management: Pollarding. It transplants well and is quite fast growing.

Remarks: It is already used in the highlands in coffee/banana fields. The wood is pale and light and very suitable for carving utensils and curios. A well-known medicinal tree: bark and roots contain the alkaloid reserpine which is used in the treatment of hypertension.

Rauvolfia caffra

Apocynaceae

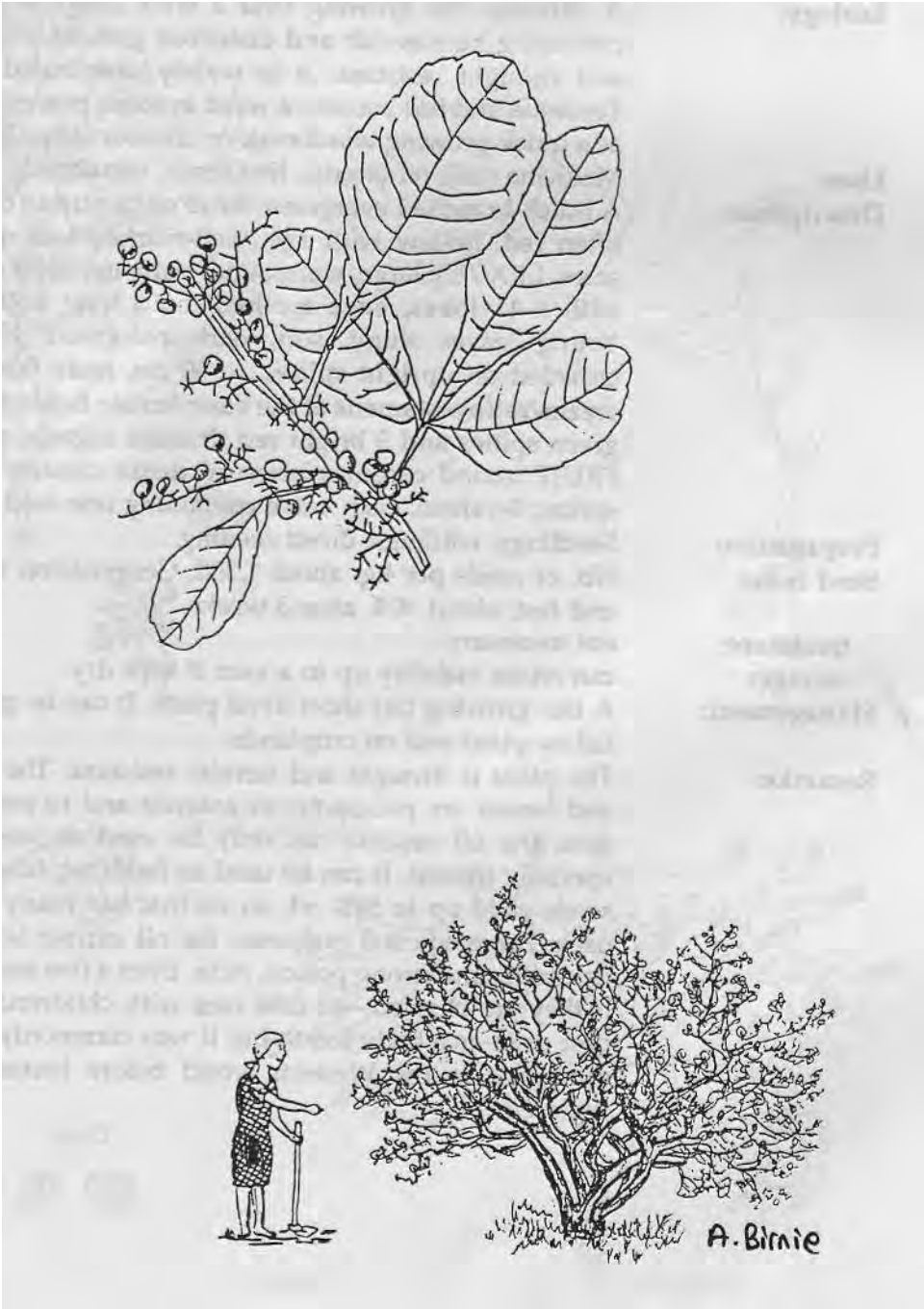


Rhus natalensis

Anacardiaceae

Indigenous

- Common names: Arusha: ormisigiyoi; Fipa: msangula; **Haya**: omusheshe, msagara; Hehe: mtunumbi; **Iraqw**: datei, mstunga, sirongi; **Kere**: musheshe; **Kuria**: msangura; **Maasai**: ol mesigie; Rangi: msakasaka; Samb: mhunguru, mhunguru-mhomba; Suku: mhunguru; Swah: mkumba; **Zinza**: msense.
- Ecology: A bush or tree widespread in Africa, usually in wooded savannah, on forest edges and beside rivers but also on coastal dunes in southern Africa, 0-3,000 m. Found in Tanzania in all but the driest parts. *Rhus* spp. are quick growing and drought resistant.
- Uses: Firewood, charcoal, timber, farm tools, food (fruit), medicine (bark, leaves), toothbrushes (stems).
- Description: A many-branched **shrub, tending to scramble**, or a rounded tree to 8 m. BARK: grey-brown, branchlets **pale and dotted with breathing pores**, branches angular. LEAVES: **three leaflets, the central largest to 9 cm**, usually dark green, rather **leathery**, hairless, sometimes **toothed**, very variable, on a stalk 2-4 cm. FLOWERS: green-yellow in loose heads to 15 cm. FRUIT: about 5 mm, oblong to kidney shaped, **smooth red with thin flesh**, edible, later dry and papery, falling easily.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 26,000-30,000. Germination is fast and good.
- treatment: not necessary
- storage: can retain viability for only a short period (3 months) **at room temperature**.
- Management: Slow growing; coppicing.
- Remarks:



Indigenous

Common names: Eng: castor-oil plant; Gogo: mnyemba; Hehe: mnyemba; Kinga: imivono; Lugu: mnyemba; Nyam: mhale; Pare: mbono; Samb: mzono; Swah: mbarika, mbono, nyonyo.

Ecology: A shrubby tree growing over a wide range of altitudes preferring humus-rich and disturbed ground. It is termite and drought resistant. It is widely distributed all over Tanzania and has become a weed in some places. It is used as a quick-growing windbreak on contour strips in Arusha.

Uses: Medicine (oil), oil (seeds), live fence, windbreak.

Description: A much-branched evergreen shrub or tree up to 6 m, stems often red, hollow with age, well-marked leaf nodes and scars. LEAVES: large, compound, palmate, to 50 cm across with 5-11 lobes, edge toothed, on a long hollow stalk. Young leaves shiny, soft, dark red-green. FLOWERS: crowded on upright spikes, to 60 cm, male flowers with cream-yellow stamens at the base; female flowers with soft green spines and 3 bright red divided stigmas at the top. FRUIT: round capsules borne in dense clusters with soft spikes; 3-valved, each valve containing one seed.

Propagation: Seedlings, wildings, direct seeding.

Seed info.: No. of seeds per kg: about 1,300. Germination very good and fast, about 90% after 3 weeks,

treatment: not necessary.

storage: can retain viability up to a year if kept dry.

Management: A fast-growing but short-lived plant. It can be grown as a fallow plant and on croplands.

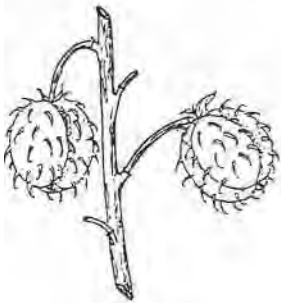
Remarks: The plant is drought and termite resistant. The seed coat and leaves are poisonous to animals and to poultry, and even the oil residue can only be used as stock feed if specially treated. It can be used as fertilizer, however. The seeds yield up to 50% oil, an oil that has many industrial uses. For medicinal purposes the oil extract is heated to neutralize the strong poison, ricin. Even a few seeds can kill if they are chewed—so take care with children. The oil is best used as a body lotion but it was commonly used as a purgative in the Western world before better products replaced it.



Z.

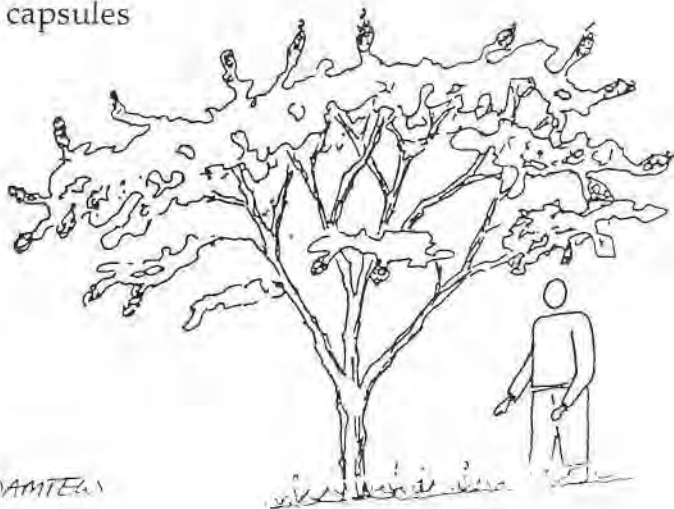


flowers



fruit capsules

seed

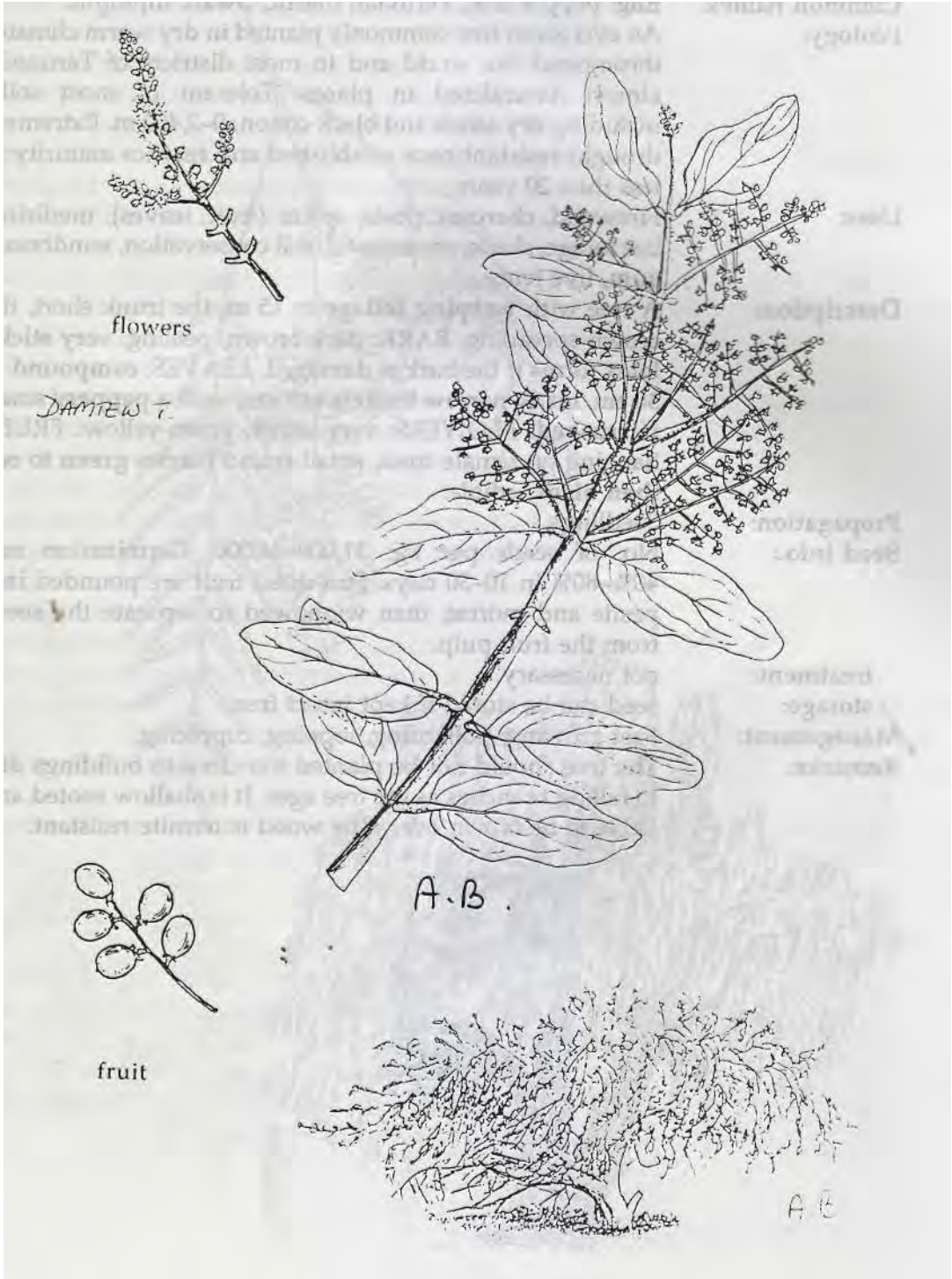


Salvadora persica

Salvadoraceae

Indigenous

- Common names:** Eng: toothbrush tree; Cogo: mkunghuni; Goro: msaki; Hehe: mswake; Iraqw: mswaki; Maasai: olremit; Mbug: modee; Mwera: chigombo; Samb: mswaki; Sangu: mswake; Suku: mswake, muche; Swah: mswaki; Zigua: mswaki.
- Ecology:** Widespread all over arid Africa and in the driest parts of India. It grows in all districts of Tanzania in thorn shrub, on desert floodplains and grassy savannah and on alkaline soils, 0-1,350 m. It is very drought resistant and is an important indicator of saline soils even though it prefers the sandy-clay soils of water courses.
- Uses:** Firewood, food (fruit), medicine (roots), fodder (fruit, leaves), soil conservation, shade, toothbrushes.
- Description:** An evergreen trailing shrub or small tree, 3-7 m. Young flexible branches pendulous, older wood twisted. **BARK:** cracked and brown. **LEAVES:** yellow-green, dull, rather fleshy but hard with rough gland dots and raised veins, oblong to rounded to 5 cm. **FLOWERS:** in loose heads, to 10 cm, small, white. **FRUIT:** white, then pink to purple, 1 cm across, one seeded, juicy and strongly flavoured.
- Propagation:** Seedlings; sow seed in pots.
- Seed info.:** No. of seeds per kg: 31,000-37,000.
- treatment:** not necessary.
- storage:** seed can be stored for about one month.
- Management:** Slow growing.
- Remarks:** A very important fodder species for dry areas when nothing else is available as shoots can be browsed all year by cattle, sheep, goats and camels—but milk may be flavoured. The bark contains an antibiotic which keeps the mouth clean and helps to prevent tooth decay. A rough salt can be produced from the ash of the wood and leaves.

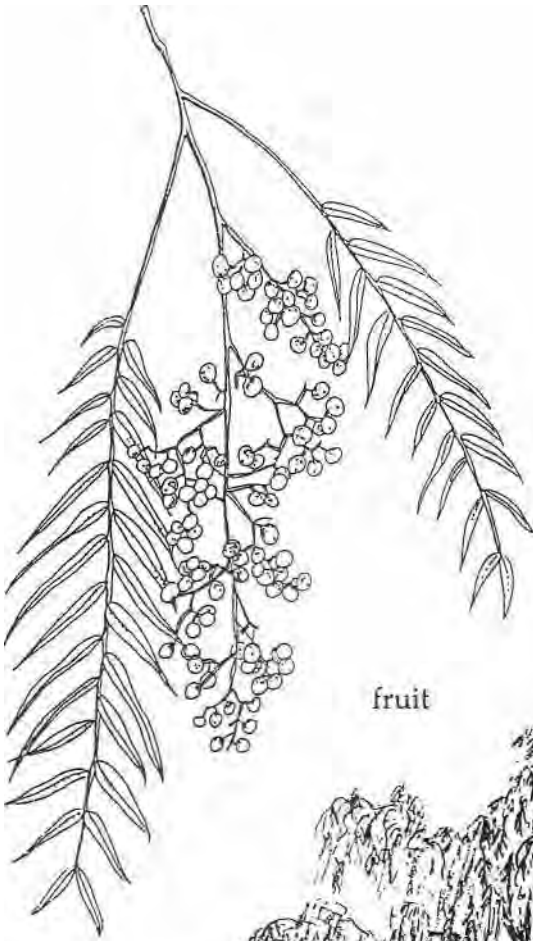


Schinus molle

Anacardiaceae

Peru, Andes

- Common names: Eng: pepper tree, Peruvian mastic; Swah: mpilipili.
- Ecology: An evergreen tree commonly planted in dry warm climates throughout the world and in most districts of Tanzania, almost naturalized in places. Tolerant of most soils, including dry sands and black cotton, 0-2,400 m. Extremely drought resistant once established and reaches maturity in less than 20 years.
- Uses: Firewood, charcoal, posts, spices (fruit, leaves), medicine, bee forage, shade, ornamental, soil conservation, windbreak, gum, live fence.
- Description: A tree with weeping foliage to 15 m, the trunk short, the crown spreading. BARK: dark brown, peeling, very sticky latex forms if the bark is damaged. LEAVES: compound to 30 cm, many narrow leaflets to 7 cm, with a peppery smell if crushed. FLOWERS: very small, green-yellow. FRUIT: hanging on female trees, small round berries green to red then black, edible.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 31,000-44,000. Germination rate 40%-80% in 10-30 days. Sun-dried fruit are pounded in a pestle and mortar, then winnowed to separate the seeds from the fruit pulp.
- treatment: not necessary.
- storage: seed can be stored if kept insect free.
- Management: Fast growing; pollarding, lopping, coppicing.
- Remarks: The tree should not be planted too close to buildings due to falling branches as the tree ages. It is shallow rooted and liable to be blown over. The wood is termite resistant.



fruit



Sclerocarya birrea subsp. caffra (S. caffra)

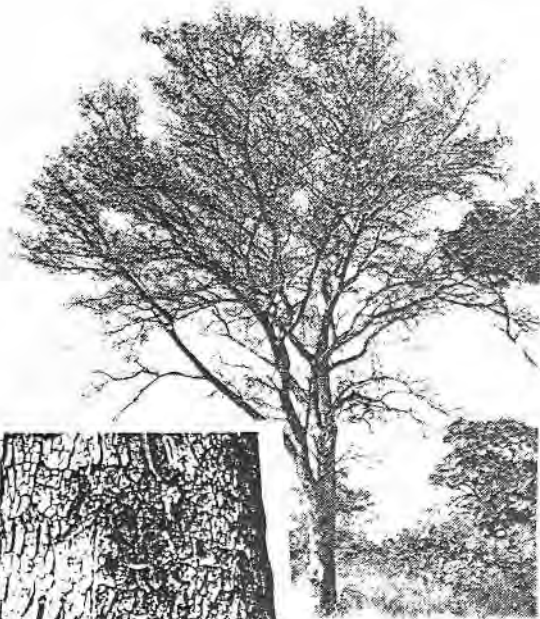
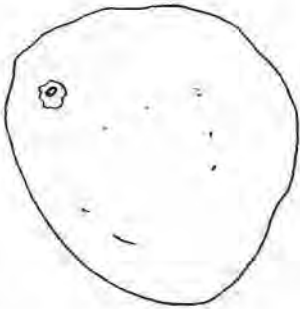
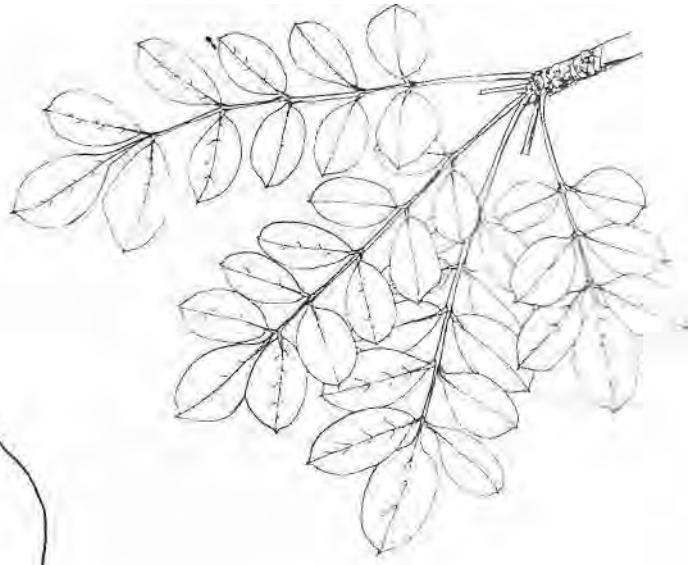
Anacardiaceae

Indigenous

- Common names:** Arusha: olmang'oi; **Gogo:** mbwejele; **Goro:** gulgurchandi; **Iraqw:** gulgurchandi; **Kuria:** omongwe; **Mate:** mbwegele, mtondoko; **Mbug:** monyangu; **Nguu:** mng'ong'o; Nyam mng'ongo; **Nyat:** muhuri; **Pare:** mng'ong'o; **Suku:** ng'ongo; **Swah:** mng'ongo, mng'ong'o; **Zara:** mng'ongo.
- Ecology:** An African fruit tree occurring from Ethiopia south to Natal at medium to low altitudes scattered in mixed deciduous woodland, wooded grassland, 100-1,600 m. In Tanzania it is widely distributed all over the country.
- Uses:** Firewood, timber (general purpose), utensils (stools, grain mortars, beehives), carving, food (fruit), drink (fruit), bee forage, fodder (leaves, fruit), medicine (bark, roots, leaves), oil (seeds).
- Description:** A deciduous tree 10-18 m with a thick bole and large branches to a light, rounded crown. **BARK:** grey then **black and thick with irregular cracks and raised scales; inner bark pink-red.** **LEAVES:** compound, crowded at tips of branches, **3-18 pairs leaflets plus a central leaflet, each stalked, oval to 10 cm, tip pointed.** **FLOWERS:** male and female flowers on the same or different trees: pale green male flowers in spikes, hang down and attract insects **female flowers solitary, green-pink.** **FRUIT:** **rounded and fleshy to 3.5 cm across, skin cream, spotted,** peeling away from the **sweet flesh** which tastes a bit like mango; 2-3 large seeds inside, oily and edible.
- Propagation:** Seedlings, cuttings, truncheons (large woody cuttings, 2 x 10 cm).
- Seed info.:** No. of seeds per kg: 400-450. Germination is 40% after 6 weeks.
- treatment:** soak in cold water for 24 hours.
- storage:** can retain viability for up to 3 months at room temperature.
- Management:** Coppicing. Young trees coppice easily.
- Remarks:** There are three subspecies in Tanzania which differ in leaflet number and shape, length of flower spike and distribution: subsp. *birrea*, subsp. *multifoliolata*, and subsp. *caffra*. Young trees are susceptible to fire damage. The fruit are rich in vitamin C and are well liked by children. The fruit are also eaten by a variety of game.

Sclerocarya birrea subsp. *caffra* (*S. caffra*)

Anacardiaceae



Securidaca longipedunculata

Polygalaceae

Indigenous

- Common names: Eng: violet tree; Fiome: furudau; Fipa: mluka, muuruka; Mate: mguluka; Mwera: chiguruka; Nyam: mteyo, mteyu; Nyih: kitwantumbi; Suku: mengo-mengo; Zinza: nengo-nengo.
- Ecology: Widespread in tropical Africa from Kenya to South Africa. In Tanzania it occurs in miombo woodland, bushland and on forest edges from sea level to about 1,600 m. It is most common in coastal forests.
- Uses: Firewood, poles, medicine (all parts), fodder (leaves), *bee* forage, ornamental, fibre (inner bark), oil (flowers, seed), soap (roots).
- Description: A semi-deciduous shrub or small tree 2-6 m, with slender branches to an open crown, sometimes with drooping branchlets. BARK: young twigs yellow-green, becoming stringy and pale; rough grey mature bark flakes to show yellow below. Deep fissures when old. LEAVES: alternate, thin and narrow, tip rounded, to 5 cm long, hairy when young, becoming smooth, blue-green, sometimes clustered on spine-tipped branchlets. FLOWERS: small, about 1 cm long, pink or purple, sweet scented in showy sprays with new leaves. FRUIT: rounded and winged, to 4 cm long, purple-green when young, pale yellow-brown when mature, hanging in bunches.
- Propagation: Seedlings, direct sowing.
- Seed info.: No. of seeds per kg: 36,000-36,500. Seeds germinate with difficulty if not pre-treated. Germination of treated seed good and fairly fast.
- treatment: soak in cold water for 24 hours.
- storage: can retain viability for a long period at room temperature if kept dry.
- Management: Fairly fast growing.
- Remarks: A beautiful flowering tree with potential as an ornamental in parks and gardens. The wood is pale yellow and has been used for bows. The fibres have been used for fish nets, bead strings and thread to sew barkcloth. The roots contain methyl salicylate and a saponin making them highly poisonous. An antidote for snakebite and a cough mixture are prepared from leaves, an abortifacient from powdered bark and a root infusion relieves toothache. But great care must be taken when using these medicinal substances.



Senna siamea (Cassia siamea)

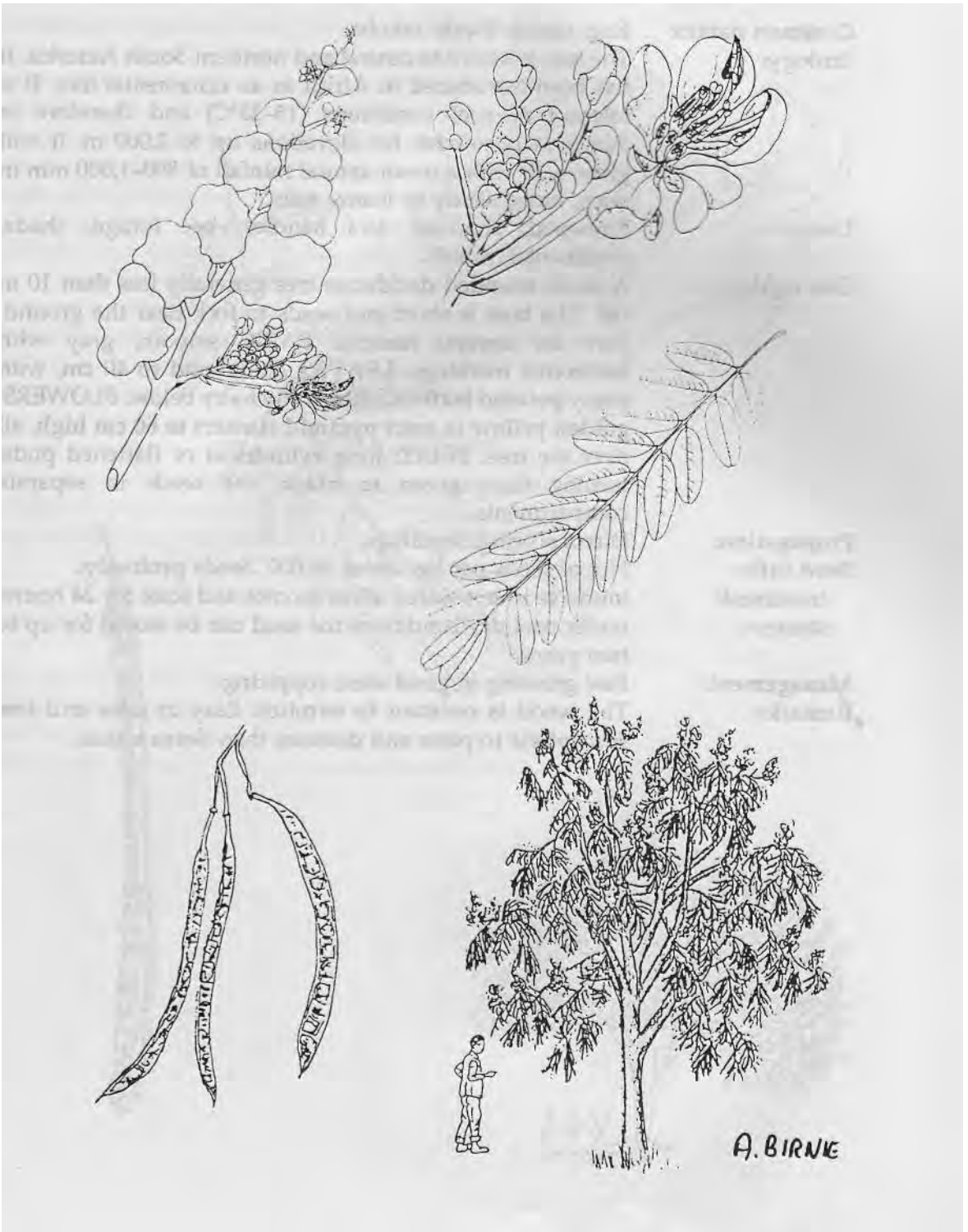
Caesalpinioideae

South-East Asia

- Common names: Eng: iron wood, yellow cassia; **Suku:** nsongoma; **Swah:** mjohoro.
- Ecology: A small tree cultivated all over the tropics from sub-humid to semi-arid and even arid zones, 0-1,600 m. It prefers a high watertable but will tolerate extended drought and a variety of soils. In Tanzania *Cassia siamea* is widely grown in drier areas below 1,000 m. The most suitable soils are deep, fairly fertile, well drained and neutral or alkaline.
- Uses: Firewood, charcoal, poles, timber (furniture), medicine, fodder (leaves), bee forage, ornamental, mulch, soil conservation, windbreak.
- Description: An evergreen tree to 20 m, often shrub like. **BARK:** smooth, pale grey-brown. **LEAVES:** compound, **stalk to 30 cm**, grooved, leaflets oblong, 4–16 pairs, round at base and tip which may be notched, dark, shiny, green above. **FLOWERS:** pale yellow in dense heads, each flower about 3 cm across. **FRUIT:** pods, in dense clusters, flat yellow-brown and smooth, slightly curved, indented across, about 20 seeds within.
- Propagation: Direct sowing, seedlings, wildings.
- Seed info.: No. of seeds per kg: 39,000. A prolific seeder.
- treatment: fresh seeds require no pre-treatment; nick or soak stored seeds up to 48 hours in cold water or pour on boiling water and leave to soak for 24 hours.
- storage: seed can be stored up to one year but germination rate drops with time.
- Management: Fast growing; lopping, coppicing.
- Remarks: The most widely planted fuel tree in the lowlands of Tanzania, with dense wood, but it gives a smoky fire. The species is not browsed so it is easily established. Should not be mixed with crops as it competes. Susceptible to mildew attacks on the leaves. In Tanzania *Senna siamea* is recommended as a woodlot tree where conditions are favourable.

Senna siamea (Cassia siamea)

Caesalpinioideae



Senna spectabilis (*Cassia spectabilis*)

Caesalpinioideae

Tropical America

Common names: Eng: cassia; **Swah:** mhoba.

Ecology: The tree is native to central and northern South America. It has been introduced in Africa as an ornamental tree. It is tolerant of cool conditions (15-25°C) and therefore in Tanzania is suitable for elevations up to 2,000 m. It will grow well with a mean annual rainfall of 800-1,000 mm in deep, moist sandy or loamy soils.

Uses: Firewood, charcoal, tool handles, bee forage, shade, ornamental, mulch.

Description: A small rounded deciduous tree generally less than 10 m tall. The bole is short and tends to fork near the ground. Bare for several months. **BARK:** smooth, grey with horizontal markings. **LEAVES:** compound to 40 cm, with many **pointed leaflets**, often softly hairy below. **FLOWERS:** **golden yellow** in **erect pyramid clusters to 60 cm high**, all over the tree. **FRUIT:** **long cylindrical** or flattened pods, turning from **green to black**, the seeds in separate compartments.

Propagation: Direct sowing, seedlings.

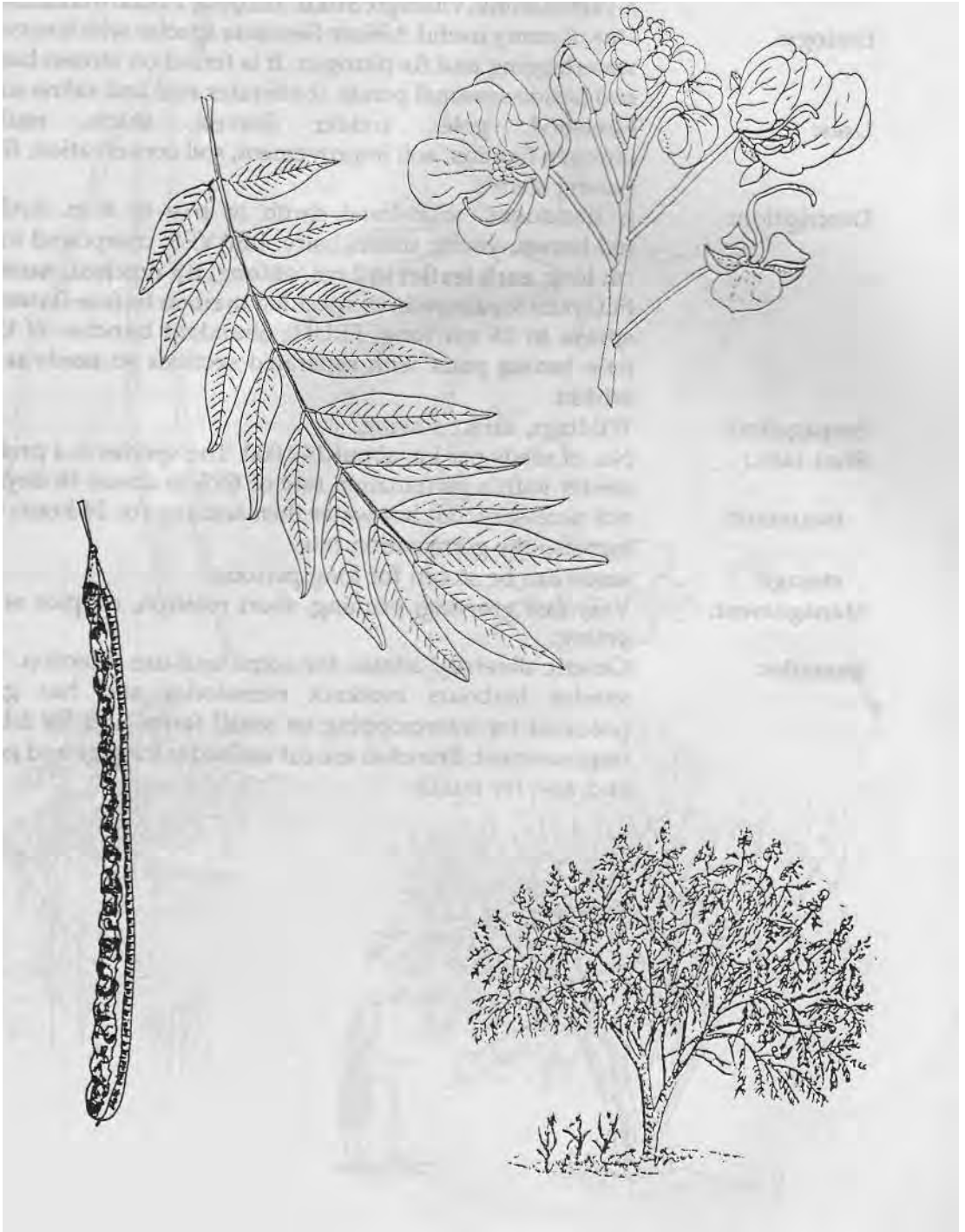
Seed **info.:** No. of seeds per kg: about 39,000. Seeds profusely.
treatment: immerse in hot water, allow to cool and soak for 24 hours.
storage: under cool dry conditions the seed can be stored for up to two years.

Management: Fast growing in good sites; coppicing.

Remarks: The wood is resistant to termites. Easy to raise and less susceptible to pests and diseases than *Senna siamea*.

Senna spectabilis (*Cassia spectabilis*)

Caesalpinioideae



Indigenous

- Common names: Eng: river bean, sesbania; **Haya:** mbondo; **Kere:** muzuzume; Nyam: luminu, vulengo; **Suku:** zuzuma; **Zinza:** muzuzumo.
- Ecology: One of many useful African Sesbania species which survive waterlogging and fix nitrogen. It is found on stream banks and beside seasonal ponds. It tolerates acid and saline soils.
- Uses: Firewood, poles, fodder (leaves), shade, mulch, nitrogen fixation, soil improvement, soil conservation, fibre (young stems).
- Description: A deciduous, short-lived shrub or tree to 8 m. BARK: red-brown, young shoots hairy. LEAVES: compound to 12 cm long, **each leaflet to 2 cm, oblong, tip notched, narrow.** FLOWERS: **pale yellow, speckled maroon in few-flowered sprays to 15 cm long.** FRUIT: abundant bunches of **thin pale brown pods** with separated sections so **seeds rattle within.**
- Propagation: Wildings, direct sowing.
- Seed info.: No. of seeds per kg: about 110,000. The species is a prolific seeder with a germination rate of 65% in about 16 days.
- treatment: not necessary, but hot water then soaking for 24 hours can increase the germination rate.
- storage: seeds can be stored for long periods.
- Management: Very fast growing; pruning, short rotation, coppice when young.
- Remarks: Genetic diversity allows for some end-use selection. The species harbours rootknot nematodes and has great potential for intercropping on small farms and for fallow improvement. Branches are cut as fodder for pigs and goats and also for mulch.

Sesbania sesban (*S. aegyptiaca*)

Papilionoideae



Spathodea campanulata (S. nilotica)

Bignoniaceae

Indigenous

Common names: **Eng:** African tulip tree, flame of the forest, Nandi flame; **Subi:** mugurube; **Swah:** kifabakazi.

Ecology: A decorative tree common at forest edges and in riverine forests in East, Central and West Africa. In Tanzania it is confined to the north-western districts of Buha, Kigoma, Biharamulo and Ngara. It does best in deep moist fertile soils in areas below 1,800 m. It is drought resistant once established.

Uses: Firewood, charcoal, carving, medicine (bark), bee forage, shade, ornamental, mulch, windbreak.

Description: A deciduous tree, crown rounded, usually 10-15 m, bare for many months. **BARK:** pale grey-brown, smooth, rough with age. **LEAVES:** compound, to 40 cm long, 6 pairs leaflets plus a central leaflet, each wavy, tip pointed. **Yellow-brown hairs** on shoots, buds, branchlets and underside of leaves. **FLOWERS:** bright **orange-red clusters** stand out all over the tree, a yellow edge on the frilly petals. Furry buds contain watery liquid. **FRUIT:** large **woody capsules to 25 cm** split on the ground, releasing many flat, **winged seeds**.

Propagation: Seedlings, wildings, root suckers.

Seed **info.:** No. of seeds per kg: 160,000-200,000 with wings attached. Good seed germination rate.

treatment: not necessary.

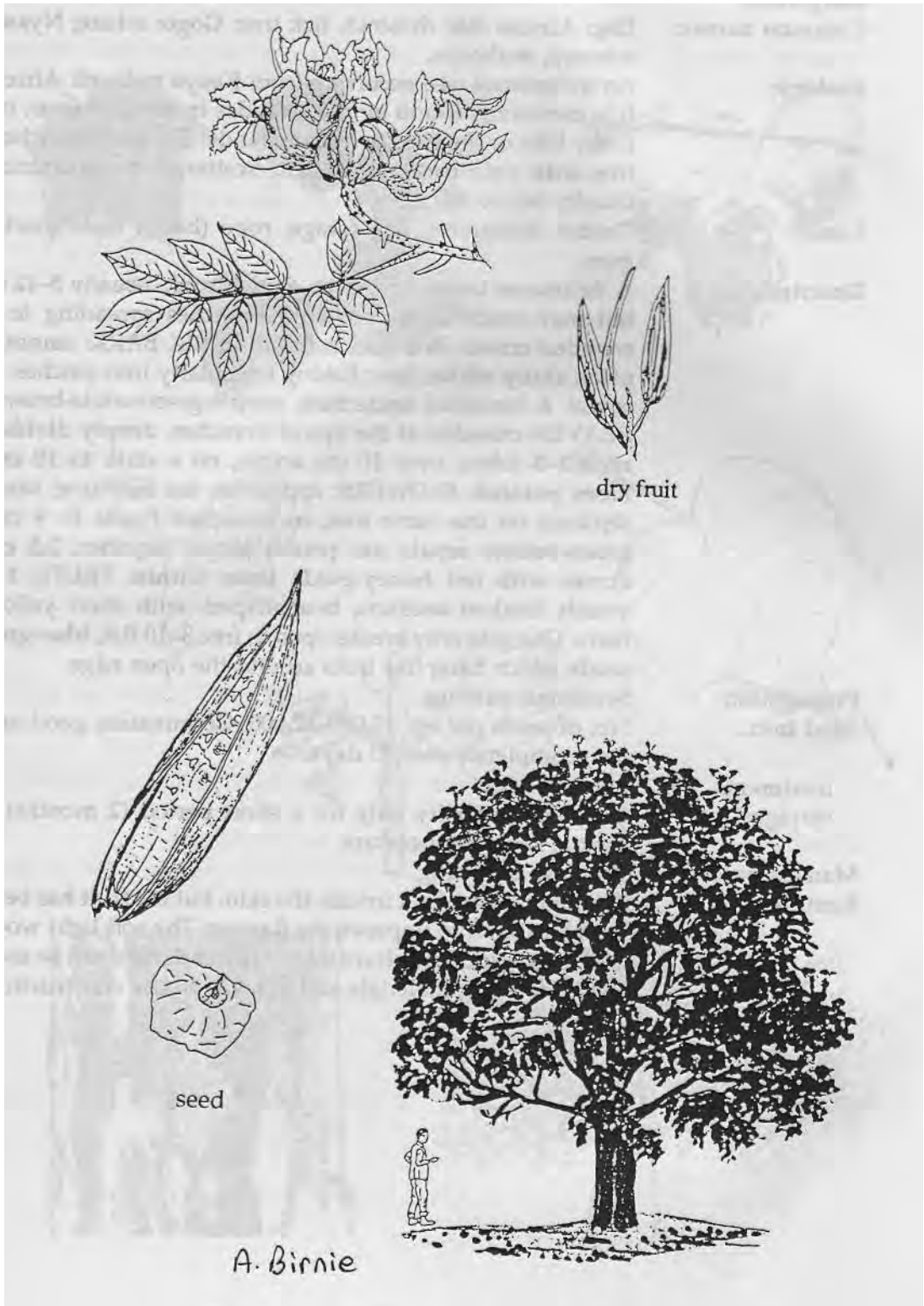
storage: seed does not store well so should be sown fresh.

Management: Fast growing.

Remarks: One of the most beautiful of the indigenous trees with its large red flowers. It has been widely planted through: Tanzania. Flowers are produced 3-4 years after planting. The tree is not browsed by stock.

Spathodea campanulata (S. nilotica)

Btgnoniaceae



Sterculia africana

Sterculiaceae

Indigenous

Common names: Eng: African star chestnut, tick tree; Gogo: mluze; Nyam: mhozya, muhozya.

Ecology: An indigenous tree occurring from Kenya to South Africa. It is commonly found at low altitudes in hot dry areas, on rocky hills or the fringes of woodlands. The bare-branched tree with pale bark stands out. Scattered in occurrence, usually below 600 m.

Uses: Timber (furniture), bee forage, rope (bark), mats (bark), gum.

Description: A deciduous tree with a thick, fluted trunk, usually 5-12 m but may reach 25 m, the erect branches spreading to a rounded crown. Branches soft and brittle. BARK: smooth, often shiny white, later flaking irregularly into patches to reveal a beautiful underbark purple-green-white-brown. LEAVES: crowded at the tips of branches, deeply divided with 3-5 lobes, over 10 cm across, on a stalk to 10 cm, lobes pointed. FLOWERS: appear on the bare tree, sexes separate on the same tree, in branched heads to 9 cm, green-yellow sepals (no petals) joined together, 2.5 cm across with red honey-guide lines within. FRUIT: 1-5 woody beaked sections, boat-shaped, with short yellow hairs. One side only breaks open to free 3-10 flat, blue-grey seeds which hang like ticks around the open edge.

Propagation: Seedlings, cuttings.

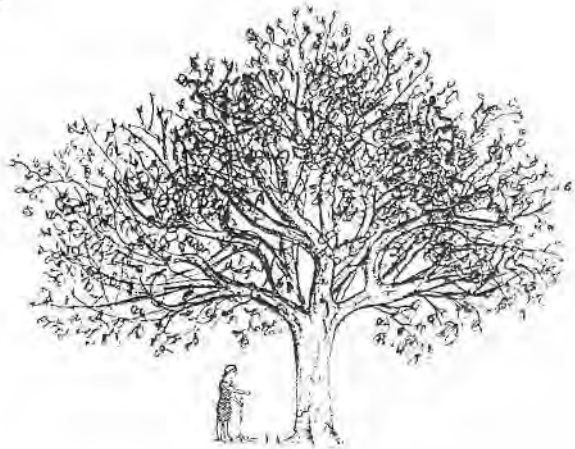
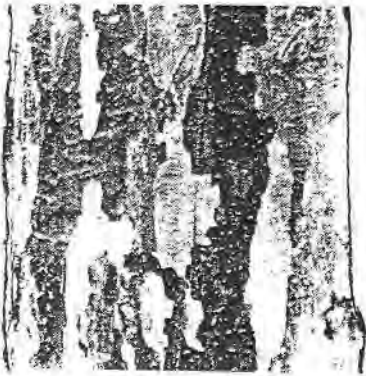
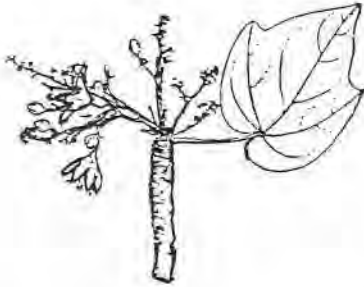
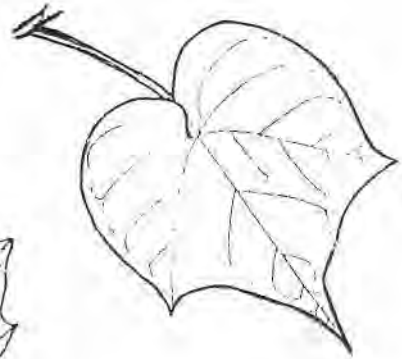
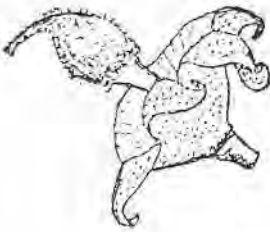
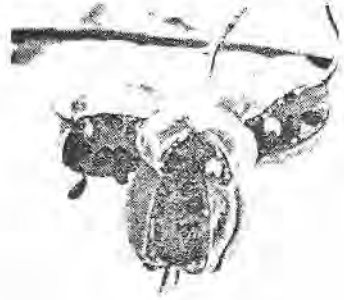
Seed info.: No. of seeds per kg: 15,000-17,000. Germination good and fast, completed after 20 days.

treatment: not necessary.

storage: can retain viability only for a short period (2 months) if kept at room temperature.

Management: Pruning, coppicing.

Remarks: The hairs on the fruit irritate the skin, but the fruit has been added to snuff to improve the flavour. The soft light wood only makes local furniture items. The bark rope can be used to tie thatching materials and poles in house construction.

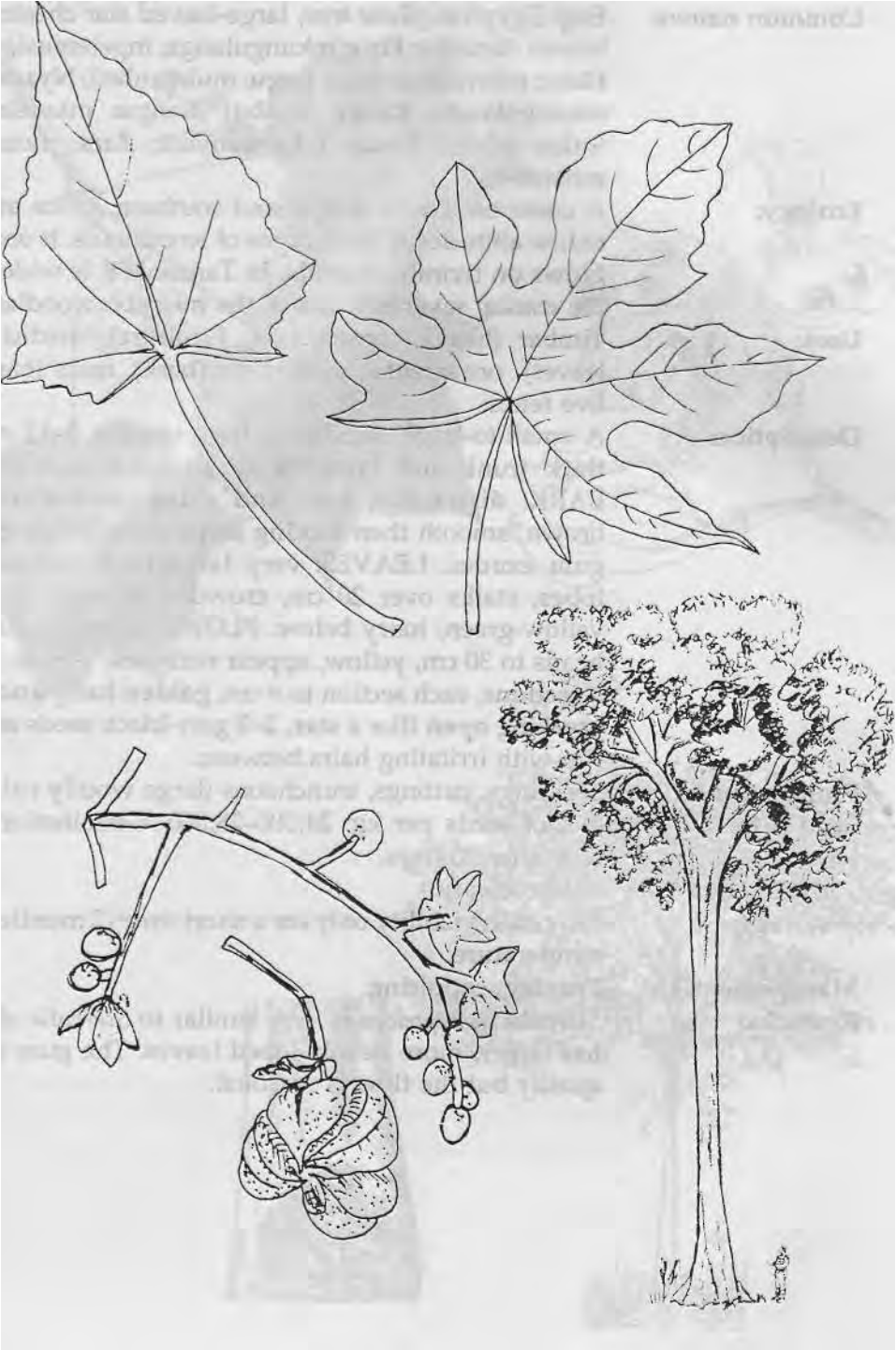


Sterculia appendiculata

Sterculiaceae

Indigenous

- Common names: Eng: tall sterculia; **Lugu:** mgude; **Nguu:** mfune, mgude; **Pare:** mfune; **Samb:** mfune; **Swah:** mfune; **Zigua:** mfune, mgude.
- Ecology: A tree of coastal and riverine forests, coastal bushland and woodland at low altitudes from Kenya to South Africa. In Tanzania it is quite common, especially along the coast 0-600 m.
- Uses: Timber (plywood), food (seeds), shade, ornamental.
- Description: A **tall, straight** deciduous tree **up to 40 m high with a dense rounded crown**. Trees have a clear bole 15-20 m and often emerge above the surrounding woodland. BARK: pale yellow, smooth, conspicuous and powdery. Branchlets have dense rust-yellow hairs. LEAVES: at the end of branches, **large, 14-30 cm across, the leaf blade divided into 3-7 lobes. Young leaves usually densely woolly with rusty hairs**, lost at maturity. Leaf stalks **over 6 cm, hairy at first**. FLOWERS: **green-yellow-brown to 2.8 cm** across in hairy few-flowered **sprays to 12 cm**, before leaves. FRUIT: **made up of 2-3 sections each to 9 cm covered with soft brown hairs on the outside**. When opened **seeds line the edges, each 2 cm long, brown with a soft yellow aril at the base**.
- Propagation: Seedlings.
- Seed **info.:** No. of seeds per kg: 12,000-15,000. Germination is good, up to 60% completed within 20 days.
- treatment:** not necessary.
- storage: can retain viability only for a short period (2 months) **at room temperature**.
- Management:** A fast-growing tree; needs fire protection.
- Remarks: Timber is soft and perishable. It has potential for planting in lowland areas. Bark and leaves are used for **medicinal** purposes by the Digo in Kenya.



Sterculia quinqueloba

Sterculiaceae

Indigenous

- Common names: Eng: Egyptian plane tree, large-leaved star chestnut, large-leaved sterculia; Fipa: mkungulanga, mpelemusi, msaguye; Hehe: mkwelangedege; Lugu: muhe-mbeti; Nyam: mguwa, mkungulanga; Rangi: ibuibui; Sangu: mkwelangedege; Suku: mhoja; Swah: mkweranyani; Zara: moza; Zigua: mhembeti.-
- Ecology: A common tree of central and southern Africa at medium to low altitudes in most types of woodlands. It occasionally grows on termite mounds. In Tanzania it is widespread in the coastal savannah and in the miombo woodlands.
- Uses: Timber (heavy construction, furniture), medicine (bark, leaves), ornamental, gum, rope (bark), mats (bark fibres), live fence.
- Description: A small-to-large deciduous tree, usually 5-12 m, with a thick trunk and branches to an open rounded crown. BARK: distinctive, pale and shiny, yellow-cream-pink-brown, smooth then flaking in patches. When cut, a **pale** gum exudes. LEAVES: very large to 40 cm across, 3-5 lobes, stalks over 20 cm, crowded at ends of branches, yellow-green, hairy below. FLOWERS: very small, in **big** heads to 30 cm, yellow, appear with new leaves. FRUIT: in 5 sections, each section to 6 cm, golden hairy and pointed, breaking open like a star, 2-3 grey-black seeds around the rim with irritating hairs between.
- Propagation: Seedlings, cuttings, truncheons (large woody cuttings).
- Seed info.: No. of seeds per kg: 24,000-28,000. Germination is up to 65% after 20 days,
- treatment: not necessary.
- storage: can retain viability only for a short time (2 months) at room temperature.
- Management: Pruning, coppicing.
- Remarks: *Sterculia quinqueloba* is very similar to *Sterculia africana* but has larger, more deeply lobed leaves. The gum is of good quality but the flow is seasonal.



Indigenous

Common names: **Bond:** mkande; **Haya:** munyereza nguge; **Hehe:** mkelenafifi; **Lugu:** hambalimwa; **Nyam:** mogavagoli, mogavami; Samb: mkande; **Swah:** mtafuna panya; **Zara:** muwenya mbewa; Zinza: mkukurama.

Ecology: An attractive flowering tree distributed from Ethiopia to South Africa from low to high altitudes. Widespread in Tanzania in fairly dry areas of deciduous forest, woodland or bush, on rocky outcrops, termite mounds and margins of evergreen forest, 1,000-2,400 m.

Uses: Firewood, poles, tool handles, utensils (wooden spoons), bee forage, medicine (bark, fruit), ornamental.

Description: A small deciduous tree 5-13 m high, the trunk bent to spiral, rarely straight, crown rounded. **BARK:** grey, smooth at first, then rough and **flaking in rounded patches exposing a paler underbark** when old (like a gum tree). **LEAVES:** compound, opposite with **4 pairs of leaflets** and one terminal leaflet each one to 8 cm. Young leaves sometimes toothed and hairy. **FLOWERS:** showy pink with red streaks on the lower lobes, **tubular**, up to 3 cm long, with 5-petal lobes, fragrant, in large drooping heads, **pink-purple on the bare tree**. **FRUIT:** very **long thin cylindrical capsules**, twisted, red-brown to 45 x 1 cm, splitting to release many **winged seeds**. Capsules remain many months on the tree.

Propagation: Seedlings, root suckers.

Seed info.: Seeds flat and winged, about 35,000 per kg. Germination is good and completed after two weeks.

treatment: not necessary.

storage: can retain viability for only a short period (3 months) at room temperature.

Management: A fairly fast-growing tree.

Remarks: A species with potential for growing as an amenity tree in parks and gardens. (In West Africa the tree is rarely felled as it is believed to have supernatural properties. The **bark** is carried to protect against witchcraft. Chewed bark stains the lips red-brown.)



Strychnos cocculoides

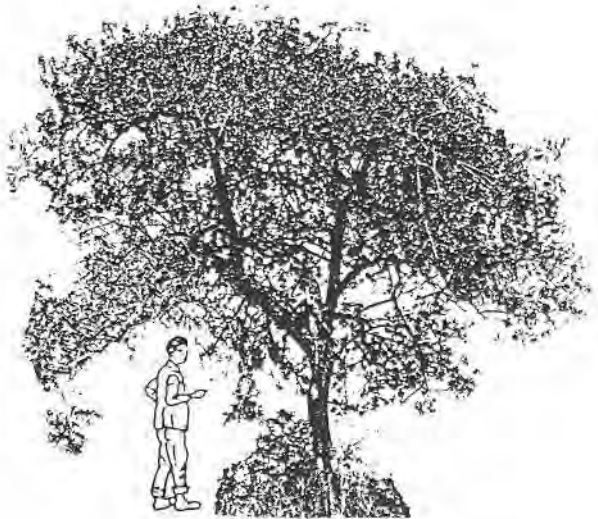
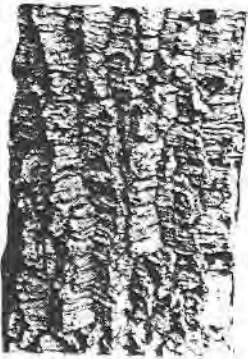
Loganiaceae

Indigenous

- Common names: Eng: corky bark, monkey orange; Hehe: mnywewa; **Mate:** mdonga, mtongawali; Nyam: mtonga, mumilwa; **Swah:** mtonga.
- Ecology: A spiny shrub found throughout the drier parts of central and southern Africa. It grows naturally in Brachystegia and deciduous woodlands, especially on rocky hills. In Tanzania it is found in Tabora, Dodoma, Iringa, Mbeya and Lindi, 0-2,000 m.
- Uses: Firewood, building poles, tool handles, food (fruit), medicine (bark, leaves, roots, fruit).
- Description: A semi-deciduous shrub or small tree 3-8 m high, branches spreading to a rounded crown. **BARK:** thick, ridged and corky, brown in colour. Branchlets hairy, purple with strong paired spines, curved, **1 cm or more**. **LEAVES:** oval to circular, to 5 cm long, shiny above, dull below, 5 veins from the base. **FLOWERS:** small green-white in dense heads, about 3 cm in diameter. **FRUIT:** round, hard, woody, about 7 cm in diameter, dark green speckled with white when young, becoming yellow when ripe, containing a juicy pulp and many seeds. Fruit may take a year to mature.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: about 1,800. Germination is poor.
- treatment: Soaking in cold water for 12 hours may hasten germination.
- storage: seeds are short live—at most 2 months at room temperature.
- Management: Slow growing; coppicing.
- Remarks: The fruits are eaten by children and adults and therefore the trees are left when land is cleared for agriculture. The wood is white and tough, rather soft and pliable.

Strychnos cocculoides

Loganiaceae



Strychnos innocua

Loganiaceae

Indigenous

Common names: **Bende:** bunkundu; **Bond:** mkwakwa; **Eng:** dull-leaved strychnos; **Gogo:** munhulwa; **Goro:** furudou; **Mwera:** mgulungulu; **Nyam:** mkulwa, mpundu, mumundu; **Nyat:** mkulungundu; **Rangi:** mukomu; **Samb:** mtanga; **Swah:** mkwakwa; **Zigua:** mtonga.

Ecology: A tree growing in lowlands from Kenya to Malawi and South Africa. Found in coastal woodland, *Brachystegia* woodland, and bushlands up to 1,400 m. In Tanzania it occurs in Tabora, Dodoma, Singida, Kondoia and on Zanzibar.

Uses: Firewood, tools, poles, food (fruit).

Description: A shrub or small tree, usually 3-6 m, **without** spines, branches often twisted, branchlets hanging down. **BARK:** pale grey, smooth, branchlets powdery grey-green to yellow-brown. **LEAVES:** in opposite pairs, widely spaced, tough, **dull blue-green** with 3-5 main veins and **clear net veining, both sides similar, wider at rounded tip, 4-10 cm.** **FLOWERS:** small, green-cream, **2-4 in stalked clusters beside leaves, calyx shorter than petals.** **FRUIT:** round with a **thick woody shell, 5-7 cm** across, blue-green, turning **yellow-orange**, containing many seeds in pulp.

Propagation: Seedlings, root suckers.

Seed info.: No. of seeds per kg: about 1,800. Germination is poor.

treatment: soaking in cold water for 12 hours may improve germination.

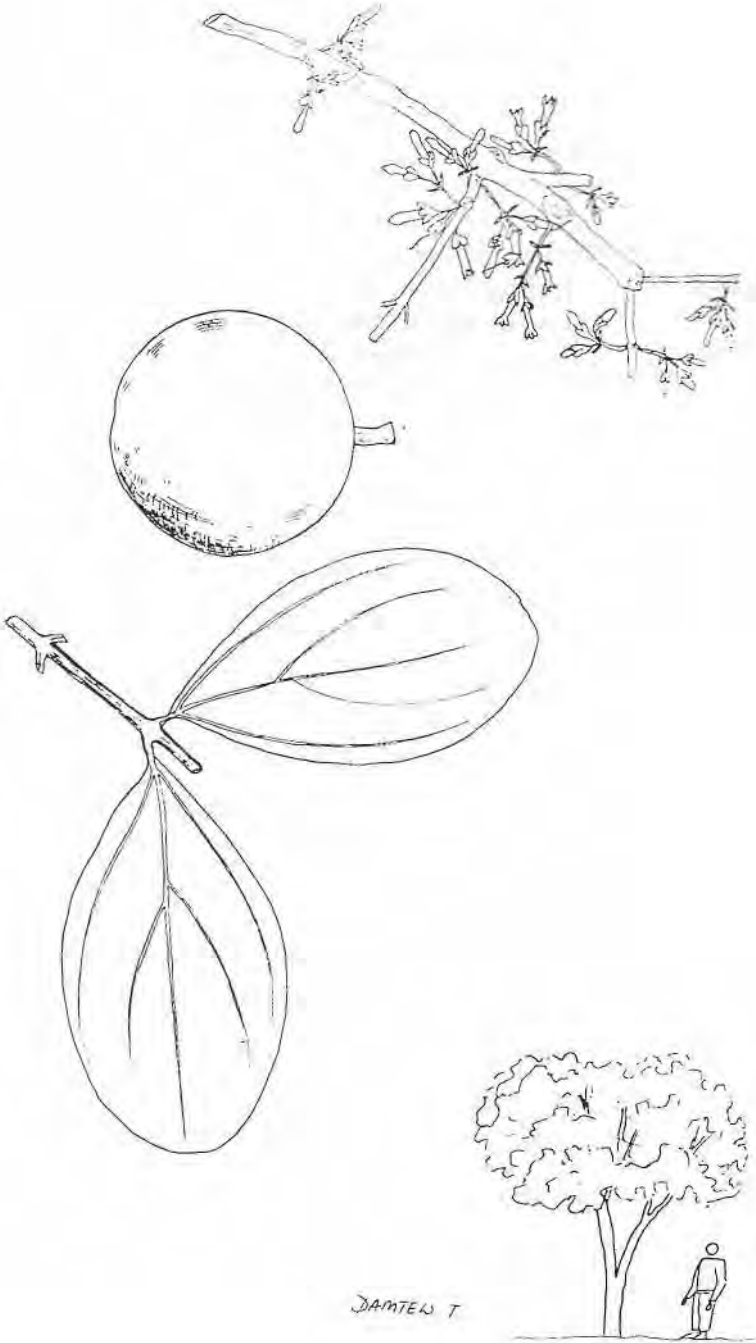
storage: can retain viability for only a short period (2 months).

Management: Pruning, coppicing.

Remarks: The tree is often left in farmlands because of its edible fruit. Even the fresh wood burns so it is useful as firewood.

Strychnos innocua

Loganiaceae



Strychnos spinosa

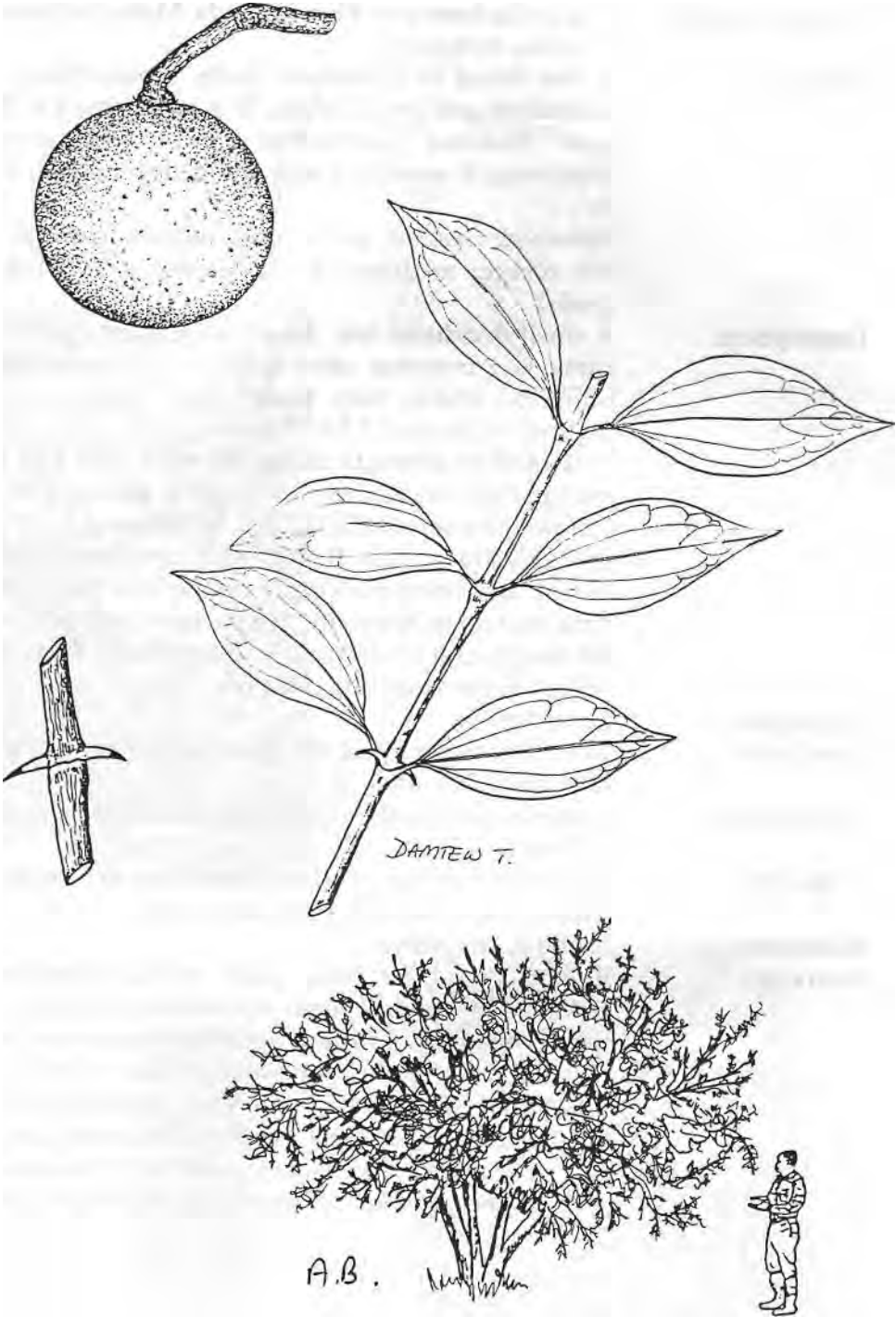
Loganiaceae

Indigenous

- Common names: Eng: elephant orange, spiny monkey ball; Fipa: mtonga; Fiome: amafughun; Hehe: mtangadas; Mate: mdonga, mungulungu; Nyam: mwage; Pare: mshegheshe; Sangu: mtangadas; Swah: mpapa, mtonga; Zara: mtonga; Zigua: mkwakwa.
- Ecology: A semi-evergreen shrub found all over tropical Africa. It grows in a wide variety of dry woodland and savannah, frequently on sandy soils of river banks up to 1,500 m.
- Uses: Firewood, charcoal, timber (furniture, boxes), food (fruit), fodder, medicine (fruit, leaves, bark, roots).
- Description: A thorny shrub or small tree usually 4–5 m but up to 9 m tall, with a spreading rounded crown. The spines are short, paired and curved or straight. BARK: grey, rough. LEAVES: like all *Strychnos*, three veins from the base, leathery, glossy green above, wedge-shaped to the base, to 10 cm long. FLOWERS: small, cream-green, in dense bunches at the end of branches. FRUIT: rounded and large to 12 cm across, green at first then light brown and woody, containing many flat seeds within juicy rather acid pulp.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: about 1,800. Seed has a hard coat.
- treatment: soak in cold water for 12 hours.
- storage: seed can be stored.
- Management: Root suckers can be encouraged by exposing roots. Coppicing.
- Remarks: Although the ripe fruit pulp is edible, seeds are toxic. Wood is pale, straight grained and planes well. However, like most *Strychnos* it is not easy to cultivate.

Strychnos spinosa

Loganiaceae



Swartzia madagascariensis

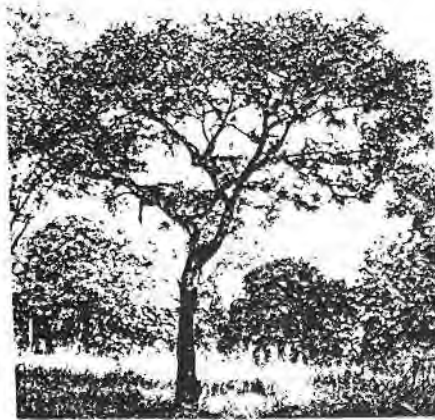
Caesalpinioideae

Indigenous

- Common names: Eng: snake bean tree; Fipa: kikonda; **Mate:** chigenge; Nyam: kasanda, nyegenye.
- Ecology: A tree found in Cameroon, Zaire, Mozambique, Malawi, Zimbabwe and South Africa. It is widespread in Tanzania from Mwanza southwards to Ruvuma growing in Brachystegia woodland and wooded grassland, 450-1,280 m.
- Uses: Firewood, charcoal, poles, posts, utensils (pestles), carving, bee forage, medicine (bark, leaves, roots), fish poison (pods).
- Description: A small deciduous tree 3-4 m, sometimes up to 15 m, the trunk and branches often twisted, the crown dense and rounded. **BARK:** very rough and thick, longitudinally fissured or cracked. **LEAVES:** compound, grey-green, with **7-11 leaflets alternate along the stalk plus one** leaflet at the tip, each one leathery to 7 cm, tip rounded pr notched, yellow hairs below. **FLOWERS:** in sprays of 2-10, **fragrant, orange-yellow**, each flower with **one large erect petal**. **FRUIT:** the heavy pods hang on the bare tree, **cylindrical, dark brown, to 30 cm**, the "snake bean" straight or curved. On the ground 10-15 seeds will be set free from the sticky yellow tissue when the pods rot.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 2,500. Germination is good and fairly fast: up to 70% after 20 days.
- treatment: immerse in hot water (75-80°C), allow to cool, and soak for 24 hours.
- storage: can retain viability for a long period (up to 2 years) at room temperature if kept dry and insect free.
- Management: Pruning, coppicing.
- Remarks: It is favoured for fence posts as the wood is termite resistant. The pods contain saponin and if fed to cows will flavour the milk. Crushed pods have been used in storage bins to protect grain from weevils. The wood is even and close grained and the red-brown heartwood may turn purple-black so it is highly favoured by wood carvers when *Dalbergia melanoxylon* is not available. Medicine against malaria and venereal disease is made from the roots.

Swartzia madagascariensis

Caesalpinioideae

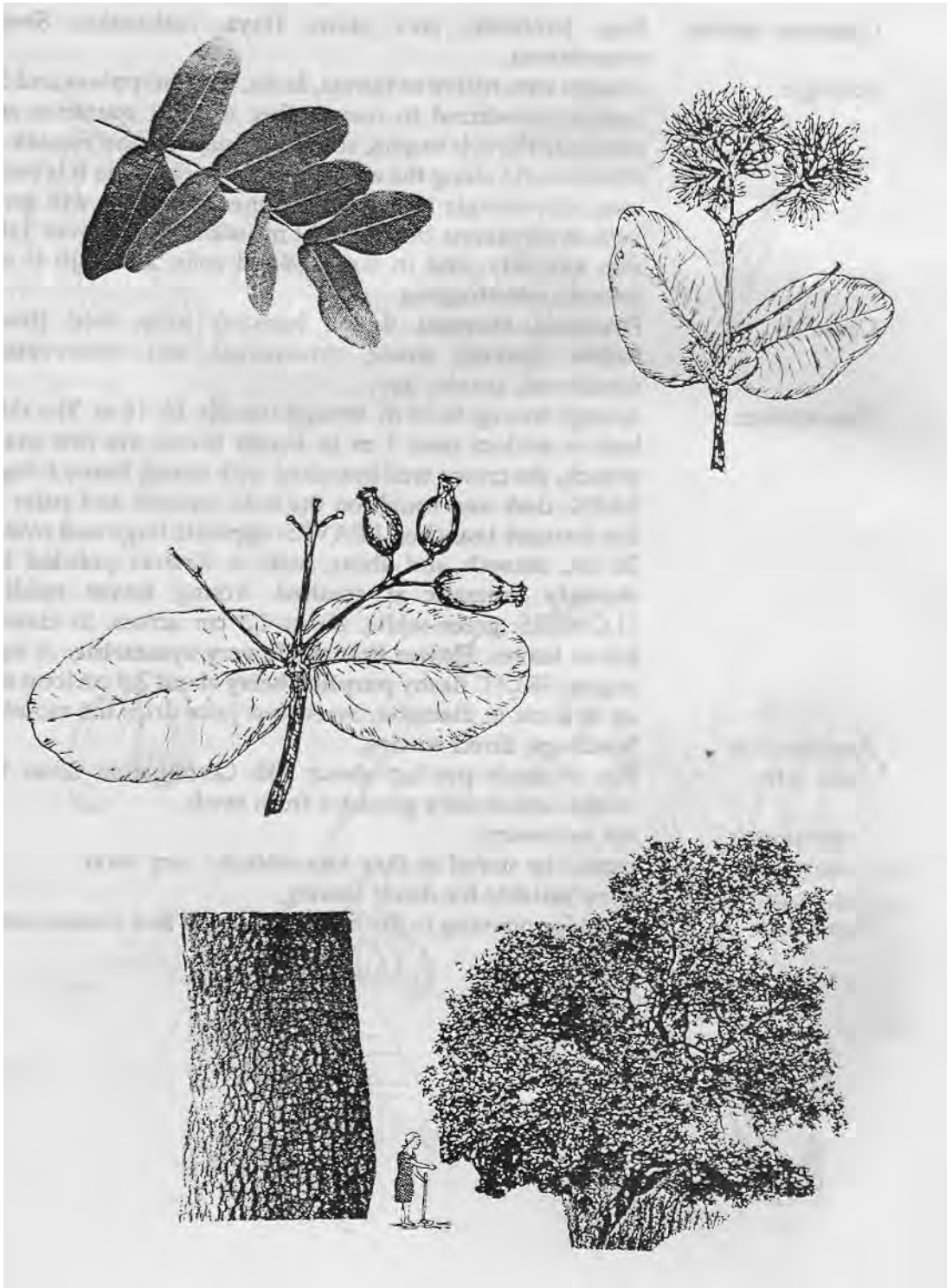


Syzygium cordatum

Myrtaceae

Indigenous

- Common names:** Eng: water-berry tree; Fipa: msu; Gogo: muhulo, muhuu; Ha: msivia; Haya: mugege; Hehe: muvengi; Iraqw. orokutuno; **Kinga:** imivengi; **Nyak:** mpegele; Mate: mnyonyo, orokutuno; **Nguu:** msungunde; **Pare:** mlama; **Samb:** mshiwi; Zara: mtalala mweupe, mzati; **Zinza:** mzeze.
- Ecology:** A tree found beside fresh water in East and Central Africa and south to Natal. Occurs at medium to higher altitudes, always near water, along water courses, in riverine thickets and forests.
- Uses:** Timber (construction, furniture), food (fruit), drink (fermented fruit), bee forage, medicine (leaves, bark, roots). dye (bark).
- Description:** A medium-sized evergreen tree 8-15 m high, sometimes a flowering shrub, the crown compact and rounded from a short thick trunk, sometimes buttressed. **BARK:** dark brown, rough and fissured, breaking into small squares; **branchlets square**, edges winged. **LEAVES:** very many near the ends or branches, **clasping the stem** in opposite pairs, the **next leaf pair at right angles, leathery**, blue-green. **oblong to circular to 8 cm, leaf base heart shaped {cordatum}**. **FLOWERS:** dense, branched **clusters to 10 cm across, pink-white with conspicuous stamens**, abundant nectar. **FRUIT:** fleshy **oval to 15 cm long, purple** when ripe, edible but acid, 1 seed.
- Propagation:** Seedlings, wildings.
- Seed info.:** No. of seeds per kg: 400-450. Germination is very good and uniform, 90% after 25 days.
- treatment:** not necessary.
- storage:** can retain viability only for a day. The seed should not be dried in the sun.
- Management:** Fairly fast growing.
- Remarks:** The wood is medium hard and heavy and works well but should be water seasoned.

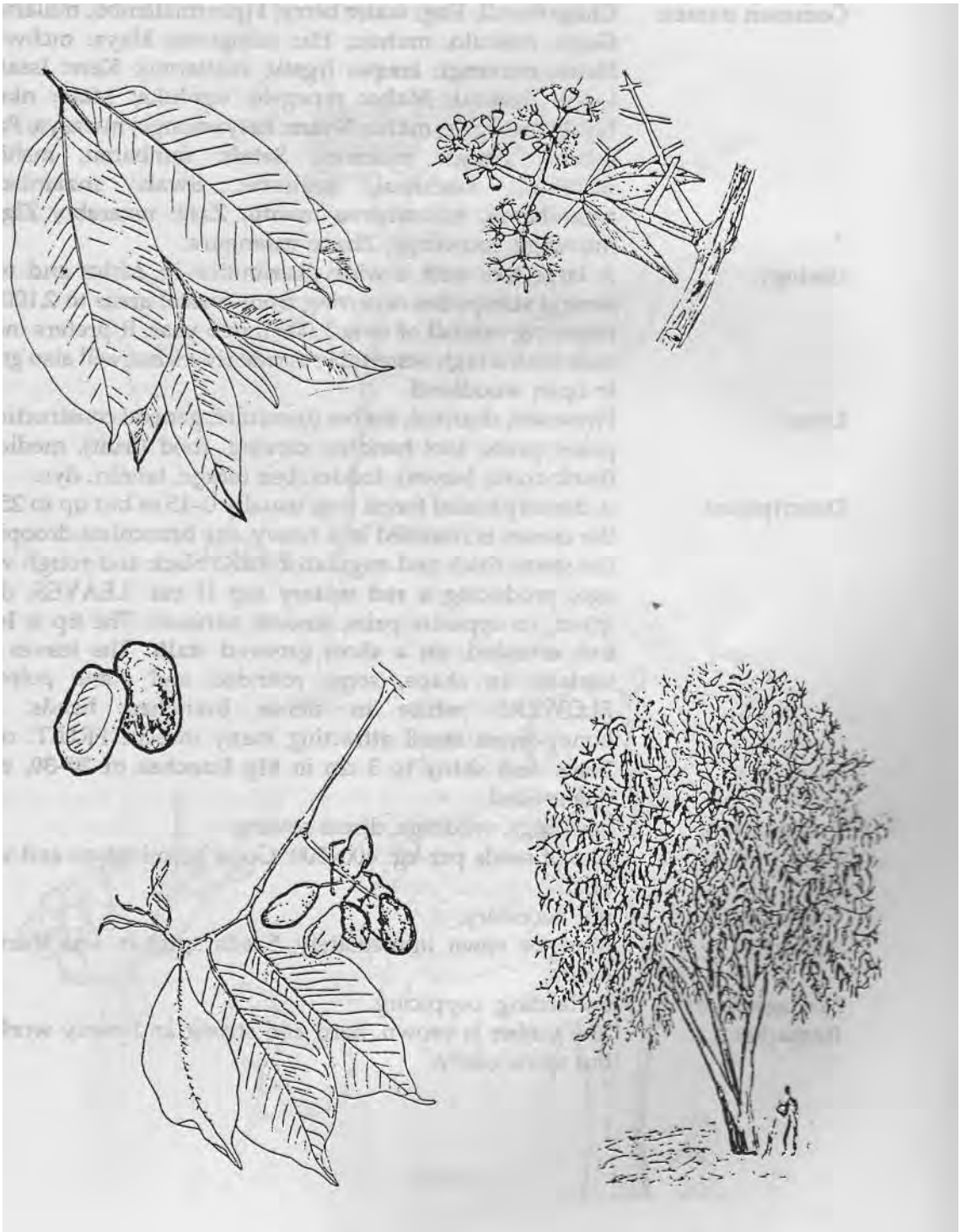


Syzygium cuminii (S. jambolanum)

Myrtaceae

Asia

- Common names: Eng: jambolan, Java plum; Haya: lushanaku; Swah: mzambarau.
- Ecology: A large tree, native to Burma, India, the Philippines and Sri Lanka, introduced to many other tropical countries and even into the sub-tropics, southern Australia and Florida. In Africa found along the east coast but in Tanzania it is being used increasingly inland as an amenity tree. It will grow best at elevations below 1,000 m, with rainfall over 1,000 mm annually, and in well-drained soils, although it can tolerate waterlogging.
- Uses: Firewood, charcoal, timber (canoes), tools, food (fruit), fodder (leaves), shade, ornamental, soil conservation, windbreak, tannin, dye.
- Description: A large tree up to 30 m, though usually 15-18 m. The thick bole is seldom over 1 m in length below the first major branch, the crown well branched with dense, heavy foliage. BARK: dark and rough on the bole, smooth and paler on the younger branches. LEAVES: opposite large and oval to 20 cm, smooth and shiny, with a distinct pointed tip, strongly aromatic if crushed. Young leaves reddish. FLOWERS: green-white, about 1.5 cm across, in clusters below leaves. Flower branchlets very symmetric, at right angles. FRUIT: fleshy purplish berry about 2.5 cm long and up to 2 cm in diameter. Sweet but juice dries the mouth.
- Propagation: Seedlings, direct sowing.
- Seed info.: No. of seeds per kg: about 500. Germination takes 1-2 weeks, and is very good for fresh seeds.
- treatment: not necessary.
- storage: cannot be stored as they lose viability very soon.
- Management: Very suitable for direct sowing.
- Remarks: Ideal for planting in the interior lowland and coastal zones.

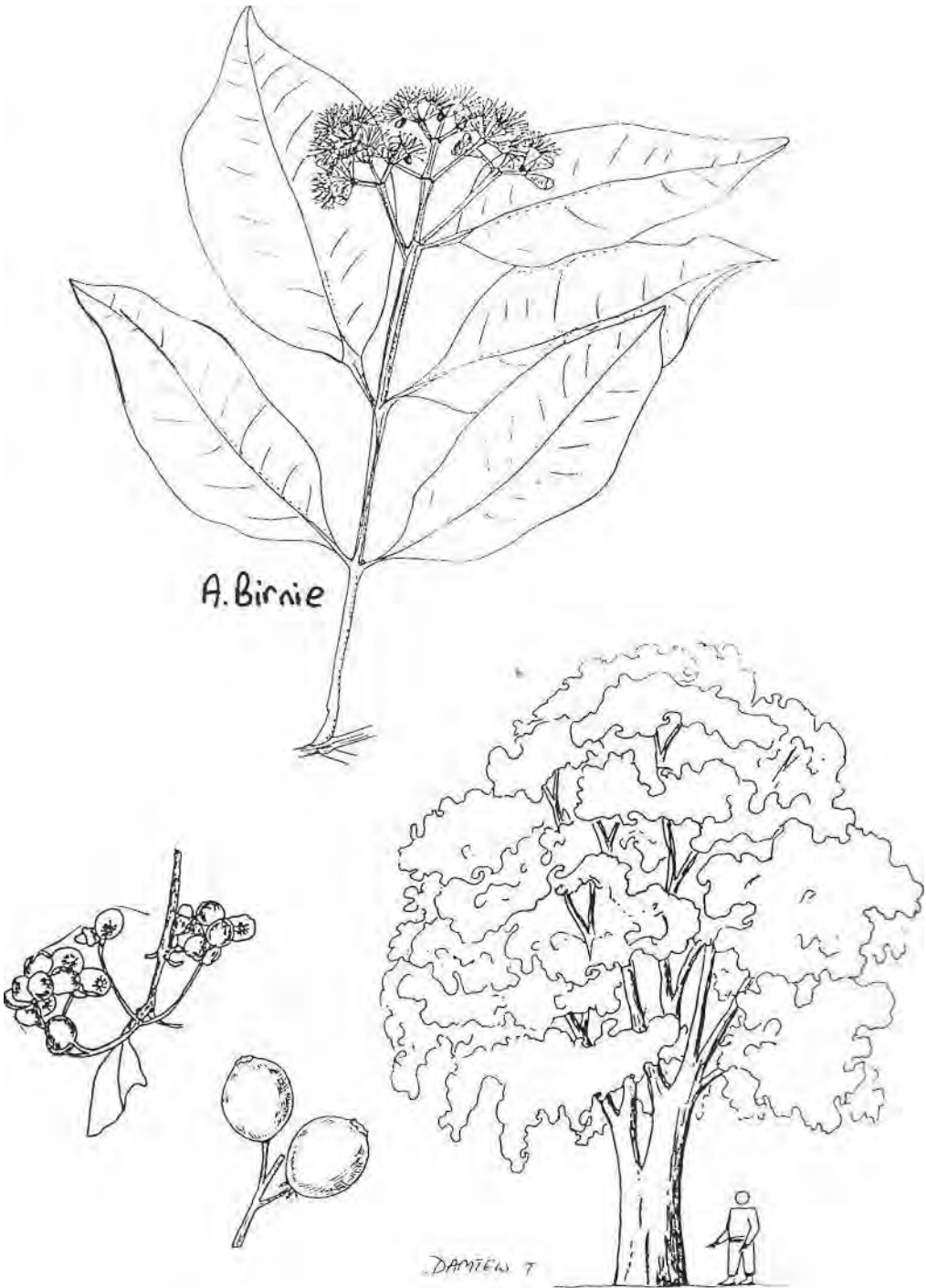


Syzygium guineense

Myrtaceoi

Indigenous

- Common names: Chag: masdi; Eng: water berry; Fipa: mlalambo, mulambo; Gogo: muhulo, muhuu; Ha: mbogonte; Haya: mchwezi; Hehe: muvengi; Iraqw: irgatu, matlarmo; Kere: issassa; Lugu: msalazi; Mako: mpegele, nguluka; Mate: nkolo; Nyak: msengele, muhu; Nyam: kasyamongo, mwasya; Pare: mlama; Rangi: mkamati; Samb: sambarau, mshiw, mshihwi, mschihui, muhuba; Swah: mzambarai, mzambarau, mzambarau mwitu; Zara: mzarabo; Zigua: muvenge, muwenge; Zinza: msangura.
- Ecology: A large tree with a wide distribution in Africa and with several subspecies occurring from coastal areas to 2,100 m requiring rainfall of over 1,000 mm a year. It prefers moist soils with a high watertable beside rivers but will also **grow** in open woodland.
- Uses: Firewood, charcoal, timber (furniture, general construction), poles, posts, tool handles, carving, food (fruit), medicine (bark, roots, leaves), fodder, bee forage, tannin, dye.
- Description: A densely leafed forest tree, usually 0-15 m but up to 25 m, the crown is rounded and heavy, the branchlets drooping; the stems thick and angular. **BARK:** black and rough with age, producing a red watery sap if cut. **LEAVES:** **dark** green, in opposite pairs, smooth surfaces. The tip is **long** but rounded, on a short grooved stalk. The leaves *are* variable in shape, some rounded and some pointed, **FLOWERS:** white in dense branched heads, the honey-sweet smell attracting many insects. **FRUIT:** oval, black and shiny to 3 cm in big bunches of 20-30, **each** one-seeded.
- Propagation: Seedlings, wildings, direct sowing.
- Seed info.: No. of seeds per kg: 400-500. Good germination and very fast.
- treatment: not necessary.
- storage: must be sown immediately. Seeds spoil in less than 24 hours.
- Management: Pollarding, coppicing.
- Remarks: The timber is brown, hard and strong and easily worked, but splits easily.



Syzygium owariense

Myrtaceae

Indigenous

Common names: Bende: kajibajiba, kasiamongo; Eng: water berry; Fipa: yunga; Mate: mhungu; Nyam: kasyamongo, mtumbu; Swah: mzambarau ziwa; Zinza: mgege.

Ecology: A tree of swamp forests, stream banks, riverine thicket and woodland, and along small streams in higher-altitude areas, 1,200-2,000 m, in Malawi, Zambia and Uganda and into West Africa; also found in Mozambique. In Tanzania it is found in the Ufipa highlands, Iringa, Mbeya and Mufindi.

Uses: Firewood, food (fruit), bee forage.

Description: An evergreen multi-stemmed shrub or small tree up to 8 m, erect branches to a bushy rounded crown. BARK: grey, thick, smooth at first becoming dark grey, rough and flaking with age. LEAVES: opposite, blue-green, thick, leathery, smooth and shiny, about 10 cm long, leaf tip long pointed but blunt, pink-yellow midrib, clear below, leaf stalk pink-red, aromatic when crushed. FLOWERS: creamy white or pink with numerous stamens, sweet scented, in heads to 15 cm across, on angular square stalks. FRUIT: oblong and fleshy, about 1.5 cm long and 1 cm thick, green at first, purple, then black when ripe, containing 1 seed.

Propagation: Seedlings, suckers, direct sowing.

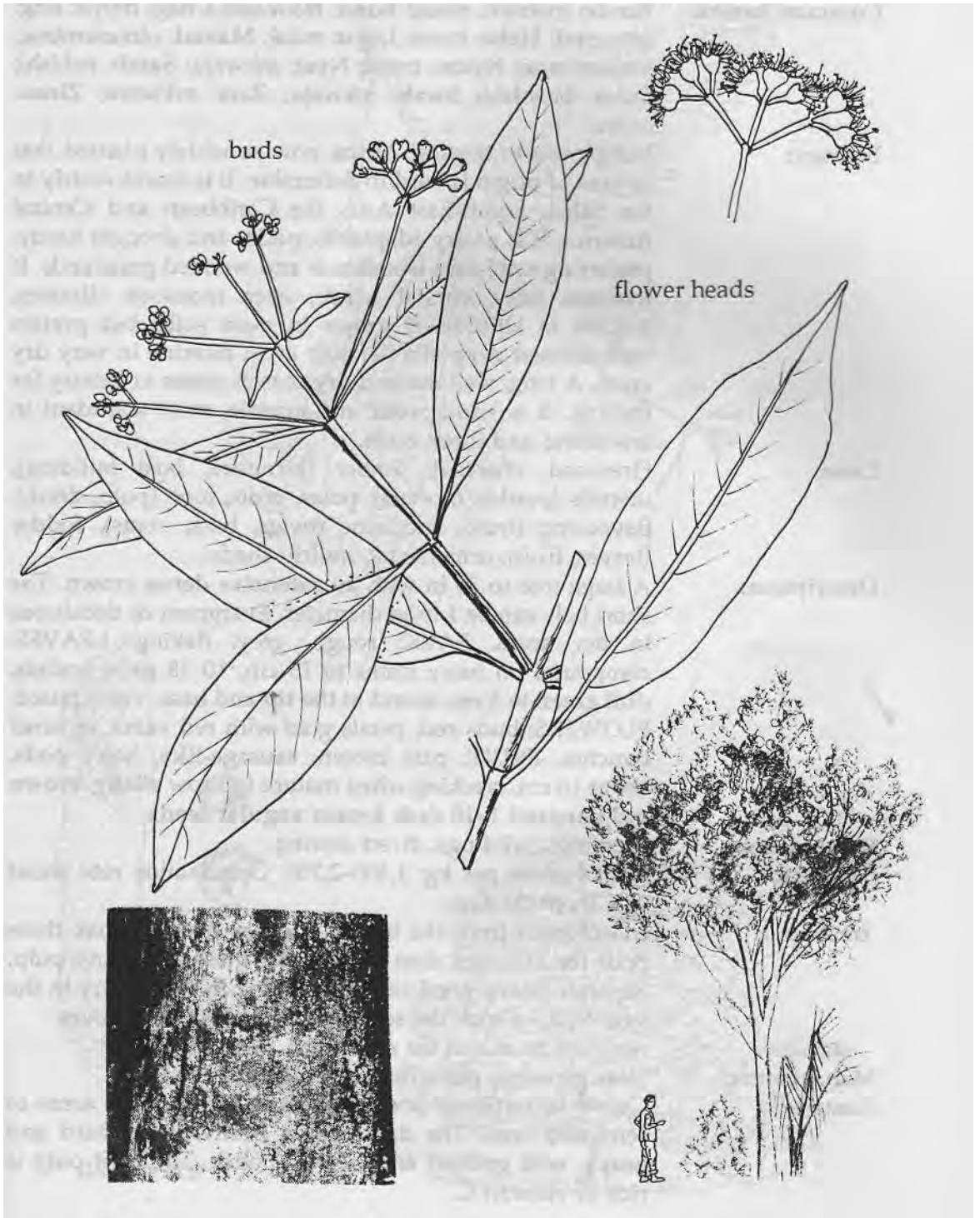
Seed info.: No. of seeds per kg: about 400. Germination is very good, up to 90% after 30 days.

treatment: not necessary.

storage: can retain viability for only a day.

Management: Coppicing, pollarding.

Remarks: Can be planted along river banks. It is said to be the best *Syzygium* species for honey. The leaves and fruit contain the essential oil eugenol which has been used for flavouring food (Guinea "cloves"). In swamp forest the roots produce knee-shaped air roots.



Tamarindus indica

Caesalpinioideae

Indigenous

Common names: **Bende:** mshishi, msisi; **Bond:** mkwazu; **Chag:** moya; Eng: tamarind; **Hehe:** msisi; **Lugu:** mdai; **Maasai:** olmasambrai, masamburai; **Nyam:** msisi; **Nyat:** mkwaju; **Samb:** nshishi; **Suku:** bushishi; **Swah:** mkwaju; **Zara:** mkwesu; **Zinza:** msisa.

Ecology: Indigenous to tropical Africa; now so widely planted that its area of origin is hard to determine. It is found widely in the Sahel, South-East Asia, the Caribbean and Central America. It is a very adaptable species and drought hardy, preferring semi-arid woodlands and wooded grasslands. It tolerates salty, coastal winds, even monsoon climates, 0-1,500 m altitude. It grows in most soils, but prefers well-drained deep alluvial soil; often riverine in very dry areas. A long, well-marked dry season seems necessary for fruiting. It is widespread in Tanzania, most abundant in woodland and thorn bush.

Uses: Firewood, charcoal, timber (furniture, boat building), utensils (pestles, mortars), poles, posts, food (pulp, drink), flavouring (fruit), medicine (twigs, bark, roots), fodder (leaves, fruit), ornamental, mulch, shade.

Description: A large tree to 30 m with an **extensive dense crown**. The short bole can be 1 m in diameter. Evergreen or deciduous in dry areas. **BARK:** rough, grey, flaking. **LEAVES:** compound on hairy stalks to 15 cm, 10-18 pairs leaflets, **dull green to 3 cm, round at the tip and base**, veins raised. **FLOWERS:** buds red, petals gold with red veins, in small bunches. **FRUIT:** pale brown, **sausage-like**, hairy pods, about 10 cm, cracking when mature to show **sticky, brown pulp around 1-10 dark brown angular seeds**.

Propagation: Seedlings, wildings, direct sowing.

Seed **info.:** No. of seeds per kg: 1,400-2,700. Germination rate about 90% in 40-50 days.

treatment: collect pods from the tree as soon as mature. Soak these pods for 24 hours, then rub on wire mesh to remove pulp. Separate heavy good seed by floating in water. Dry in the sun. Nick or soak the seed in cold water for 12 hours, seed can be stored for more than two years.

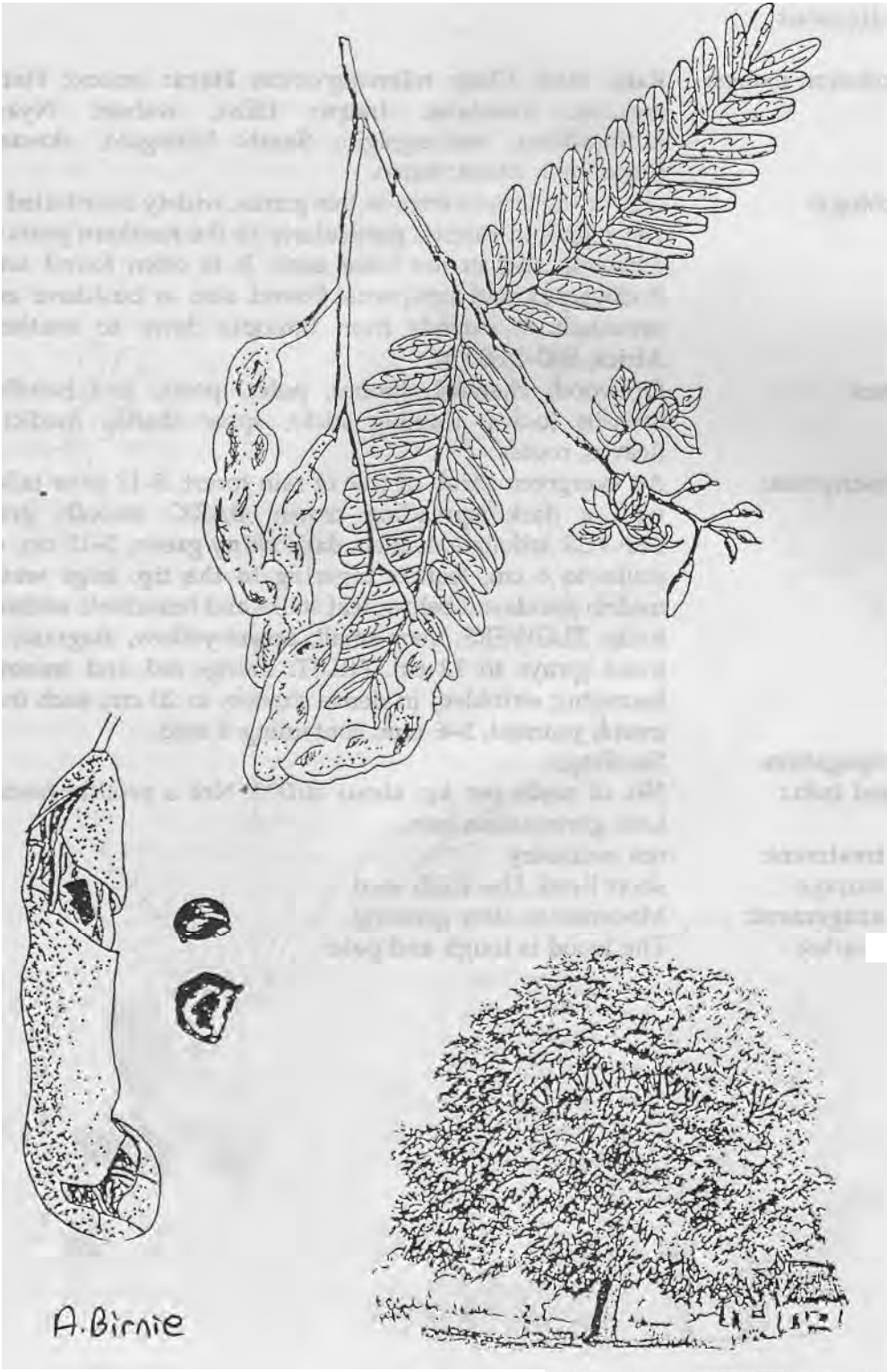
storage:

Management: Slow growing; pollarding, coppicing.

Remarks: Grows in fertile to poor soils from high-rainfall areas to semi-arid ones. The dark brown heartwood is hard and heavy, well grained and easy to polish. The fruit pulp is rich in vitamin C.

Tamarindus indica

.Caesalpinioideae



Teclea nobilis

Rutaceae

Indigenous

Common names: **Bara:** iitisi; **Chag:** mlimang'ombe; **Haya:** omuzo; **Hehe:** mputsa, mwatatsi; **Iraqw:** liliisi, wahari; **Nyam:** mdimudimu, mulungsigiti; **Samb:** kilongolo, nkwaati; **Suku:** mju; **Zinza:** muzo.

Ecology: One of the largest trees in this genus, widely distributed in wet highland forests, particularly in the northern parts of Tanzania and in the Lake zone. It is often found with Podocarpus and Juniperus. Found also in bushland and savannah. It extends from Ethiopia down to southern Africa, 900-2,600 m.

Uses: Firewood, charcoal, timber, poles, posts, tool handles, utensils (bows, walking sticks, spear shafts), medicine (leaves, roots).

Description: An evergreen shrub or tree of rain forest, 5-12 m or taller, with a dark, spreading crown. **BARK:** smooth, grey. **LEAVES:** trifoliate, leaflets **dark shiny green**, 5-15 cm, on stalks to 6 cm, leaflets **tapering to the tip, edge wavy**, midrib stands out below, leaf stalks and branchlets **without hairs**. **FLOWERS:** very small, **cream-yellow, fragrant**, in loose sprays to 12 cm. **FRUIT:** **orange-red and smooth**, becoming wrinkled, in dense clusters to 20 cm, each fruit **ovoid, pointed, 5-6 mm**, containing 1 seed.

Propagation: Seedlings.

Seed info.: No. of seeds per kg: about 20,000. Not a prolific seeder. Low germination rate.

treatment: not necessary.

storage: short lived. Use fresh seed.

Management: Moderate to slow growing.

Remarks: The wood is tough and pale.

r|



Tectona grandis

Verbenaceae

South-East Asia

Common names: **Eng:** teak; **Swan:** msaji.

Ecology: The natural range is wet tropical lowland forests of Burma, India, Thailand, and on the Indonesian islands. It grows in a variety of soils but deep soils with good drainage are necessary for satisfactory growth. Its climatic range is moist plateau and wet tropical. In Tanzania it is planted in large-scale plantations in Mtibwa (Morogoro), Longuza (Tanga) and in the Usambaras.

Uses: Firewood, timber (boat building, heavy construction, furniture), poles.

Description: A large deciduous tree over 30 m in height in favourable growing conditions. The bole is often buttressed and may be fluted to a considerable height, up to **15 m long below** the first branches, and up to 1 m in diameter at breast height. Crown open with many small branches. **BARK:** brown on the bole, distinctly fibrous and with shallow longitudinal fissures. **LEAVES:** **4-sided**, branchlets bear the **very large leaves** which are shed for 3-4 months during the later half of the dry season. Leaves shiny above, **hairy below**, vein network clear, about 30 x 20 cm but young leaves up to 1 m long. **FLOWERS:** small, about 8 mm across, **mauve-white** and arranged in **large flowering heads**, about 45 cm long, found on the topmost branches in the unshaded part of the crown. **FRUIT:** round, hard and woody, enclosed in an **inflated, bladder-like covering, pale green** at first, then brown after maturity.

Propagation: Stumps (12-18 months).

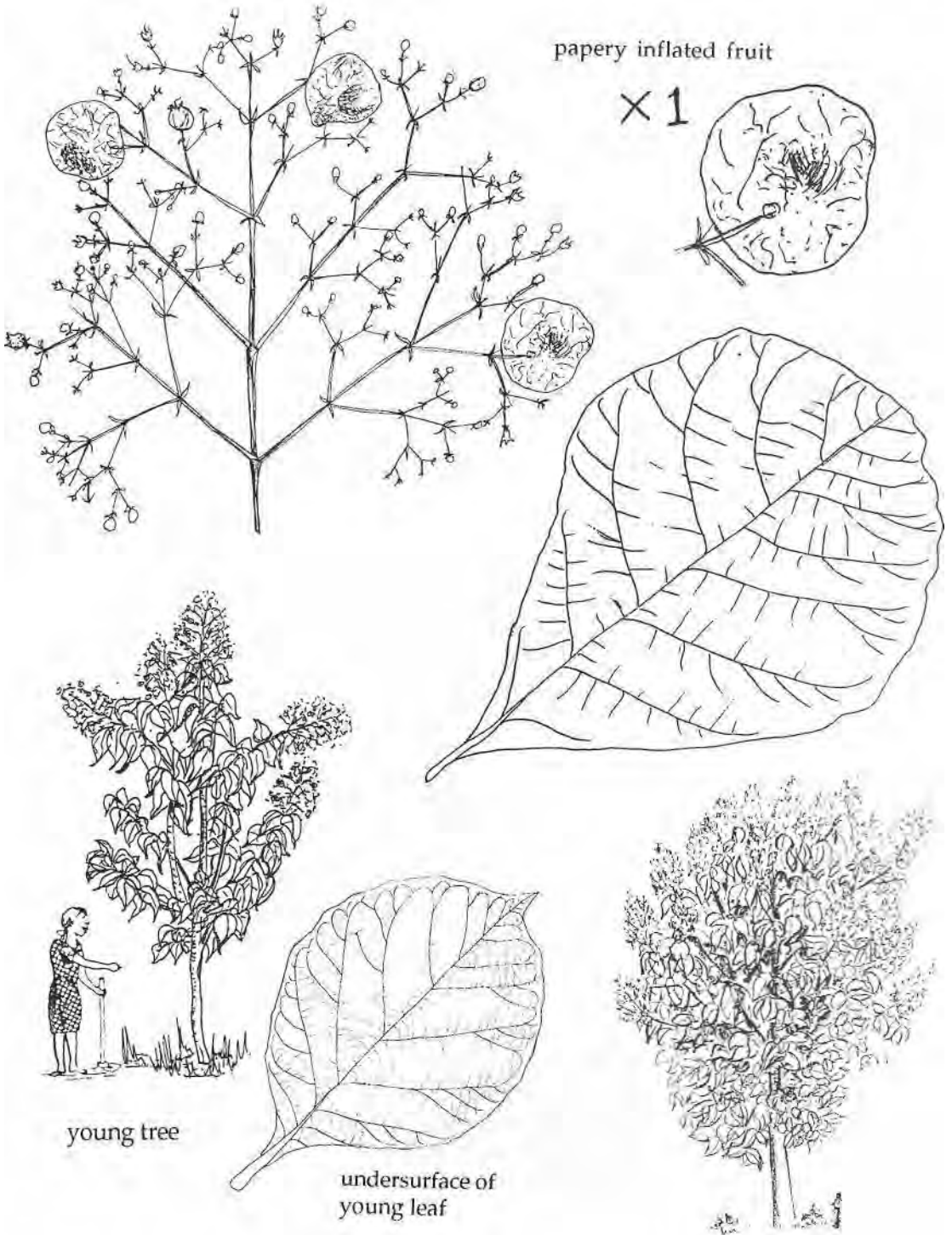
Seed info.: Germination is good and uniform after 5-6 weeks. No. of seeds per kg: 1,000-1,700.

treatment: alternate soaking in cold water and drying in sun for 2-3 days over a period of 2-3 weeks. A second method is to char (or half burn) the fruits by covering them with a thin layer of grass and setting this alight,

storage: seed can be stored for up to 3-4 years.

Management: Coppicing, thinning, weeding. Shoots can grow to 3 m in 2 years. Rotation period is 80 years.

Remarks: One of the most useful timbers in the world. Recommended as a timber tree in suitable sites in wetter areas below **1,200** m and for fuel and poles on the better soils in the moist plateau areas. Thinnings are useful timber also. Teak is heavier than water until dried out.



papery inflated fruit

$\times 1$

young tree

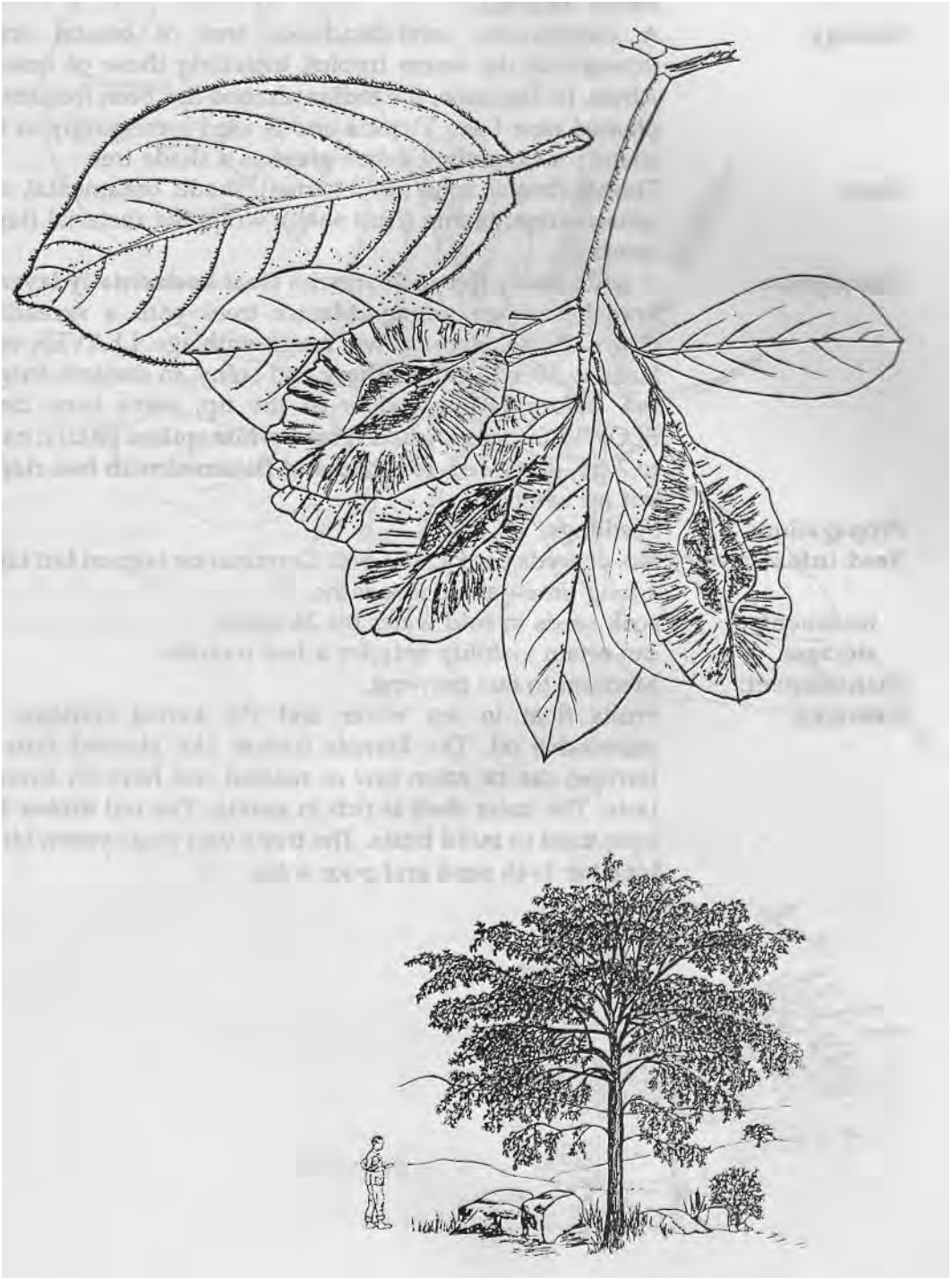
undersurface of young leaf

Terminalia brownii

Combretaceae

Indigenous

- Common names:** Chag: mpoke, mpuko; Fiome: bukuumo; **Lugu:** mvumba; Maasai: olbugoi, olbukoi; **Rangi:** mwanya.
- Ecology:** This is one of the very useful trees of semi-arid areas in Zaire, Kenya, Nigeria, Sudan, Ethiopia and Somalia. It is found in deciduous woodland, bushland, wooded grassland and riverine vegetation, 730-2,000 m. In Tanzania it is found in Kilimanjaro, Kondoia and Kilosa, growing best in well-drained soils.
- Uses:** Firewood, charcoal, timber (bedsteads), poles, posts, tool handles, utensils (mortars, pestles), medicine (leaves, bark), fodder (leafy branches), mulch, soil improvement, shade, dye.
- Description:** A tree 7-13 m high with a **rounded crown**, in layers, foliage drooping. **BARK:** dark grey, longitudinally fissured, thick and fibrous. **LEAVES:** spirally arranged, at ends of branchlets, oval, 6-16 **cm long, wider at tip, pointed or notched**, edge wavy, side veins clear, young leaves fresh green, old leaves red before leaf fall; **stalk and young leaves hairy below**. **FLOWERS:** white or cream, in spikes to 12 cm, with an unpleasant smell. **FRUIT:** small and winged, reddish-purple, 3.5-5.5 cm long, **tip rounded or notched**, narrowed to base.
- Propagation:** Seedlings, wildings.
- Seed info.:** About 1,800 winged fruits per kg. Fruit are ready for collection if the wings break off easily. Shake the tree to collect on -the ground then dry for about a week. Germination good and fast for fresh seeds—about 30% in 60-90 days.
- treatment:** remove the wings; the woody covering can be nicked very carefully to increase germination.
- storage:** can retain viability for a long period if kept dry.
- Management:** A fairly fast-growing tree on moist sites; pollarding, coppicing.
- Remarks:** A tree with good potential for agroforestry in semi-arid areas as it is termite and drought resistant. Leaves are used as medicine for stomach ache and diarrhoea in both humans and livestock. In spite of its dense canopy, crops grow well in its shade. The yellow-brown timber, medium hard but light, is highly valued for house construction, etc. The bark is useful as fuel.



Terminalia catappa

Combretaceae

Andaman Islands, India, tropical Asia, Malaysia

Common names: Eng: bastard almond, Indian almond, tropical almond;
Swah: mkungu.

Ecology: A conspicuous semi-deciduous tree of coastal areas throughout the warm tropics, including those of eastern Africa. In Tanzania, the Indian almond has been frequently planted near Lake Victoria and is used increasingly in the country's expanding urban areas as a shade tree.

Uses: Timber (boats), food (seed kernel), shade, ornamental, soil conservation, tannin (fruit shell), wrapping material (large leaves).

Description: A wide shady tree to 25 m with **clear horizontally layered branches** when young. Mature trees with a spreading crown. BARK: grey-brown, rough with age. LEAVES: very **large to 30 x 15 cm, leathery** and shiny, in clusters, bright red before **falling**, wider at the tip, veins very clear. FLOWERS: inconspicuous **green-white spikes**. FRUIT: hard, to 7 cm, green-red, **rounded and flattened with two ridges** but no wings.

Propagation: Seedlings.

Seed info.: No. of seeds per kg: 150-860. Germination is good but takes a long time—about 2 months.

treatment: soak seeds in cold water for 24 hours.

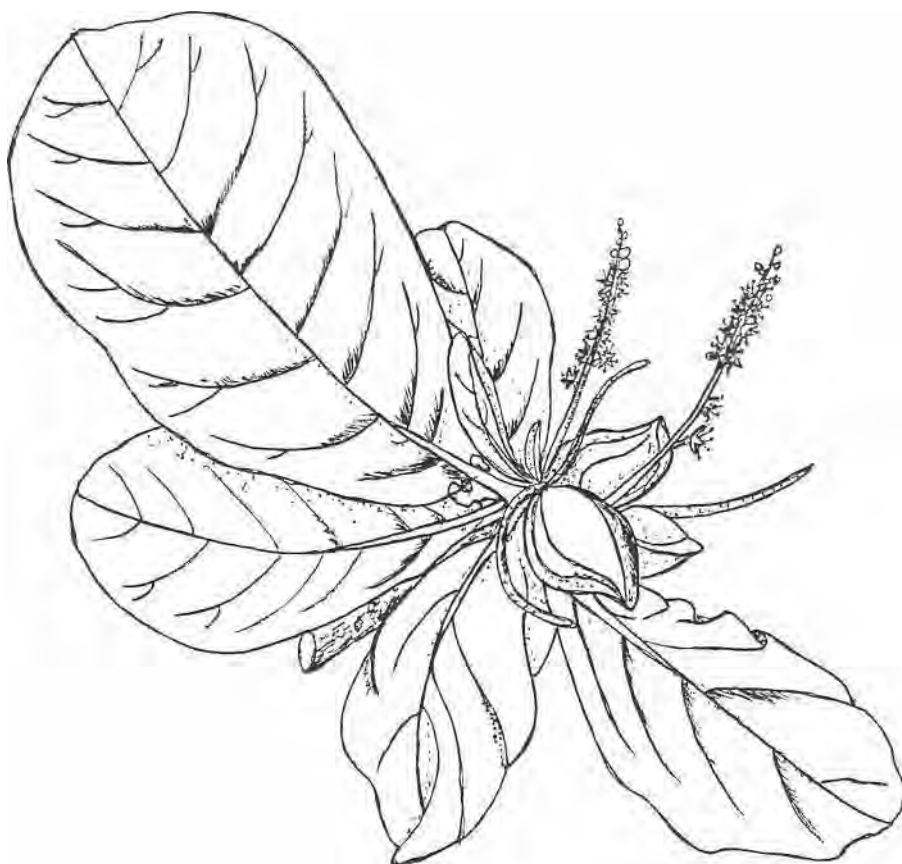
storage: can retain viability only for a few months.

Management: Medium to fast growing.

Remarks: Fruits float in sea water and the kernel contains an extractable oil. The kernels (rather like almond nuts of Europe) can be eaten raw or roasted and have an almond taste. The outer shell is rich in tannin. The red timber has been used to build boats. The tree's vast root system binds together both sand and poor soils.

Terminalia catappa

Combretaceae



young tree

Terminalia sericea

Combretaceae

Indigenous

Common names: **Eng:** silver terminalia; Gogo: mpululu; **Goro:** bukuumo, sarakwi; Hehe: mpululu; **Iraqw:** bukuumo, sarakwi; **Mate:** mulamwili; Nyam: mpululu, mzima; **Nyat:** mufuruu; **Nyir:** mupuluu; Rangi: mwanya; **Sand:** sengh'aa.

Ecology: A tree widespread in Tanzania and occurring in many other parts of Africa from Zaire to South Africa. It occurs in Brachystegia woodland and wooded grasslands, especially on sandy soils, 450-1,300 m.

Uses: Firewood, charcoal, timber (general, bedsteads), poles (building), posts, tool handles, medicine (leaves, roots), bee forage, rope (bark), red dye (bark).

Description: A small, well-formed deciduous tree, 3-16 m with spreading branches to a light rather flat crown. **BARK:** dark grey or grey-brown, rather rough with longitudinal fissures. Branchlets with **characteristic purplish bark** peeling off in strips, pale below. **LEAVES:** simple, **clustered** towards the tips of branchlets, 5-12 cm long, narrowed to the base, pale green, leathery, with **silvery silky hairs below**. Young leaves pink and dying leaves deep pink before they fall. **FLOWERS:** cream to pale yellow, in **short spikes to 5 cm**, buds silky hairy, opening with new leaves. **FRUIT:** pink-purple-brown, to 4 cm long, oval and flat, **winged around the central seed, tip notched**.

Propagation: Seedlings, root suckers.

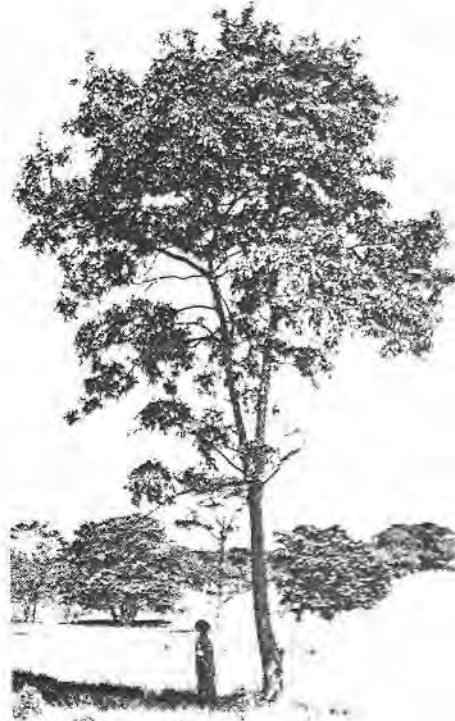
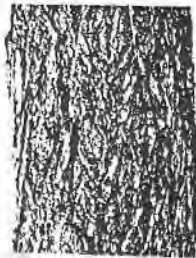
Seed **info.:** No. of seeds per kg: about 1,200. Germination is good with fresh seeds,

treatment: remove wings.

storage: seed can be stored if kept dry. They can remain viable for up to 3 years.

Management: Pollarding, coppicing.

Remarks: This species can grow in very poor soils which are not suitable for farming. The hard yellow wood is generally useful, and posts both for fences and houses last well and resist insect attack. Leaves have been used to treat stomach ache, diarrhoea, snake bite, and wounds.



Terminalia spinosa

Combretaceae

Indigenous

Common names: **Eng:** spiny terminalia; **Lugu:** mtagala; **Nguu:** mtagalo; **Swah:** mwangati, mwarambe; **Zara:** mtakalla, muhangula, mwangare, tagala.

Ecology: A spiny tree of dry bush country, dry coastal forests and wooded grassland in the north of Tanzania into Kenya, Somalia, northern Uganda and the Sudan, 0-1,770 m. It grows with *Terminalia -prunioides*.

Uses: Firewood, charcoal, timber (construction, furniture), poles, carving, live fence.

Description: A tree to 15 m, the branches horizontal, long shoots zigzag. **BARK:** rough, grey, longitudinally fissured, **stout spines, 2-3** together are found on one side, shoots up to 2 cm long. **LEAVES: in clusters from side shoots, up to 5 cm, usually 2-3 cm, wider at the tip, clearly notched,** narrowed to a short stalk, often red. **FLOWERS:** 4-5 pink-white spikes in clusters beside leaves. **FRUIT: 2-3 cm long on stalks.** orange-brown to dark brown, thin winged.

Propagation: Seedlings, wildings.

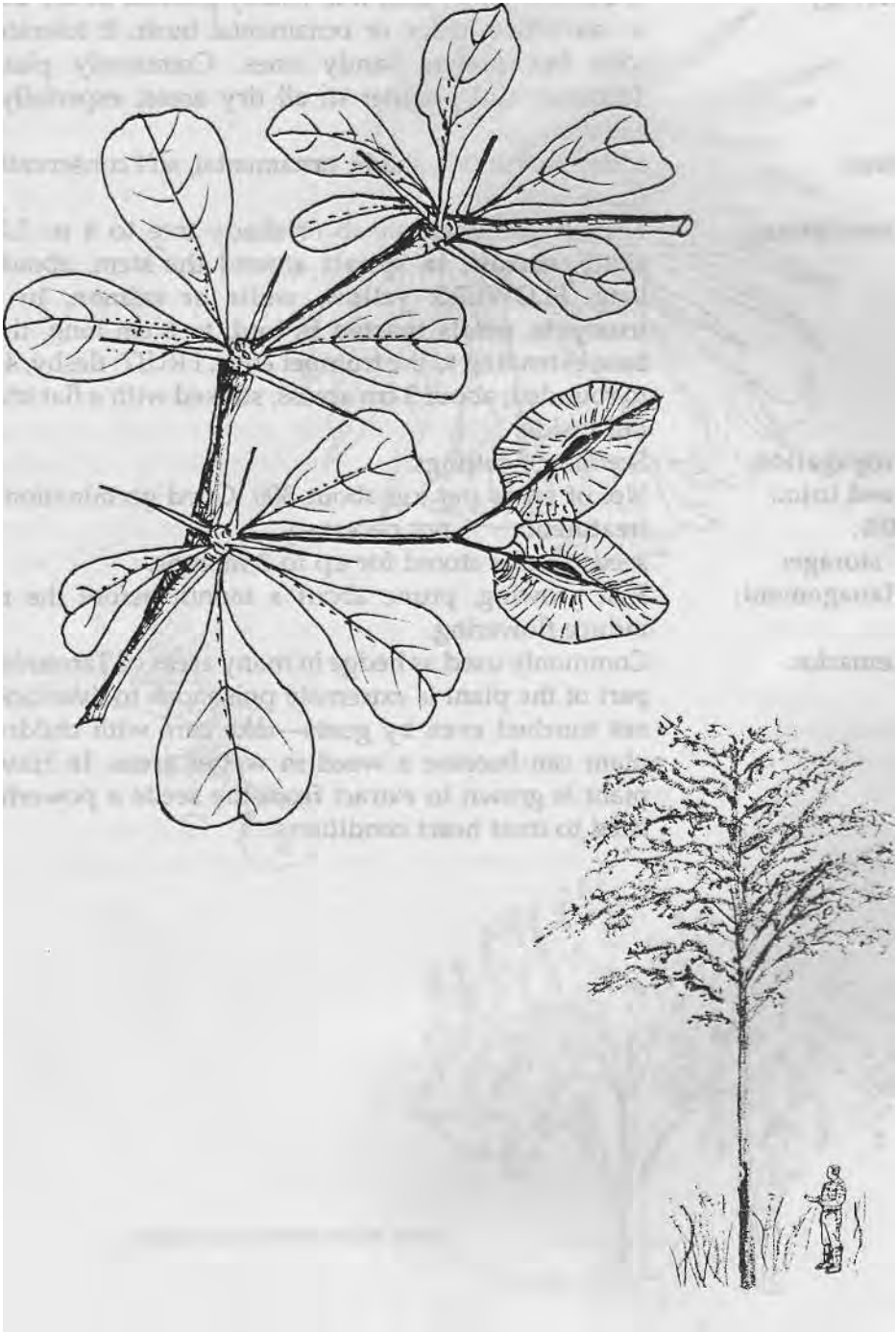
Seed info.: No. of seeds per kg: 8,000-20,000. The tree seeds prolifically. Germination is slow but the rate is good.

treatment: remove wings.

storage: seed can be stored if kept cool and dry.

Management: Trim as a hedge.

Remarks: The tree is believed to have magical properties. It is not browsed by goats so makes a useful live fence. Wood is resistant to termites and fungal attack. The timber is **dark** brown, hard and durable and therefore valued for building.



Thevetia peruviana (T. neriifolia)

Apocynaceae

West Indies and Central America

Common names: Eng: lucky nut, yellow oleander.

Ecology: A bush or small tree, it is widely planted in the tropics as an attractive hedge or ornamental bush. It tolerates most soils but prefers sandy ones. Commonly planted in Tanzania and popular in all dry areas, especially below 1,200 m.

Uses: Medicine (seeds), shade, ornamental, soil conservation, live fence.

Description: A multi-stemmed shrub or shady tree to 4 m. LEAVES: shiny, **narrow, in spirals** around the stem, about 10 cm long. FLOWERS: **yellow, white or salmon, in narrow trumpets, petals twisted in bud**, to 6 cm long, the green base extending to the trumpet edge. FRUIT: fleshy, 4-angled to rounded, about 3 cm across, stalked with a flat triangular nut inside.

Propagation: Seedlings, cuttings.

Seed info.: No. of seeds per kg: about 300. Good germination rate of **80%.** **treatment:** not necessary.

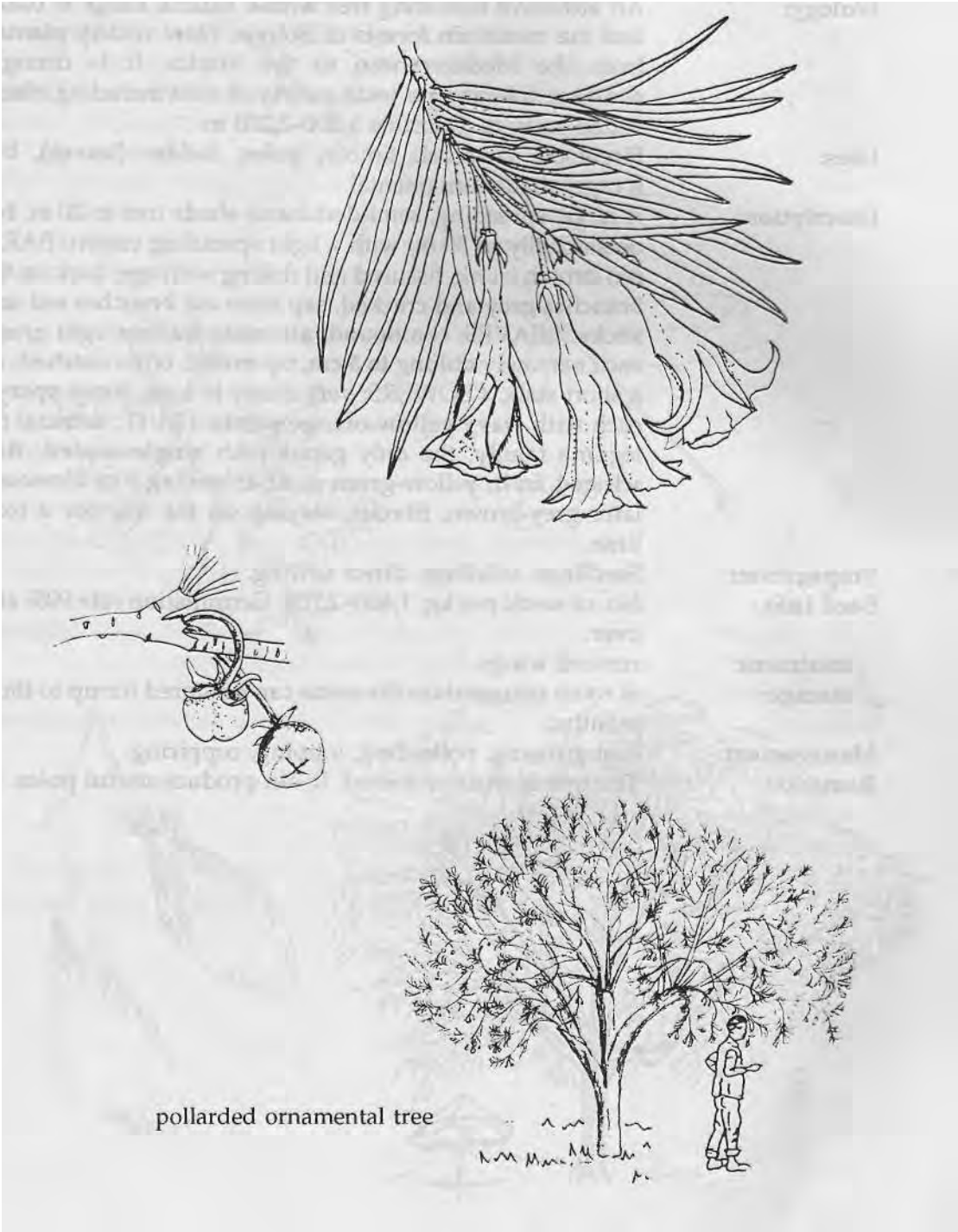
storage: seeds can be stored for up to 3 months.

Management: Fast growing, prune about a month before **the** rains to induce flowering.

Remarks: Commonly used as hedge in many areas of Tanzania. Every part of the plant is extremely poisonous to livestock and is not touched even by goats—take care with children. The plant can become a weed in wetter areas. In Hawaii the plant is grown to extract from the seeds a powerful drug used to treat heart conditions.

Thevetia peruviana (T. neriifolia)

Apocynaceae



Tipuana tipu (Machaerium tipu)

Papilionoideae

Bolivia, Brazil

Common names: **Eng:** pride of Bolivia, tipu tree.

Ecology: An attractive flowering tree whose natural range is Brazil and the mountain forests of Bolivia. Now widely planted from the Mediterranean to the tropics. It is drought resistant, tolerating a wide variety of soils including black-cotton soils; in Tanzania 1,200-2,200 m.

Uses: Firewood, charcoal, timber, poles, fodder (leaves), bee forage, shade, ornamental.

Description: A large, spreading, semi-deciduous shade tree to 20 m, but occasionally to 30 m, with a light spreading crown. **BARK:** red-brown trunk, fissured and flaking with age, bark on the branches grey and cracked, sap from cut branches red and sticky. **LEAVES:** compound, **alternate leaflets** light green, each narrowly **oblong to 5 cm, tip round**, often notched, on a short stalk. **FLOWERS:** very many in long, **loose sprays**, each with **wavy yellow-orange petals**. **FRUIT:** unusual for legume family, the only genus with **single-seeded, flat-winged fruit**, yellow-green at first, looking like blossoms, later grey-brown, fibrous, staying on the tree for a long time.

Propagation: Seedlings, wildings, direct sowing.

Seed info.: No. of seeds per kg: 1,600-2,700. Germination rate 90% and over.

treatment: remove wings.

storage: at room temperature the seeds can be stored for up to three months.

Management: Fast growing; pollarding, lopping, coppicing.

Remarks: The tree is shallow rooted. It can produce useful poles.



Treculia africana

Moraceae

Indigenous

Common names: Eng: African breadfruit, wild jackfruit; **Haya:** mbungu; Lugu: ezeya, mjaya; **Mate:** maya.

Ecology: A fruit tree of riverine forest in tropical Africa, Madagascar, Uganda and Tanzania, 0-1,200 m. In Tanzania it is found in Bukoba (Munene Forest Reserve), Kilosa (Kidodi), Morogoro (Sanje Forest Reserve), East Usambara (Amani) and Ruvuma (Mbinga).

Uses: Firewood, timber, food (seed), fodder (leaves), shade, mulch, soil conservation.

Description: An evergreen tree 15-30 m, up to 50 m, with a dense spreading crown and a fluted trunk. **BARK:** grey, smooth thick, exuding **white latex** when cut, which later **turns rusty-red**. **LEAVES:** simple, alternate, **very large, about 30 x 14 cm** (up to 50 x 20 cm), dark green, smooth above, tough, paler below with some hairs on the **10-18 pairs of clear veins, tip pointed, a short stalk** to 1.5 cm. Young leaves red or yellow. **FLOWERS:** Flower head brown-yellow, **rounded, 2.5-10.0 cm across**, male and female usually separate, growing **beside leaves** (axillary) or **on older wood** down to the trunk. **FRUIT:** compound, **rounded, very large, up to 30 cm across**, on the trunk or main branches, containing many orange seeds, about 1 cm, buried in spongy pulp of the fruit. The outer surface is covered with rough pointed outgrowths.

Propagation: Seedlings, but not well known.

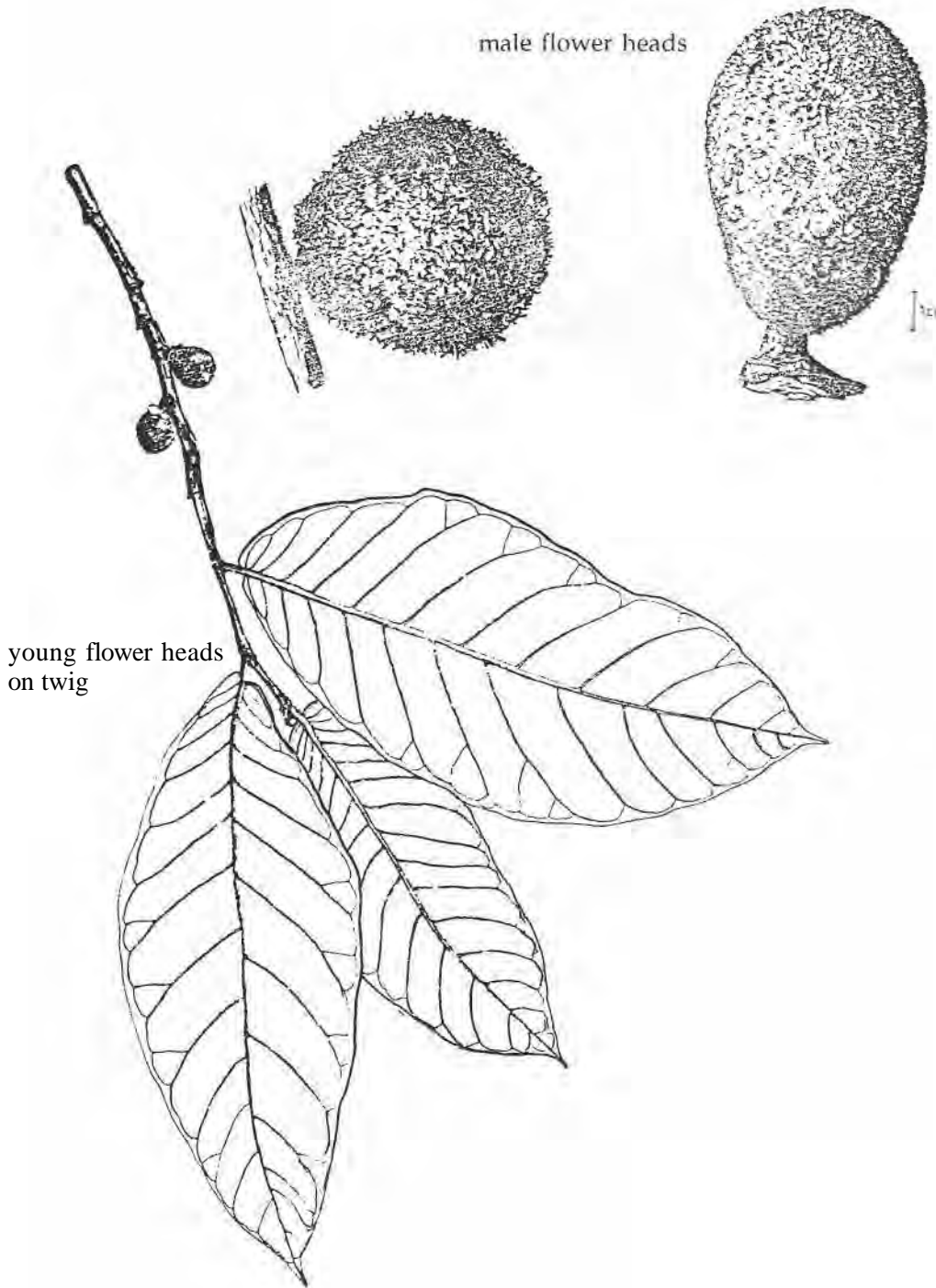
Seed info.: No. of seeds per kg: 4,500-5,000. Germination rate not well known.

treatment: not necessary.

storage: perishable.

Management: A fairly fast-growing tree.

Remarks: A tree with potential for domestication on farmlands in valleys and riverine areas. The seeds can be dried, fried and eaten.



Trema orientalis (T. guineensis)

Ulmaceae

Indigenous

- Common names: Arusha: ol matata; Chag: mshinga, mwesii, mwezi; Eng: pigeon wood; Haya: omuhuwe, muuwe; Iraqw: slarakahe; Kere: omuhohwe; Lugu: mbefu; Mate: mpeho; Mbug: lushinga; Meru: mwefu; Nyak: mpehwe; Pare: mwesu; Samb: mshinda, mshinga; Suku: mohowe; Swah: mgendagenda; Zara: mpehe, mshanulo; Zigua: boriti, mpera, mshinga.
- Ecology: A small, short-lived tree, widely distributed in Asia and Africa from Senegal and the Sudan to the Cape in higher-rainfall areas, 0-2,000 m. It is found in riverine forest or forest margins as a pioneer which quickly invades clearings and disturbed soils.
- Uses: Firewood, charcoal, poles, fodder (leaves, pods, seeds), bee forage, shade, ornamental, mulch, nitrogen fixation, soil conservation, soil improvement, black dye (bark), brown dye (leaves), oil (seed).
- Description: A shrub or much branched tree to 12 m. BARK: light grey smooth, branchlets hairy. LEAVES: alternate along drooping branchlets, to 14 cm long, rough and dull above, hairy below, the edge finely toothed all round, the blade unequal sided. FLOWERS: small, yellow-green, separate male and female flowers. FRUIT: small, round and flesh) black when ripe, 4-6 mm, containing one black seed in green flesh.
- Propagation: Seedlings, cuttings.
- Seed info.: No. of seeds per kg: 370,000. Germination rate is about 30%.
- treatment:
storage: can retain viability for a few months.
- Management: Very fast growing; coppicing.
- Remarks: A host tree for many butterflies and the fruit are eaten by birds, the main agents of distribution. It is a very fast-growing tree but the timber is poor. It does not compete with crops. Medicine from the leaves is reported to be an antidote to poison in general. Both bark and leaves contain a saponin, a tannin and sugar and have been used for deworming and as cough medicine.



Trichilia emetica (T. roka)

Meliaceae

Indigenous

Common names: **Chag:** mchengo, mechengo, mkongoni, mututu, mwavai; **Eng:** Cape mahogany; **Gogo:** nyembe mwitu; **Ha:** mtandaruka; **Lugu:** mtengotengo; **Nguu:** mgolimazi; **Nyak:** msanguti; **Samb:** mgolimazi; **Suku:** sungute; **Swah:** mkungwina, mtimaji, mtimai; **Zigua:** mgolimazi.

Ecology: A widespread and important tree of high forest, often by rivers in Uganda, Ethiopia, Kenya and Tanzania, south to Mozambique, 0-1,800 m. Prefers well-drained, rich soil and high ground water. There is a smaller savannah form with corky grey bark.

Uses: Firewood, timber (furniture, boats), poles, tool handles, medicine (leaves, bark, roots, oil), fodder, bee forage, shade, ornamental, soil conservation, oil, soap (seed).

Description: An evergreen tree, 15-30 m, with **dark hanging foliage**, crown oval to rounded and dense when mature, rather smooth. **BARK:** red-brown, scaling to show green underbark. **LEAVES:** compound 4-5 pairs leaflets, thick and glossy, **leaflets increase in size from the base upwards to largest terminal leaflet**, maximum 16 cm, underside with soft hairs and midrib continues as a hairy tip; leaf stalks and shoots softly hairy. **FLOWERS:** creamy white, fragrant in inconspicuous clusters in heads to 10 cm, 5 thick petals about 2 cm around hairy centre of stamens. **FRUIT:** rounded, furry, brown capsules to 3 cm across, split into 3 or 4 parts to reveal **3-5 shiny black seeds each with a fleshy orange aril** almost covering the seed.

Propagation: Seedlings, direct sowing.

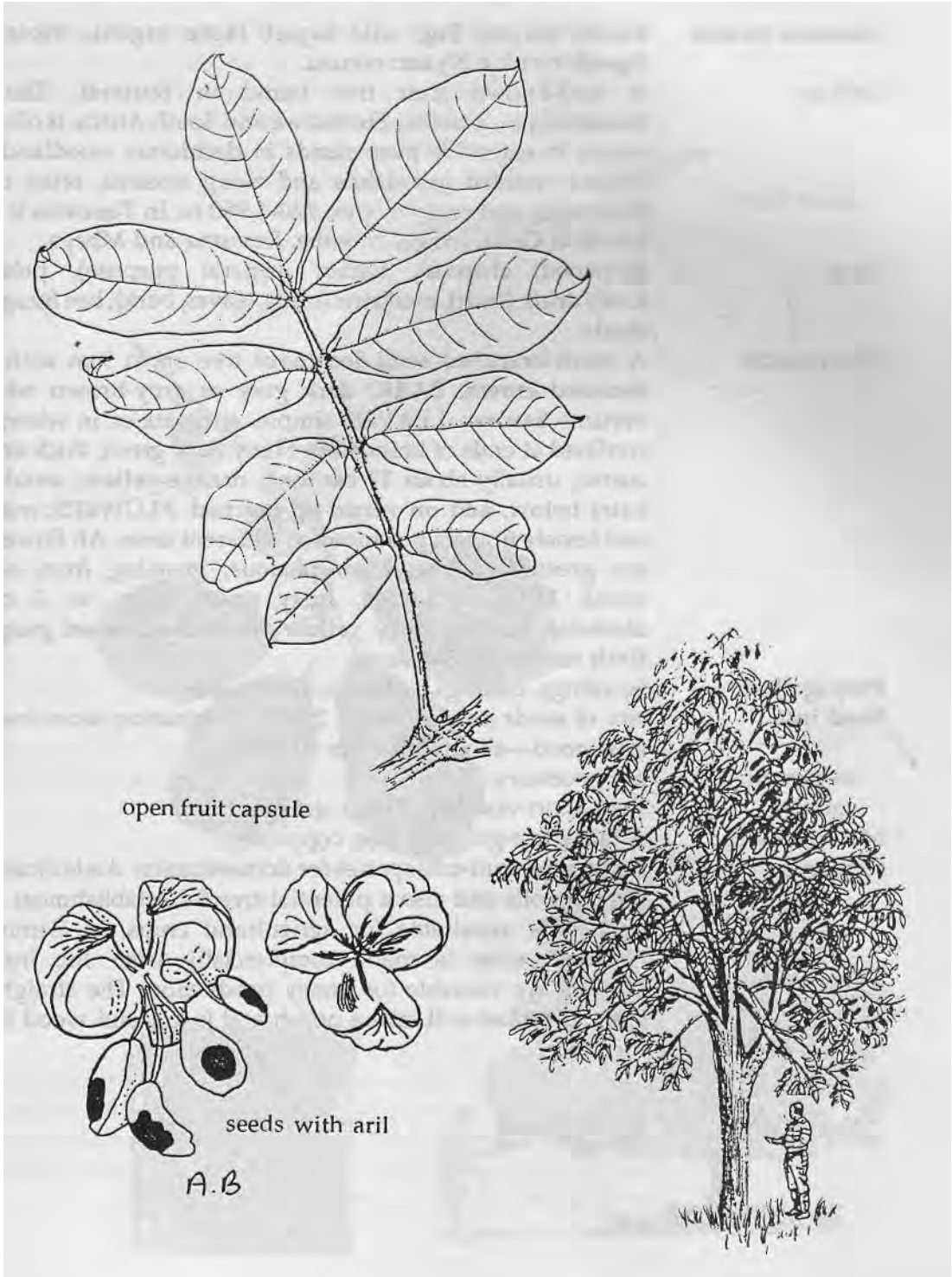
Seed info.: No. of seed per kg: 300. Sow fresh seeds for best results; seeds do not store. Collect when capsules start opening, dry in the shade, shake out seed and sow immediately,

treatment: collect when capsules start opening, dry in the shade then shake out seed; remove aril by maceration in water, then sow immediately,

storage: seed loses viability quickly.

Management: Fairly fast growing.

Remarks: The aril is removed from the seed and crushed with water to form a suspension used in cooking. Seeds are extremely poisonous. Leaves have some soapy properties and have been exploited during bad economic periods in Tanzania (e.g. 1979-1982). The pink-grey-brown timber is very susceptible to insect attack.



Uapaca kirkiana

Euphorbiaceae

Indigenous

Common names: Bende: mkusu; Eng: wild loquat; Hehe: mguhu, mkusu; Ngoni: msuku; Nyam: mkusu.

Ecology: A well-known fruit tree found in Burundi, Zaire, Mozambique, Zambia, Zimbabwe and South Africa. It often occurs in extensive pure stands in deciduous woodlands, upland wooded grasslands and along streams, often on stony soils and rocky slopes, 720-1,950 m. In Tanzania found in Geita, Iringa, Njombe, Ruvuma and Mbeya.

Uses: Firewood, charcoal, timber (general purpose), poles food/drink (fruit), medicine (roots, leaves, bark), bee forage, shade.

Description: A much-branched semi-deciduous tree up to 9 m with a rounded crown. BARK: dark grey or grey-brown with vertical fissures. LEAVES: simple, alternate or in whorls, confined at ends of branchlets. Shiny dark green, thick and coarse, usually about 17 cm long, orange-yellow, woolly hairs below, and on veins, tip notched. FLOWERS: male and female flowers produced on different trees. All flowers are greenish-yellow, inconspicuous, growing from old wood. FRUIT: rounded, rusty green berry, to 3 cm diameter, turning rusty yellow when ripe, sweet pulpy flesh surrounds 3-4 seeds.

Propagation: Seedlings, cuttings, wildings, root suckers.

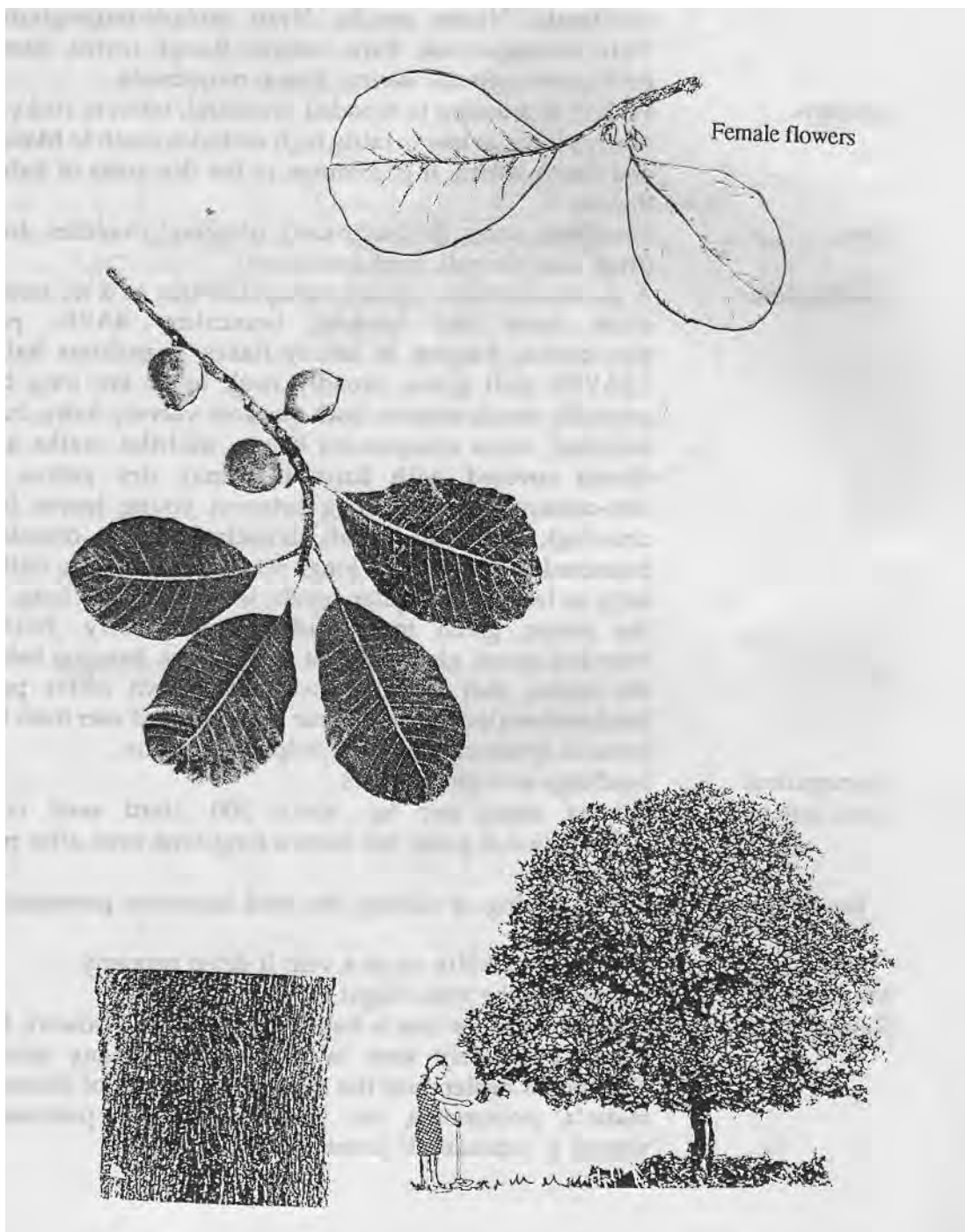
Seed info.: No. of seeds per kg: about 2,500. Germination from fresh seed good—about 70% after 30 days.

treatment: not necessary.

storage: Very short viability. Avoid storage.

Management: A fairly fast-growing tree; coppicing.

Remarks: A potential fruit-tree species for domestication. An indicator of poor soils and also a potential tree for establishment in poor soils unsuitable for agricultural crops. In Zambia "msuku" wine is made commercially from the **fruit**. Flowers are valuable for honey production. The straight-grained timber will take a polish and is a useful wood for furniture.



Vangueria infausta

Rubiaceae

Indigenous

Common names: Arusha: engumi; **Bara:** babaxchet, barangu, malharimog; Eng: wild medlar; **Fipa:** msanda; **Hehe:** msambalawe; **Kere:** mufitanda; Nyam: msada; **Nyat:** mulade-mujenghuma; Nyir: mkungulusuli; **Fare:** mdaria; **Rangi:** mviru; **Samb:** mvilu, mviu; **Swah:** mviru; **Zinza:** mnyabwita.

Ecology: Widely distributed in wooded grassland, often in rocky or sandy places, at low to fairly high altitudes south to Malawi and South Africa. It is common in the dry areas of Babati district.

Uses: Firewood, poles (houses), tools (digging), handles, food (fruit, seed kernel), medicine (roots).

Description: A deciduous hairy shrub or shapeless tree to 8 m, with a short trunk and hanging branchlets. **BARK:** pale grey-brown, peeling in untidy flakes, **branchlets hairy**. **LEAVES:** dull green, broadly oval, to 30 cm long but generally much smaller, **both surfaces velvety hairy**, base rounded, veins conspicuous below, **midribs, stalks and shoots covered with hairs** that may dry yellow or rust-coloured, stipules long between young leaves (see drawing). **FLOWERS:** small, **densely hairy, in crowded, branched heads** to 3 cm long, petals yellow-green, falling early to leave 5 triangular sepals, less than 2 mm long, on the young green fruit, buds pointed, hairy. **FRUIT:** rounded, green, **glossy, about 4 cm across**, hanging below the leaves, dull orange-brown, soft brown edible pulp inside when ripe. The fruit bear a **star-shaped scar** from the remains of the calyx, which helps recognition.

Propagation: Seedlings and root suckers.

Seed info.: No. of seeds per kg: about 500. Hard seed coat Germination is good but takes a long time even after pre-treatment.

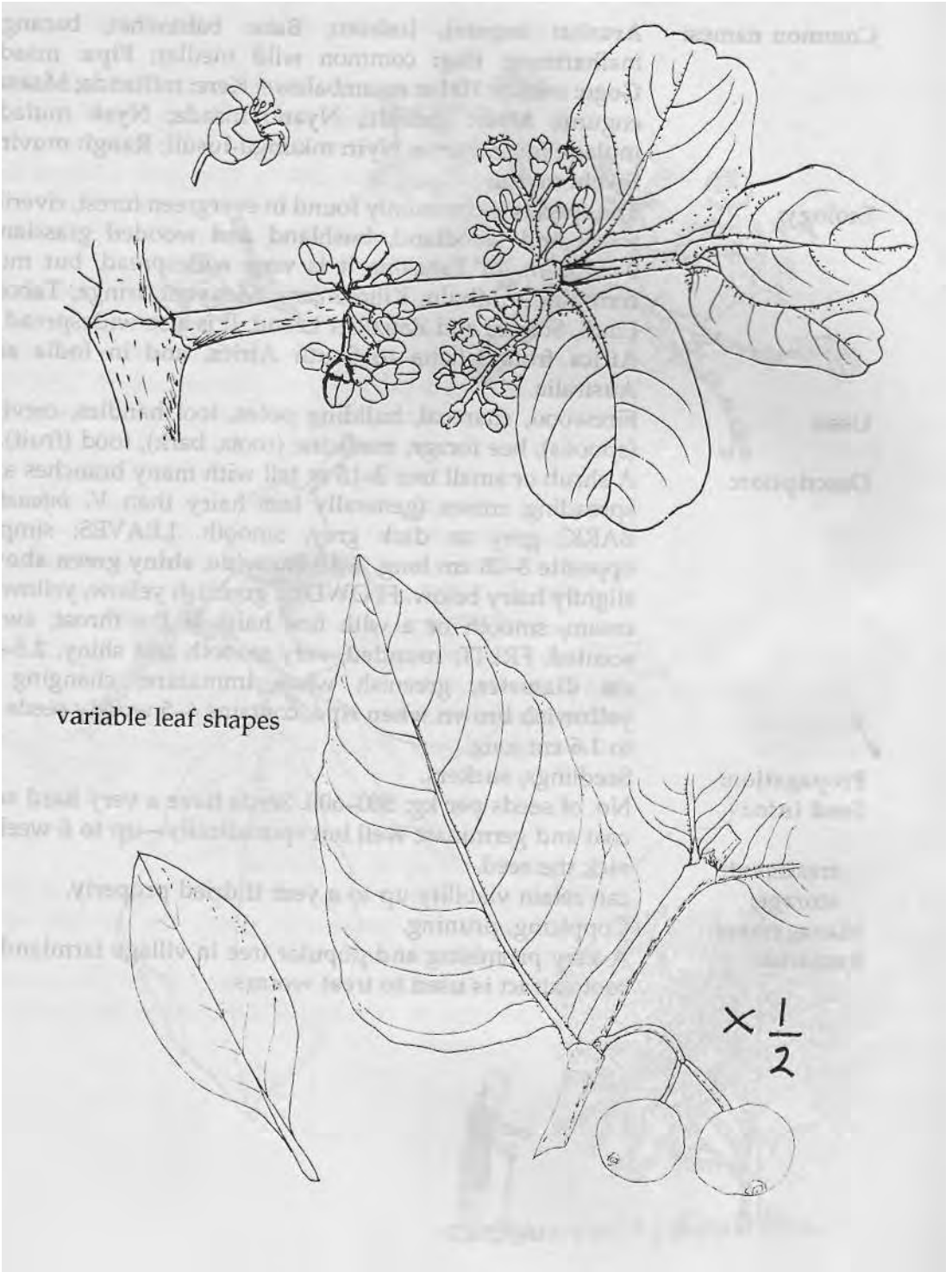
treatment: none (soaking or nicking the seed improves germination very little).

storage: can retain viability up to a year if dried properly.

Management: Coppicing; the tree is light demanding.

Remarks: In some areas the tree is believed to have evil powers, but it can be widely seen in farmlands in many places. Traditional healers use the roots for a variety of illnesses: malaria, pneumonia, etc. This species was previously named *V. rotundata/V. tomentosa*.

Vangueria infausta



Vangueria madagascariensis (V. acutiloba)

Rubiaceae

Indigenous

- Common names: Arusha: engumi, loshoro; **Bara:** babaxchet, barangu, malharimog; Eng: common wild medlar; **Fipa:** msada; Gogo: msada; **Hehe:** msambalawe; **Kere:** mfitanda; **Maasai:** engumi; **Mate:** lindikiti; Nyam: msada; **Nyat:** mulade, mulade mujenguma; Nyir: mkungu-lusuli; **Rangi:** muviru; Swah: mviru.
- Ecology: The species is commonly found in evergreen forest, riverine forest and woodland, bushland and wooded grassland, 0-2,130 m. In Tanzania it is very widespread, but most common in Mbulu, Kilimanjaro, Manyoni, Iringa, Tabora, Lindi, Songea and Zanzibar Island. It is also widespread in Africa from Ghana to South Africa, and in India and Australia.
- Uses: Firewood, charcoal, building poles, tool handles, carving (spoons), bee forage, medicine (roots, bark), food (fruit).
- Description: A shrub or small tree 2-15 m tall with many branches and spreading crown (generally less hairy than *V. infausta*). BARK: grey or dark grey, smooth. LEAVES: simple, opposite 8-28 cm long, 3-15 cm wide, **shiny green above**, slightly hairy below. FLOWERS: greenish yellow, yellow or cream, smooth or a with few hairs at the throat, sweet scented. FRUIT: **rounded**, very smooth and shiny, 2.5-5.0 cm diameter, greenish when immature, changing to yellowish **brown when ripe**, contains 4-5 woody seeds up to 1.6 cm long.
- Propagation: Seedlings, suckers.
- Seed info.: No. of seeds per kg: 500-600. Seeds have a very hard seed coat and germinate well but sporadically—up to 6 weeks, treatment: nick the seed.
- storage: can retain viability up to a year if dried properly.
- Management: Coppicing, pruning.
- Remarks: A very promising and popular tree in village farmland. A root extract is used to treat worms.



Vangueriopsis lanciflora

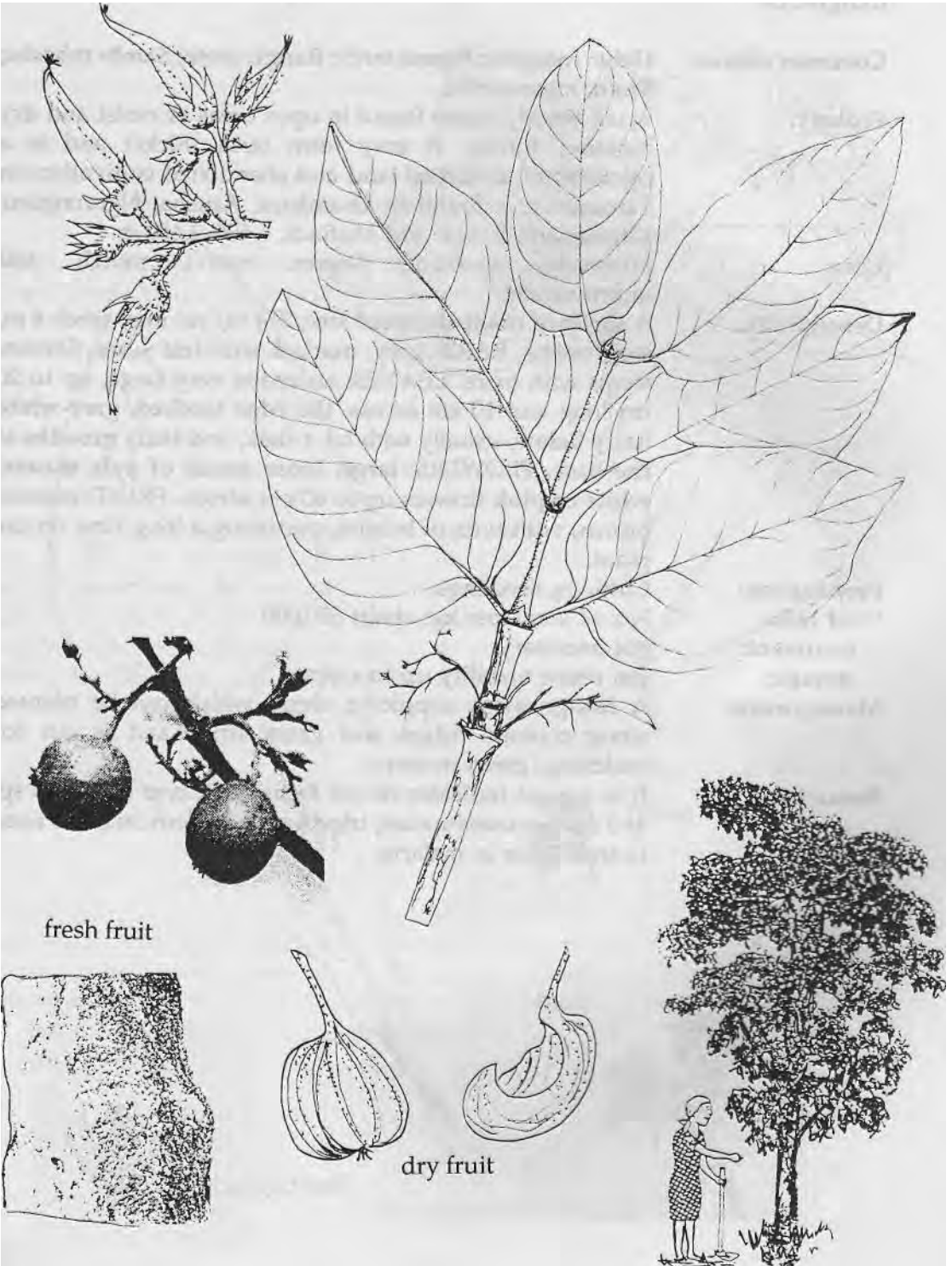
Rubiaceae

Indigenous

- Common names: Eng: crooked false medlar; Hehe: msambalawe-lulenga; Nyam: mgelelya.
- Ecology: A shrub of central and east Africa and into Mozambique, common at medium to higher altitudes in woodland and wooded grassland, often associated with rocky outcrops. In Tanzania it is found near Tabora, Manyoni, Chunya and Iringa, 250-1,250 m.
- Uses: Firewood, charcoal, utensils (spoons), food (fruit), bee forage, medicine (bark, roots), live fence.
- Description: A shrub or small tree 7 m or more in height with spreading more-or-less horizontal branches. BARK: smooth, grey on trunk and older branches; **powdery red-brown on** young branches, flaking to show brown-pink underbark. LEAVES: variable, about 3-13 cm long, oval and opposite, blue-green, roughly hairy above or smooth but **grey-white hairs below** tip rounded or not, edge wavy on a stalk about 1 cm. FLOWERS: appear before the leaves, **tubular** green-yellow **buds**, hairy, about 2 cm long, open to reveal white **petals which curl back, sweet scented** and showy. Flowers borne in leaf axils. FRUIT: **rounded** when it has 2 seeds but **one sided** when only 1 seed develops, **up to 3 cm long, green and hairy, becoming yellow-brown**; fleshy slightly acid pulp around seeds.
- Propagation: Seedlings, root suckers.
- Seed info.: Germination is poor owing to hard seed coat; at best 60% after 40 days.
- treatment: soak seed in cold water for 24 hours,
- storage: mature green fruits can be picked and stored for ripening. Can be stored for up to 12 months.
- Management: Seedlings give best results. Although regeneration from coppicing and root suckers is good, the growth often succumbs to drought and fire.
- Remarks: The species is light demanding and should be planted after partial clearance of vegetation. The leaves and fruit are attacked by insects.

Vangueriopsis lanciflora

Rubiaceae



Vernonia myriantha (V. subligera)

Compositae

Indigenous

Common names: Hehe: mtogoto; **Nguu**: mteli; **Rangi**: seese; **Samb**: mhasha; **Suku**: mgumambu.

Ecology: A tall woody shrub found in open areas of moist and dry montane forests. It may form bush thicket and is a colonizer of disturbed land and abandoned cultivation. In Tanzania it is found in Usambara, Arusha, Ngorongoro, Kilimanjaro, Iringa, and Mufindi, 1,600-2,400 m.

Uses: Firewood, medicine (leaves, roots), mulch, soil improvement.

Description: A shrub or multi-stemmed tree, 3-4 m, but may reach 6 m, stout stems. **BARK**: grey, marked with leaf scars, fibrous, stems with hairs. **LEAVES**: alternate, very **large**, up to 20 cm long and 10 cm across, the **edge toothed, grey-white hairy below**, usually without a stalk and **leafy growths at the base**. **FLOWERS**: large, loose **heads of pale mauve, white or pink** flowers up to 60 cm across. **FRUIT**: minute, brown, with tufts of bristles, persisting a long time on the plant.

Propagation: Cuttings, seedlings.

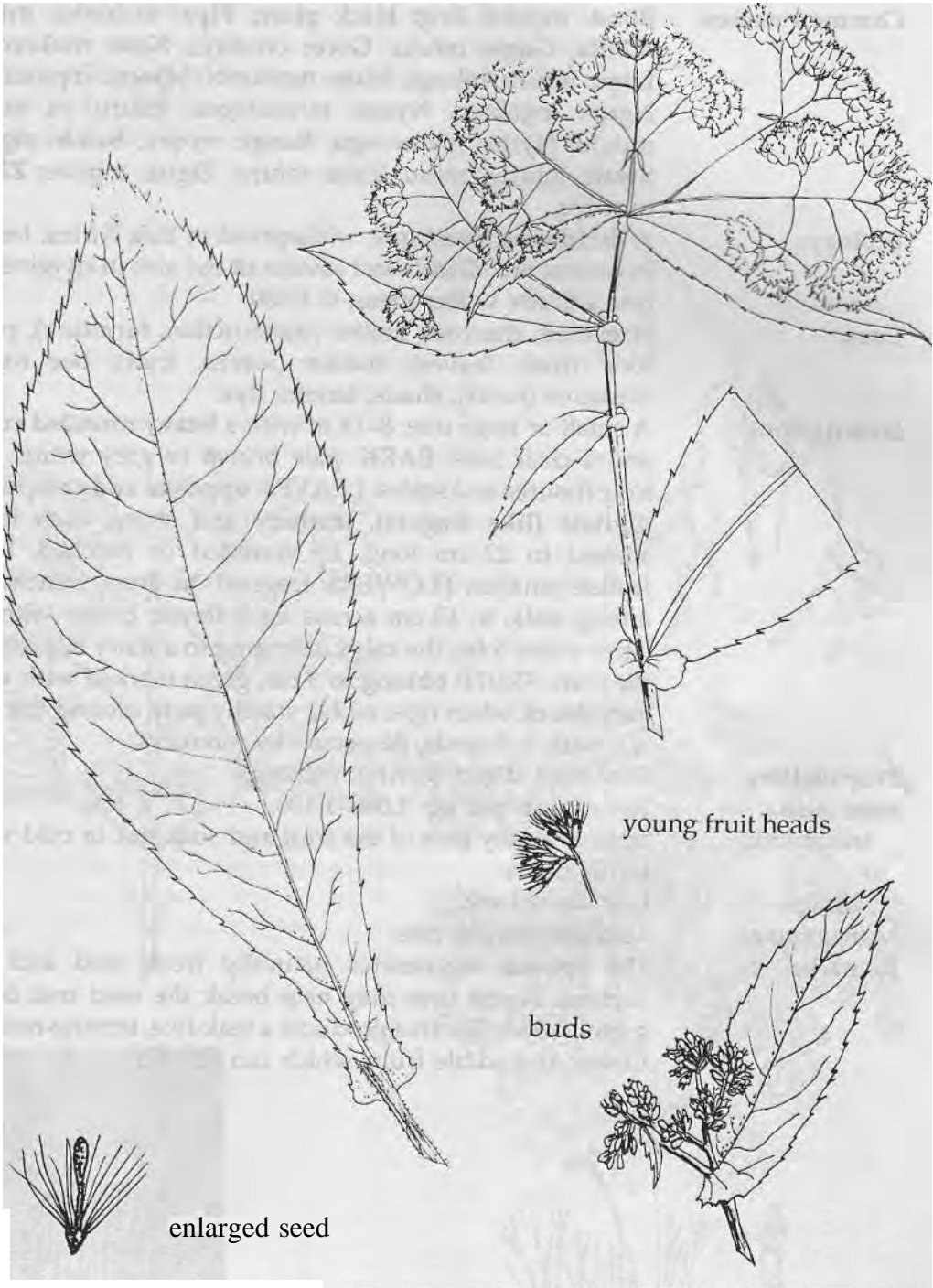
Seed info.: No. of seeds per kg: about 850,000.

treatment: not necessary.

storage: can retain viability up to a year.

Management: A fast-growing, coppicing shrub which can be planted along contour ridges and grass strips and is cut for mulching/green manure.

Remarks: It is a good indicator of soil fertility. Leaves of *Coleus* sp. and *Rumex usambarensis*, together with Vernonia, are used to treat fever in malaria.



Vitex doniana (V. cuneata, V. cienkowskii)

Verbenaceae

Indigenous

Common names: **Bond:** mgobe; **Eng:** black plum; **Fipa:** mchinka, mfuru, mufita; Gogo: mfulu; **Goro:** orrolmo; **Kere:** mukoronto; **Lugu:** mfuru, mkoga; **Mate:** mpitimbi; **Mwera:** mpindimbi; **Nguu:** mgobwe; Nyam: mfurulegea, mfuru ya mtoni, mpulu; Nyiha: mkunungu; **Rangi:** mpuru; **Samb:** mgobe; **Swah:** mfudu, mfuu; **Zara:** mfuru; **Zigua:** mgobe; **Zinza:** muvuru.

Ecology: A deciduous forest tree, widespread in East Africa, largely in coastal woodlands and savannah but also in riverine and low-altitude wetter areas, 0-1,800.

Uses: Firewood, charcoal, timber (construction, furniture), poles, food (fruit, leaves), fodder (leaves, fruit), bee forage, medicine (roots), shade, tannin, dye.

Description: A small or large tree, 8-14 m with a **heavy rounded crown** and a clear bole. **BARK:** pale brown or grey white, with long fissures and scales. **LEAVES:** **opposite and compound, digitate (like fingers), leathery** and shiny, each leaflet stalked to 22 cm long, tip rounded or notched, lower leaflets smaller. **FLOWERS:** fragrant, in dense bunches on a long stalk, to 12 cm across, each flower cream with one hairy violet lobe; the calyx enlarging to a hairy cup around the fruit. **FRUIT:** **oblong to 3 cm**, green marked with white dots, **black** when ripe, edible starchy pulp around the hard nut with 1-4 seeds, dispersed by monkeys.

Propagation: Seedlings, direct sowing, wildings.

Seed info.: No. of nuts per kg: 1,000-1,100.

treatment: remove fleshy part of the fruit and soak nut in cold water for 24 hours.

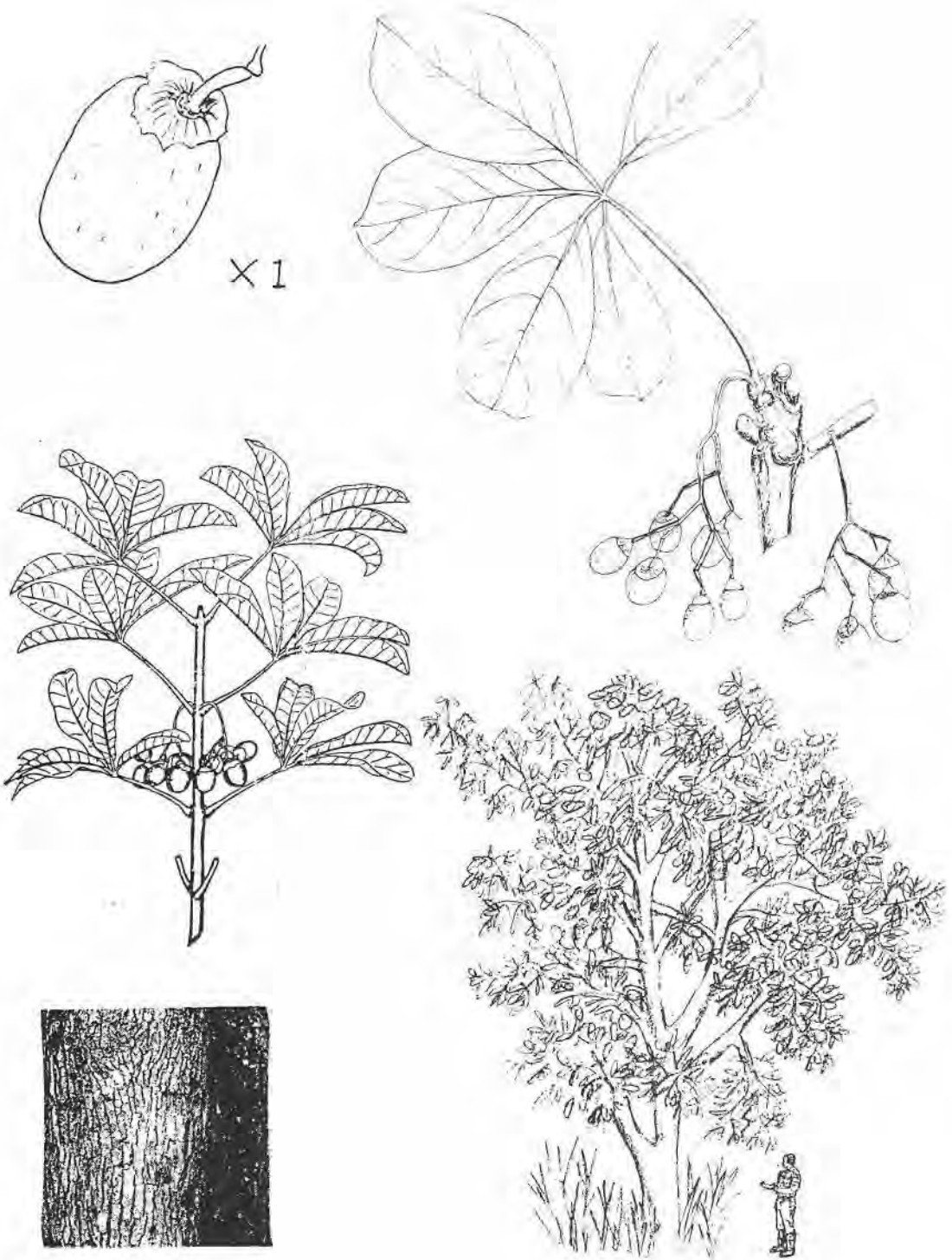
storage: best sown fresh.

Management: Medium growth rate.

Remarks: The species regenerates naturally from seed and root suckers. Forest fires may help break the seed coat before germination. The tree produces a teak-like, termite-resistant timber and edible fruits which can be sold.

Vitex doniana (V. cuneata, V. cienkowskii)

Verbenaceae

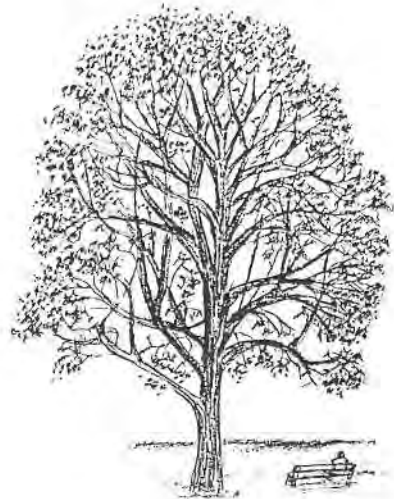
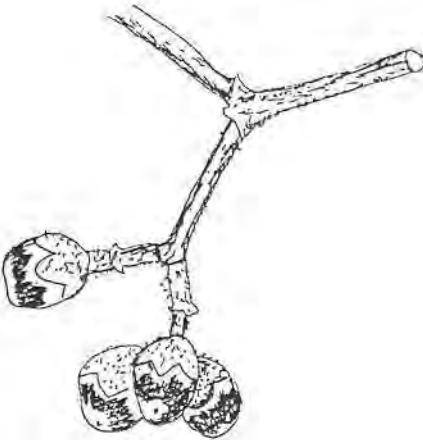


Indigenous

- Common names:** **Eng:** Meru oak; **Meru:** moru, muuru; **Swah:** mfuu.
- Ecology:** A valuable timber tree occurring in Kenya on the eastern slopes of Mt. Kenya, Meru District. Now planted elsewhere, e.g. in Tanzania on Mt. Kilimanjaro, 1,500-1,850 m. Locally common with *Commiphora eminii* on thicketed rocky hills in Shinyanga and Lake Victoria. It prefers deep sandy-loam soils.
- Uses:** Firewood, timber (furniture, veneer, panels), food (fruit), ornamental, mulch, windbreak.
- Description:** A tall deciduous tree up to 30 m high with a rounded crown and a clear straight bole. **BARK:** pale brown, with narrow vertical fissures, dark brown with age. **LEAVES:** **compound with 5 leaflets on long leaf stalks**, up to 25 cm long, leaflets light green above, pale green **and hairy beneath**. **FLOWERS:** small, in loose heads, about 1 cm long, creamy white, with one prominent mauve petal. **FRUIT:** rounded, about 1.5 cm across, green at first, becoming soft **and black** when ripe, the **hairy calyx remaining**. The inner nut usually has 1-2 seeds. Black fruit fall to the ground.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds (nuts) per kg: about 3,000. Germination is low and sporadic, up to 40% after 9 weeks. Dry **Fruit**, then rub over a wire mesh to remove pulp. Dry in the shade.
- treatment:** not necessary, or soak in cold water for 24 hours.
- storage:** can retain viability for a long time if kept dry.
- Management:** A fairly fast-growing tree. Deciduous and produces a useful mulch of leaf litter. Coppicing.
- Remarks:** A useful tree for planting on a small scale on farms. **Can** also be grown in commercial plantations in humid **lower** highlands. The timber is hard and durable, very pale and similar to teak. The fruit are only eaten in emergency.

Vitex keniensis

Verhenaceae



Indigenous

Common names: **Bena:** msasati; Eng: smelly berry vitex; **Fipa:** mchinka, mkiinka, mfulu; Hehe: mfudululenga, msasati; **Nyam:** msungwe, msungwi mtalali; **Nyat:** msasati; **Nyir:** msasati, msassi; Rangi: mjumbau; **Suku:** mgukubi, msungwi; **Swah:** mfudumaji, mtalali; **Zigua:** mgobe; **Zinza:** mkakata, msungwa.

Ecology: A shrub or tree found at low to medium altitudes on stony outcrops and in deciduous woodland from Kenya and Zambia to South Africa. In Tanzania it is widespread from the coast to Tabora and the Lake Victoria islands, and common north of Kongwa. Also found in riverine forest near Kigoma, 0-1,600 m.

Uses: Firewood, food (fruit), bee forage, shade.

Description: A stiffly branched deciduous shrub or small tree to 8 m. **BARK:** rough grey to brown with **deep longitudinal fissures**. Branchlets densely covered with brown-red hairs. **LEAVES:** compound, opposite, with **5 leaflets**, sometimes 3 leaflets (lower 2 leaflets deformed or absent), widest above the middle, **abouro cm long, short soft hairs above but dense orange hairs below**, on hairy stalks to 9 cm. **FLOWERS:** few flowers in a branched head on **stalks to 6 cm**, each flower 5 mm, all violet-blue or all white with upper lip only blue; **petals twice as long as calyx lobes, ovary hairy**. **FRUIT:** rounded to oblong, 2-3 cm long, green at first, turning black when ripe, juicy. **Calyx lobes enlarge, cover the fruit but later open out or bend back.**

Propagation: Seedlings, direct sowing.

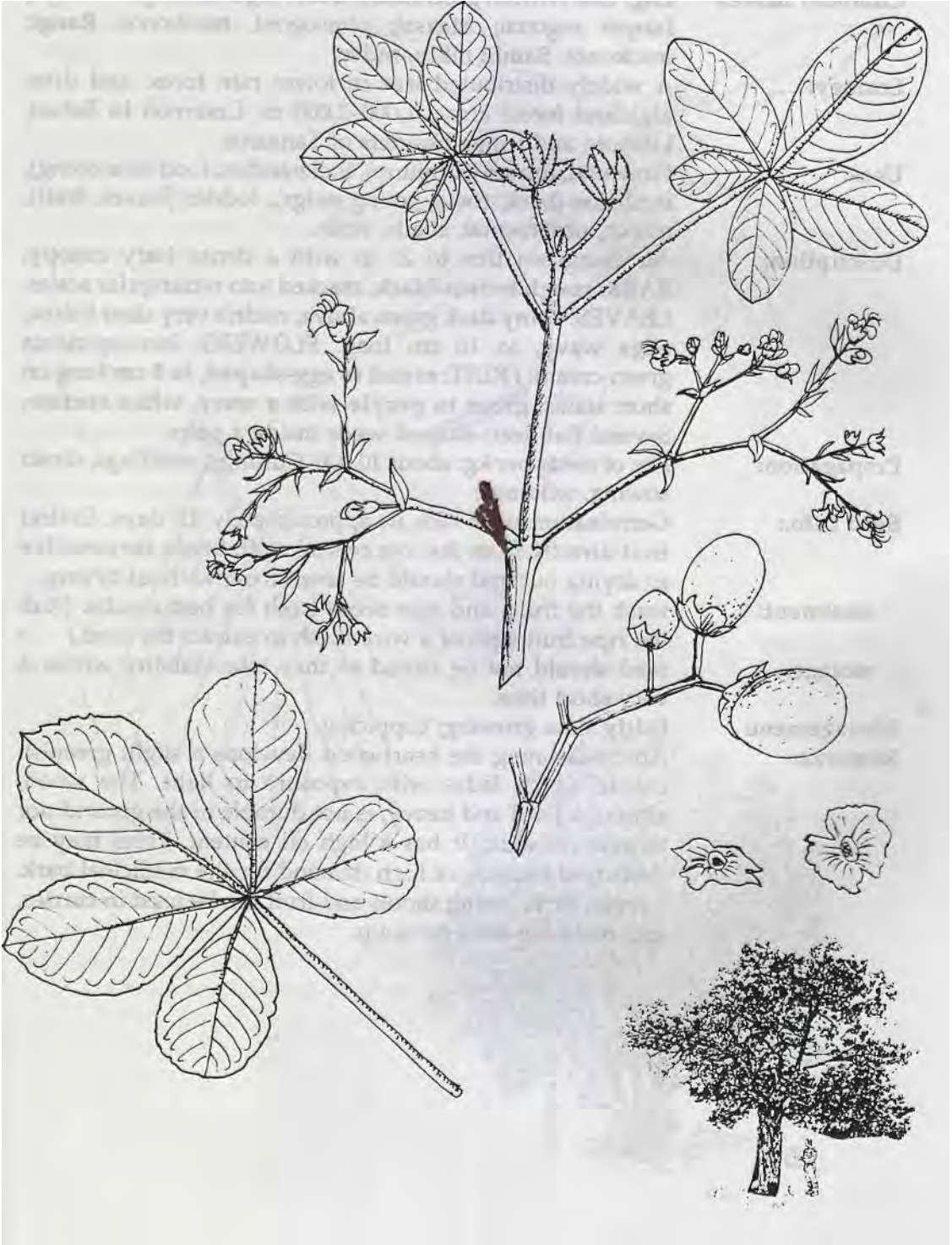
Seed **info.:** No. of seeds per kg: about 1,000. Hard seed coat which inhibits germination, but may be broken by forest fires. Germination is poor and sporadic.

treatment: Soak in cold water for 24 hours. Scratch the seed coat surface to increase water absorption.

storage: seeds can be stored for up to 12 months.

Management: Coppicing.

Remarks: This tree regenerates naturally from seed. Clearing land can help natural regeneration as the species is a light demander and prefers open areas. It is usually left in the farms for its fruit and shade. The fruit contains vitamin C and stains a dark purple-black. It has an unpleasant smell and persistent taste, but is much sought after in some areas.



Warburgia ugandensis (W. salutaris)

Canellaceae

Indigenous

- Common names: Eng: East African greenheart; Goro: sagonai; Haya: muhiya; Iraqw: sagonai; Maasai: olmsogoni, msokonoi; Rangi: msokonoi; Samb: mlifu, mdee.
- Ecology: A widely distributed tree in lower rain forest and drier highland forest areas, 1,000-2,000 m. Common in Babati, Lushoto and Iringa Districts of Tanzania.
- Uses: Firewood, timber (furniture), tool handles, food (seasoning), medicine (bark, roots, young twigs), fodder (leaves, fruit), mulch, ornamental, shade, resin.
- Description: An evergreen tree to 25 m with a dense leafy canopy. BARK: rough brown-black, cracked into rectangular scales. LEAVES: shiny dark green above, midrib very clear below, edge wavy, to 10 cm long. FLOWERS: inconspicuous green-cream. FRUIT: round to egg-shaped, to 5 cm long on short stalks, green to purple with a waxy, white surface. Several flat heart-shaped seeds inside a pulp.
- Propagation: No. of seeds per kg: about 10,000. Cuttings, seedlings, direct sowing, wildings.
- Seed info.: Germination over 80% in approximately 15 days. Collect fruit directly from the tree or shake off. Seeds are sensitive to drying out and should be sown fresh without drying, wash the fruits and sow seeds fresh for best results. (Rub the ripe fruit against a wire mesh to extract the seed.)
- treatment: seed should not be stored as they lose viability within a very short time.
- storage: seed should not be stored as they lose viability within a very short time.
- Management: Fairly slow growing; coppicing.
- Remarks: After seasoning the heartwood develops a slight greenish colour which fades with exposure to light. The wood, although hard and heavy, is not durable in the ground nor termite resistant. It has a high oil content. Trees may be destroyed because of high demand for the medicinal bark. Leaves, bark, young shoots and fruit can be used in curries, and roots are used for soup.



Xeroderris stuhlmannii

Papilionoideae

Indigenous

Common names: **Eng:** wing pod; Gogo: mnyinga; Nyam: munyenye; Nyat: mjimbua, mjohou; **Nyir.** munene; **Sand:** leba; **Suku:** njundu; **Swah:** mnyinga, mondogondo; **Zara:** mHINGI; **Zigua:** mnyinga, munyinga.

Ecology: A tree found in Senegal, Nigeria, Kenya and southwards to South Africa. It occurs in deciduous woodland and bushland particularly on well-drained soils, 100-1,650 m. In Tanzania common in all regions except highland areas.

Uses: Firewood, charcoal, utensils (mortars, stools, milk pots), carving, fodder (leaves, fruit), famine food (seeds), medicine (sap, roots), shade, red dye (sap).

Description: A medium or large deciduous tree, 6-10 m, with spreading rounded crown. **BARK:** grey or grey-brown, smooth to rough with longitudinal flakes exuding blood-red sap when slashed. **LEAVES:** compound with **4-9 pairs of leaflets**. The leaflets are dark green, crowded near the tips of branchlets, **when young covered with silky hairs**. **FLOWERS:** small, **white or greenish white, pea shaped**, profusely borne on many-branched flowering stalks. Buds rusty brown. **FRUIT:** **a large flat pod 9-18 cm long**, swollen over the seed cases and with **distinctive ridged vein** around the indehiscent pod. Outside this is a **hard wing up to 1 cm wide**.

Propagation: Seedlings, suckers.

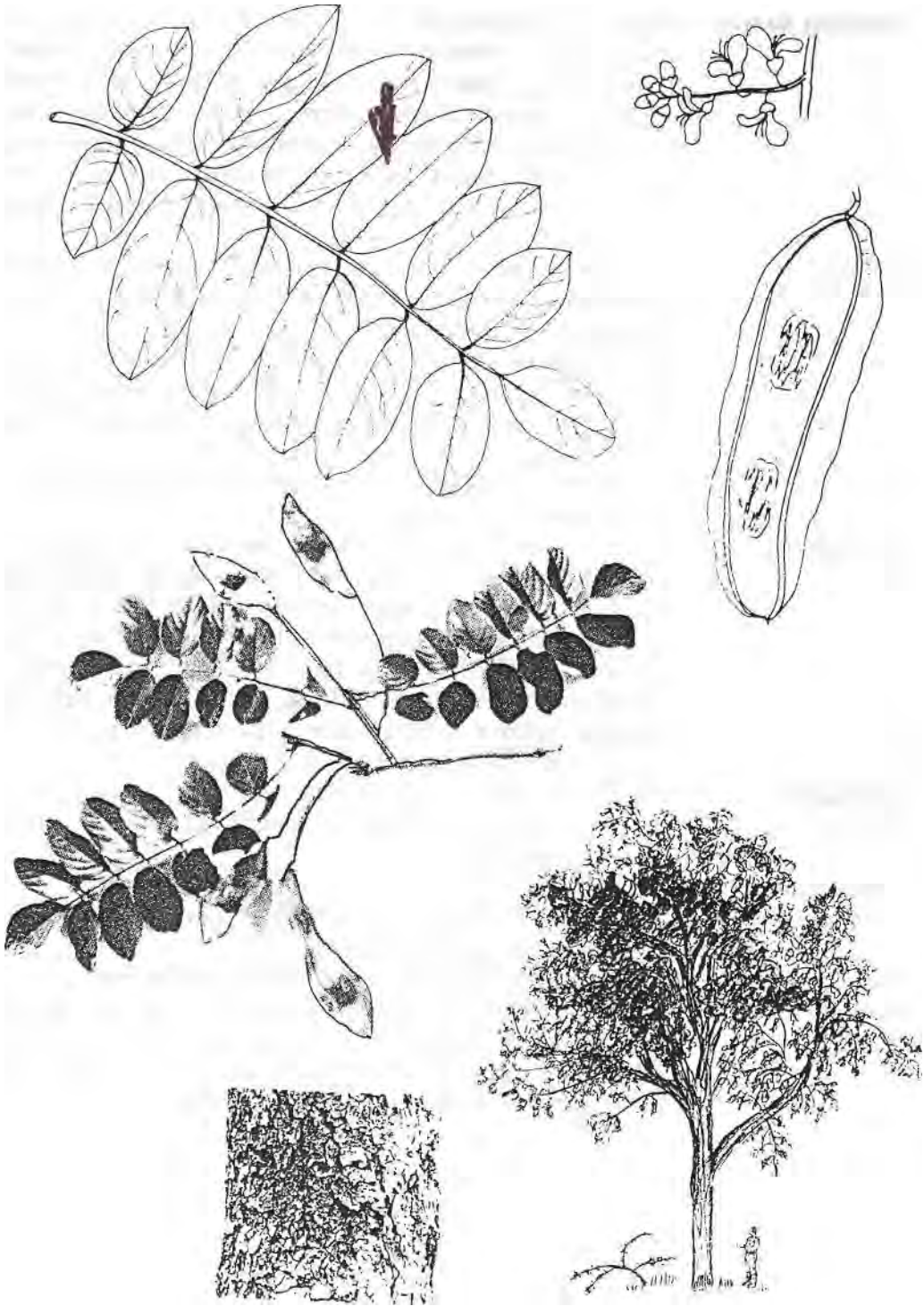
Seed info.: No. of seeds per kg: 3,500-5,000. Germination 40-70% after two weeks,

treatment: not necessary.

storage:

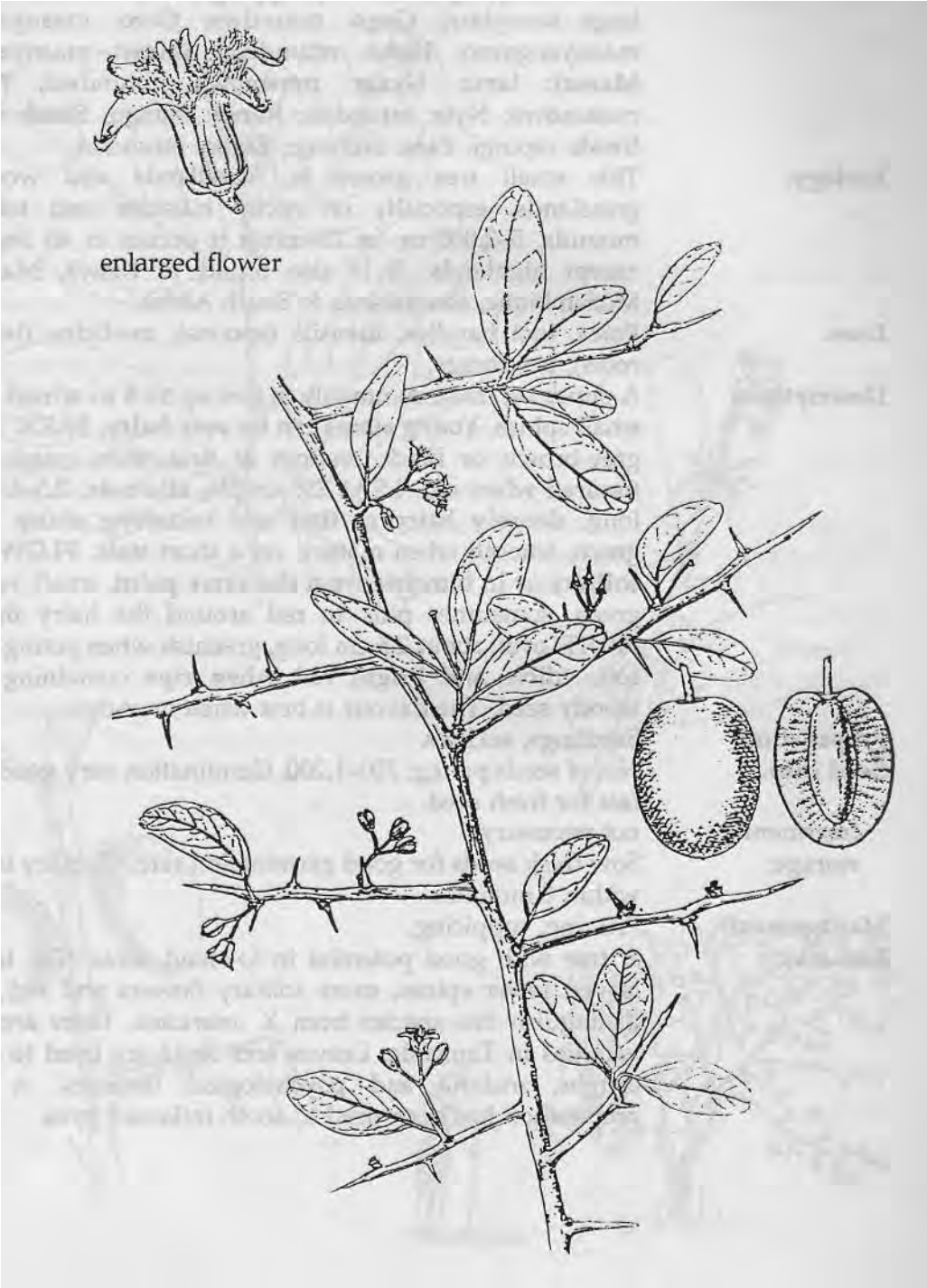
Management: Pruning, pollarding, coppicing.

Remarks: This tree has the synonym *Ostryoderris stuhlmannii*. It can grow in poor sandy soils and is drought resistant. **The seeds can only be eaten as famine food after long boiling as they are poisonous when raw. Both leaves and fruit are eaten by cattle and game, however. The red gum from the bark has been used for tanning. The red sap is used to treat wounds and the roots are used for stomach ache.**



Indigenous

- Common names:** **Bena:** mpingipingi; **Bende:** msantu; **Chag:** lama; **Eng:** wild plum; **Fipa:** mnembwa; **Gogo:** mtundwe; **Goro:** tarantu; **Hehe:** mingi, mtundwahi; **Iraqw:** mutuhu, tahhamanto, tarantu; **Maasai:** olama; **Mbug:** olamai, tarantu; **Nyam:** mnembwa mudo, mtundwa; **Samb:** mtundui; **Sangu:** mingi, mtundwahi; **Suku:** mpingi, **mtundwa;** **Swah:** mpingi, mtundakula; **Zara:** membwa, mHINGI, mpingi; **Zigua:** mtundwi.
- Ecology:** This is a pan-tropical tree species found in African savannah, America, and tropical Asia. In Tanzania **it** occurs in coastal, Rift Valley and northern areas in open sandy woodland, on stony slopes, scattered thorn bush, arid and semi-arid zones, 0-2,000 m. It is drought resistant. At the coast, seeds are collected in July-August, **but** it flowers and fruits throughout the year in other areas.
- Uses:** Firewood, tool handles, food (fruit), medicine (leaves, roots, bark), fodder, oil (seed).
- Description:** Usually a spiny shrub or a small tree up to 4 m, spines to 1 cm, thin and straight. **BARK:** brown-black small scales. **LEAVES:** alternate, **simple or tufts**, oblong to 2-4 cm long, blue-grey-green, **fold upwards along midrib**, tip round **or** notched. **FLOWERS:** very fragrant, small green-white in small branched clusters. **FRUIT:** oval to 2.5 cm, **thin skin usually yellow, occasionally pink-red, pulp sour but** refreshing, One large seed, containing oil.
- Propagation:** Seedlings, protect natural regeneration.
- Seed info.:** No. of seeds per kg: 700-1,400. Germination very good **and** fast for fresh seed.
- treatment:** not necessary.
- storage:** seeds can be stored for a short period (only 3 months). **Sow** fresh seed for good germination rate.
- Management:** Pruning, coppicing. Protect natural regeneration.
- Remarks:** A useful tree for arid and semi-arid areas. The wood **is** heavy, hard and durable. The seed contains a non-drying oil suitable for soap and lubrication—has been used as a body and hair oil and for softening leather.



enlarged flower

Ximenia caffra (X. americana var. caffra)

Olacaceae

Indigenous

Common names: **Bara:** maanyangu; **Bena:** mpingipingi; **Bende:** msantu; **Eng:** large sourplum; **Gogo:** mtundwe; **Goro:** maanyangu, maanyangumo; **Hehe:** mtundwa; **Iraqw:** maanyangu; **Maasai:** lama; **Nyam:** mnembwa, mtundwa; **Nyat** mutundwe; **Nyir:** mtundwi; **Rangi:** mjingu; **Sand:** xaya; **Swah:** mpingi; **Zara:** muhingi; **Zigua:** mtundwi.

Ecology: This small tree grows in woodlands and wooded grasslands, especially on rocky hillsides and termite mounds, 5-2,000 m. In Tanzania it occurs in all regions except highlands. It is also found in Kenya, Malawi, Mozambique, southwards to South Africa.

Uses: Poles, tool handles, utensils (spoons), medicine (leaves, roots), bee forage.

Description: A shrub or, more commonly, a tree up to 8 m armed with small spines. **Young stems can be very hairy.** **BARK:** grey, grey-brown or black, smooth at first, then rough and fissured when old. **LEAVES:** simple, alternate, 2.5-6.0 cm long, **densely hairy at first** and becoming **shiny dark green**, smooth when mature, on a short stalk. **FLOWERS:** **solitary or in bunches from the same point**, small, white-green, sometimes pink to red around the hairy throat. **FRUIT:** oval, about 2.5 cm long, greenish when young then soft, edible and **bright red when ripe** containing one woody seed. The flavour is best when over-ripe.

Propagation: Seedlings, suckers.

Seed info.: No. of seeds per kg: 700-1,200. Germination very good and fast for fresh seed,

treatment: not necessary.

storage: Sow fresh seeds for good germination rate. Viability is lost within 3 months.

Management: Pruning, coppicing.

Remarks: A tree with good potential in lowland areas. The larger leaves, fewer spines, more solitary flowers and red fruit distinguish this species from *X. americana*. There are two varieties in Tanzania. Leaves and roots are used to treat coughs, malaria and psychological illnesses. A leaf preparation has been used to sooth inflamed eyes.

Ximenia caffra (X. americana var. caffra)

Olacaceae



Zanthoxylum chalybeum

Rutaceae

Indigenous

Common names: **Arusha:** oluisuki; **Bara:** wapkan; **Eng:** knobwood; **Fiome:** morungi; **Fipa:** popwe; **Goro:** morungi; **Haya:** entare yeirungo; **Lugu:** mhunungu; **Mbug:** molongo; **Rangi:** mulungu; **Swah:** mjafari; **Zara:** mnungu.

Ecology: A deciduous tree of medium to low altitudes in dry woodland or grassland, often on termite mounds, from Ethiopia to Southern Africa, 0-1,500 m.

Uses: Firewood, utensils (spoons, combs), carving, food (leaves), medicine (leaves, bark, roots), stamps from cork.

Description: A spiny deciduous shrub or tree to 8 m, the crown rounded but open. The bole has characteristic **large, conical woody knobs with sharp prickles**. **BARK:** pale grey smooth, **dark scales and prickles protect buds**. **LEAVES:** compound, a strong **lemon smell if crushed, the leaf stalk with hooked prickles below**, 6-9 pairs of shiny leaflets. **FLOWERS:** yellow-green in short sprays below leaves on new branchlets. **FRUIT:** **red-brown-purple, like berries**, open to release **shiny black seeds**.

Propagation: Seedlings, wildings.

Seed info.: No. of seeds per kg: about 30,000.

treatment: not necessary.

storage: short lived; lose viability within a few weeks.

Management: The wood is of little value.

Remarks: *Zanthoxylum holtzianum* grows with this species all along the coast into Somalia and can grow on coral, 0-230 m. It is very similar but smaller, sometimes a climber. It is used for carving and for medicine.



Ziziphus mauritiana

Rhamnaceae

South-East Asia

Common names: **Eng:** geb, Indian jujube; **Hehe:** mtanula; **Nyam:** kagowole, mgugunu; **Sangu:** mtanula; **Suku:** mgugunu; **Swah:** mkunazi.

Ecology: This tree is now widely naturalized in the tropics, including the Mediterranean and Africa. It has a strongly developed root system and does best in areas with high a watertable. In Tanzania it is a common coastal tree, 0-1,400 m.

Uses: Firewood, charcoal, timber (beds, dhow ribs), poles, utensils (bows, arrows), carving, fodder (leaves, fruit), bee forage, shade, soil conservation, resin, gum, windbreak, live fence, tannin, dye.

Description: A much-branched, **spiny tree**, small, but may reach 7 m, drooping angular branches, **crown rounded**, often forming thickets. **BARK:** grey, branches with curved **thorns**. **LEAVES:** alternate, shiny above, hairy white below, thin, three veins from the base, rather small **but** up to 8 cm, **leaf base rounded and equal sided**. **FLOWERS:** small yellow-green, in clusters beside leaves, on hairy stalks. **FRUIT:** **rounded 1-2 cm**, shiny yellow then **red-brown**, pulp edible, **two seeds in a large stone**.

Propagation: Seedlings, direct sowing, root suckers, cuttings.

Seed info.: No. of seeds per kg: 430-2,000. Germination rates often low.

treatment:

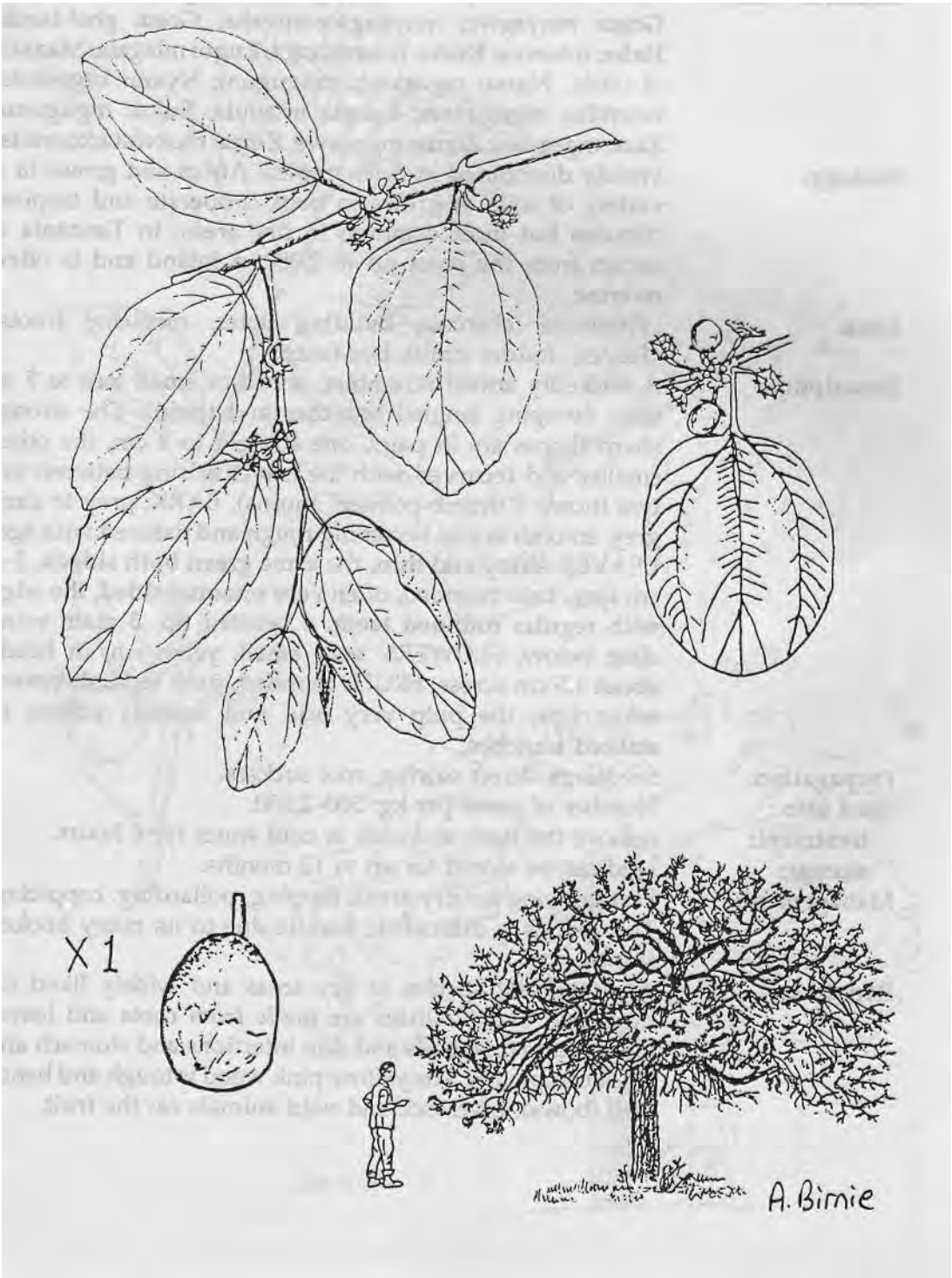
soak in cold water, crack hard seed cover.

storage:

seed can be stored for up to a year, after which viability starts to drop gradually.

Management: Fast growing for dry areas; lopping, pollarding, pruning, coppicing.

Remarks: A very important tree for dry areas because of its many uses. However, many parasites attack the leaves and fruits.

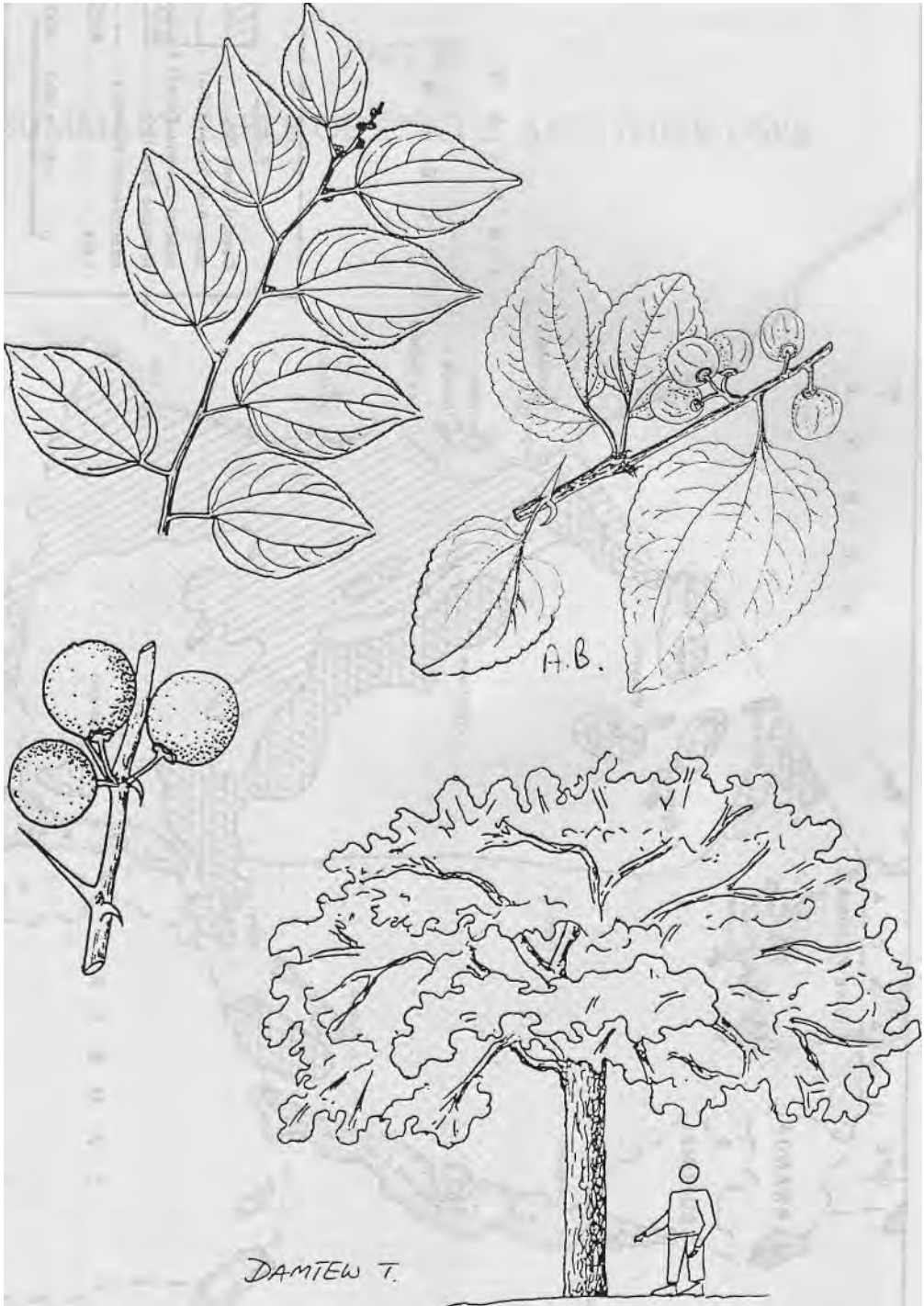


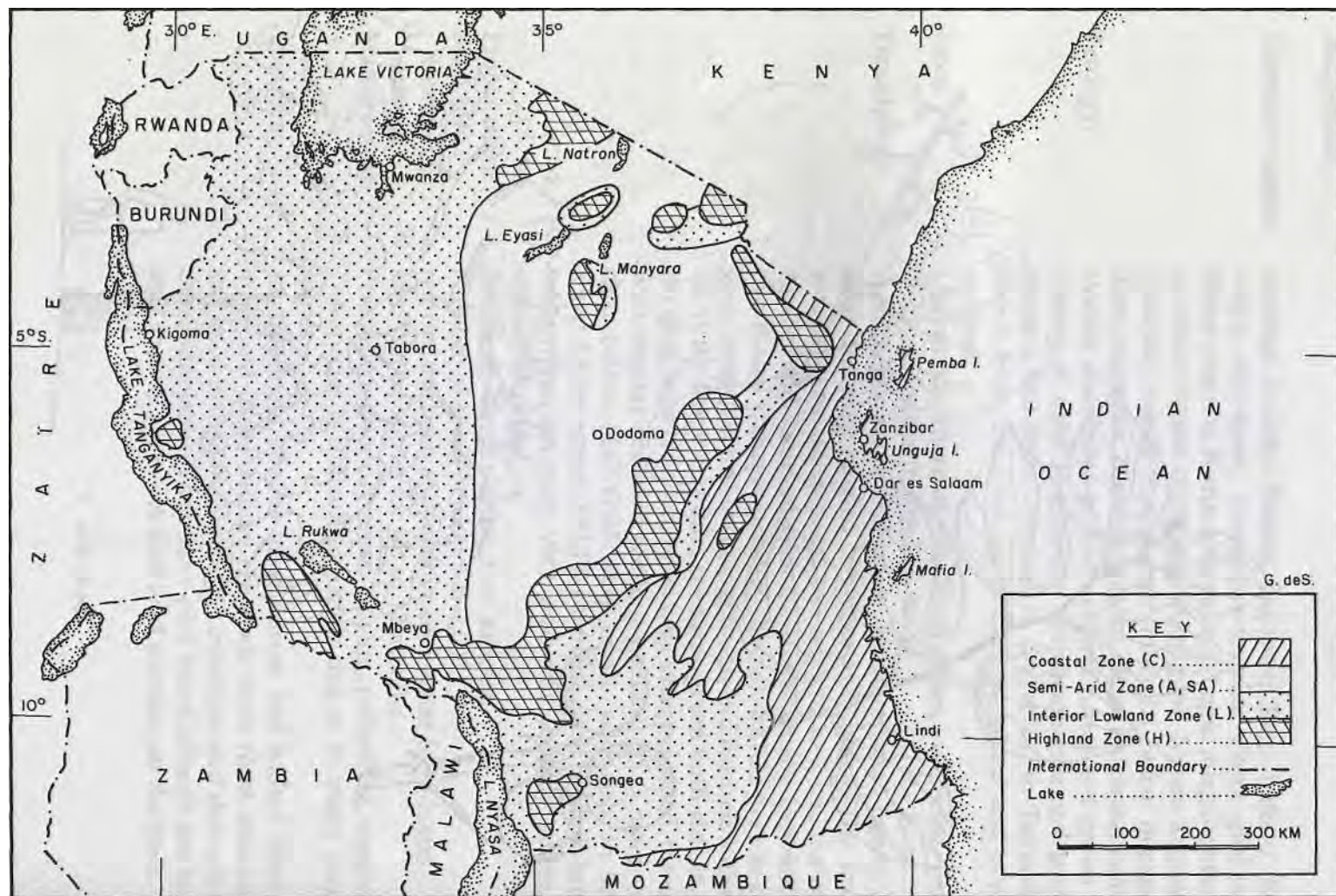
Ziziphus mucronata

Rhamnaceae

Indigenous

- Common names:** **Arusha:** oloilahi; **Bende:** kagobole; **Eng:** buffalo thorn; **Gogo:** mnyagwe, mnyangwe-mwaha; **Goro:** ghal-landi; **Hehe:** mtanula; **Kuria:** msarakanga; **Lugu:** mlagala; **Maasai:** ol oilale; **Nguu:** mgagawe, muguguni; **Nyam:** kagowole, kalembo, mgugunwa; **Sangu:** mtanula; **Suku:** mgugunu; **Zara:** mgegewa; **Zigua:** mgagawe; **Zinza:** mukwatanzumula.
- Ecology:** Widely distributed in drier tropical Africa and grows in a variety of soils. It grows in both temperate and tropical climates but most common in dry areas. In Tanzania it occurs from the coast up to 2,000 m inland and is often riverine.
- Uses:** Firewood, charcoal, building poles, medicine (roots, leaves), fodder (fruit), live fence.
- Description:** A wickedly armed scrambler, shrub or small tree to 7 m with drooping tangled branches and thorns. The strong, sharp thorns are in pairs, one straight to 2 cm, the other smaller and recurved with the leaves arising between the two thorns ("thumb-pointer" thorns). **BARK:** grey to dark grey, smooth at first becoming rough and fissured with age. **LEAVES:** **shiny and thin**, the **same green both** sideds, 3-6 cm long, base rounded, often very **unequal sided**, the edge with **regular rounded teeth**, a pointed tip, 3 main veins clear below. **FLOWERS:** very small, yellowish, in heads about 1.5 cm across. **FRUIT:** rounded, **dark reddish-brown** when ripe, the pulp very acid and scarcely edible, **in stalked bunches**.
- Propagation:** Seedlings, direct sowing, root suckers.
- Seed info.:** Number of seeds per kg: 500-2,000.
- treatment:** remove the flesh and soak in cold water for 6 hours.
- storage:** seed can be stored for up to 12 months.
- Management:** Fast growing for dry areas; lopping, pollarding, coppicing. The species is difficult to handle due to its many hooked spines.
- Remarks:** An important species in dry areas and widely liked for medicinal use. Poultices are made from roots and leaves and used to treat boils and skin infections and stomach and chest complaints. The yellow-pink wood is tough and bends well (bows). Livestock and wild animals eat the fruit.





Map 4. The main agro-ecological zones of Tanzania

PART III

SUMMARY TABLE OF SPECIES AND THEIR USES

	Wood					Food					Fodder		Environmental					Other Uses					
Derchemia discolor			x	x	>						x	>											
Bersama abyssinica	x	x		x									x	x									
Bombax rhodognaphalon								x						x					x				x
Borassus aethiopum		x	x		x	x		x	x		x								x	x			
Boscia salicifolia	x		x								x		x	x									
Brachylaena h/jillensis	x	*	X	X																			
Brachystegia bussei	x	x	x		x						x	x							x		x		
Brachystegia spiciformis	x	x	x		x						x	x	x						x		x		
Breonadia salicina	x		x	x																			
Bridelia micrantha	x	x	x	x				x			x		x	x		x							
Burkea africana	x	x	x	x							x	x											x
Cadaba farinosa	.	i						x	x		X												
Caesalpinia decapetala													x		x	x							
Caesalpinia pulcherrima														x									x
Cajanus cajan	x							x			x	x			x	x	x	x					
Calliandra calothyrsus	x		x								x	x	x		x	x	x	x	x				
Callistemon citrinus	x	x											x	x									
Callitris robusta			x	x																			x
Calodendrum capense	x	x	x	x									x	x	x	x							

	Wood					Food					Fodder	Environmental					Other Uses									
Ocotea usambarensis		x	x	x							x															
Olea capensis ssp. hochstetteri	x	x	x	x	x						x															
Olea capensis ssp. welwitschii	x	x			x						x															
Olea europaea ssp. africana	x	x	x		x				x		x	x													x	
Ormocarpum trachycarpum					x					x	*															
Qsyris lanceolate	"t	i	x	I	i						1													i	•	
Oxytenanthera abyssinica			x						x		x				x					x				i	•	
Ozoroa insignis			x								x									x						
Pappea capensis	x	x	x						x		x	x	x	x	x										x	
Parinari curatellifolia	x	x	x	x	x				x		x	x		x	x										x	
Parkinsonia aculeata	x	x									x	x	x	x	x										x	
Peticopsis angolensis	x	'%	x	x	x						X	x														
Persea aniericana																									x	
Phoenix reclinata	x		x																						x	
Piliostigma thonningii	x	x	x	x							x	x	x	x	x										x	
Pinus caribaea	x		x	x																					x	
Pinus kesiya	x		x	x																					x	
Pinus oocarpa			x																							
Pinus patula	x		x	x																						

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(At the beginning of each comment please write the page number and the subject or species name. Use the back of this form if you need more space.)

The Swedish International Development Authority, SIDA, has supported rural development programmes in countries in Eastern Africa since the 1960's. Many of these programmes have over the years developed a clear environmental profile. It has been recognized that conservation of soil, water and vegetation must form the basis for sustainable utilization of land. Hence the importance of integrating conservation in smallholder farming systems.

In 1982 SIDA established the Regional Soil Conservation Unit, RSCU, based in Nairobi, in order to facilitate exchange of regional experience. RSCU's mandate is to promote soil conservation, broadly defined as environmentally sound techniques for agricultural production incorporating crop and animal husbandry as well as agroforestry.

RSCU organizes training courses, workshops and study tours, prepares and distributes manuals and textbooks, gives technical advice, facilitates exchange of expertise and initiates pilot activities for the development of new knowledge, techniques and approaches. The regional mandate includes Eastern Africa defined as Eritrea, Ethiopia, Kenya, Tanzania, Uganda and Zambia.

In order to publicize the experiences from practical soil conservation and environmental rehabilitation work, RSCU issues series of publications which contain reports, technical handbooks and training materials produced in the region.



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ISBN 9966-896-16-3

Eucalyptus camaldulensis (E. rostrata)

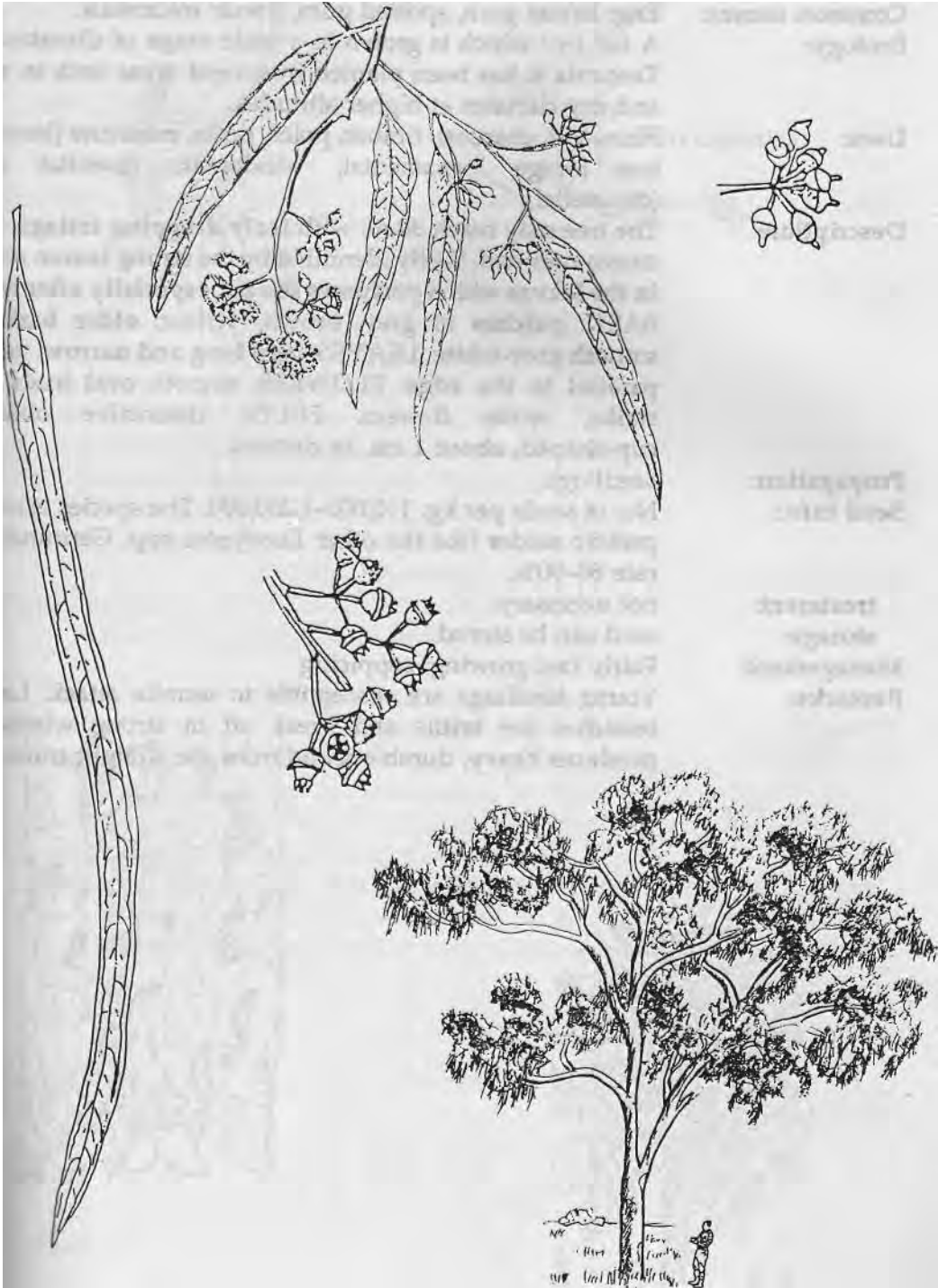
Myrtaceae

Australia

- Common names: **Chag:** mbanyi; Eng: Murray red gum, Red River gum. Swah: mkaratusi.
- Ecology: A tree widely distributed in eastern Australia where it is usually confined to valley bottoms liable to regular flooding. It requires underground water, but will grow in a wide range of soils and in a variety of climates. This was one of the first gum trees to be used elsewhere in the world, both in the Mediterranean and the tropics. It does well in semi-arid regions and tolerates a long dry season. In Tanzania it is planted in areas with little rainfall.
- Uses: Firewood, charcoal, poles (power lines), posts, timber (construction), plywood, veneer, bee forage, shade, ornamental, windbreak, tannin, dye, swamp reclamation.
- Description: A tall evergreen tree up to 25 m, deeply branched sometimes with a long **straight** bole, but often the branches are not straight. BARK: white to brown, **thin and peeling** in **long** strips; when cut it exudes red gum. LEAVES grey-blue, long and drooping to 30 cm. FLOWERS: **short conical bud caps**, white clusters. FRUIT: **very small capsules** at the end of thin stalks, 5-8 mm, 4 valves containing minute seeds.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 100,000-2,100,000. Germinates uniformly after 7-10 days with 15-40% germination rate, not necessary.
- treatment: seed can be stored for a long time.
- storage: seed can be stored for a long time.
- Management: Fast growing; pollarding, coppicing. Protect young trees from termites.
- Remarks: The tree has proved itself very adaptable as regards to **both** climate and soil. It does well in hot, dry areas and it **can** also withstand frost. Primarily good for quick-growing fuelwood, it is useful for woodlots and along roads, but **not** near crops due to root competition for water. The timber is red, hard and heavy.

Eucalyptus camaldulensis (E. rostrata)

Myrtaceae

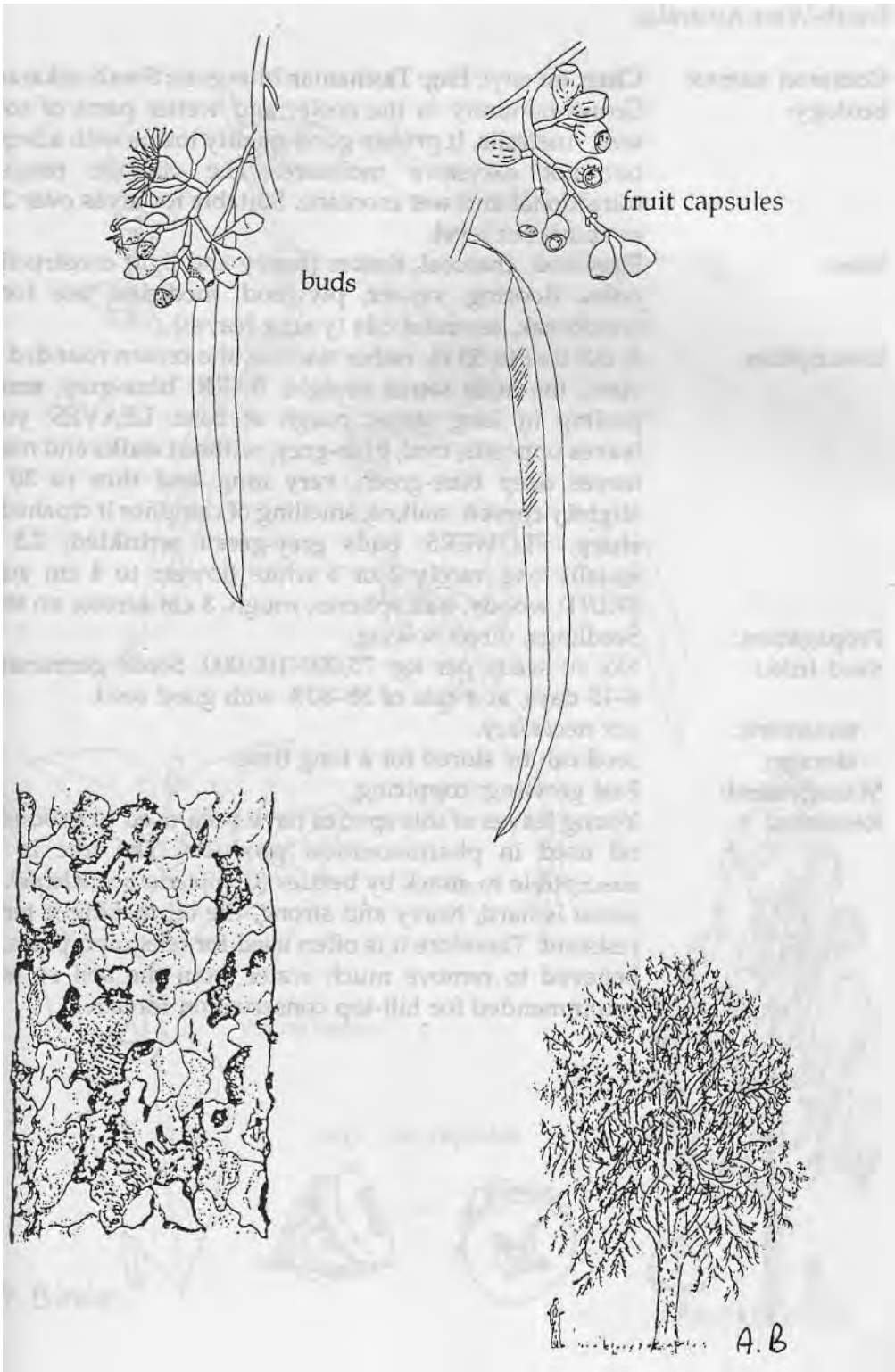


Eucalyptus citriodora

Myrtaceae

Eastern Queensland (Australia)

- Common names:** Eng: lemon gum, spotted gum. Swah: mkaratusi.
- Ecology:** A tall tree which is grown in a wide range of climates. In Tanzania it has been planted in several areas both in **wet** and dry climates at higher altitudes.
- Uses:** Firewood, charcoal, timber, poles, posts, medicine (leaves), bee forage, ornamental, windbreak, essential **oils** (citronellal).
- Description:** The tree may reach 30 m, with leafy drooping foliage, the crown rounded. Easily identified by the strong lemon **scent** in the leaves which perfumes the air, especially after rain. **BARK:** patches of grey, brown, yellow; older bark is smooth grey-white. **LEAVES:** very long and narrow, **veins** parallel to the edge. **FLOWERS:** smooth oval buds on stalks, white flowers. **FRUIT:** distinctive oblong cup-shaped, about 1 cm, in clusters.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: 110,000-1,200,000. The species is not a prolific seeder like the other *Eucalyptus* spp. Germination rate 60-90%.
- treatment:** not necessary.
- storage:** seed can be stored.
- Management:** Fairly fast growing; coppicing.
- Remarks:** Young seedlings are susceptible to termite attack. **Large** branches are brittle and break off in strong wind. It produces heavy, durable wood from the straight trunk.

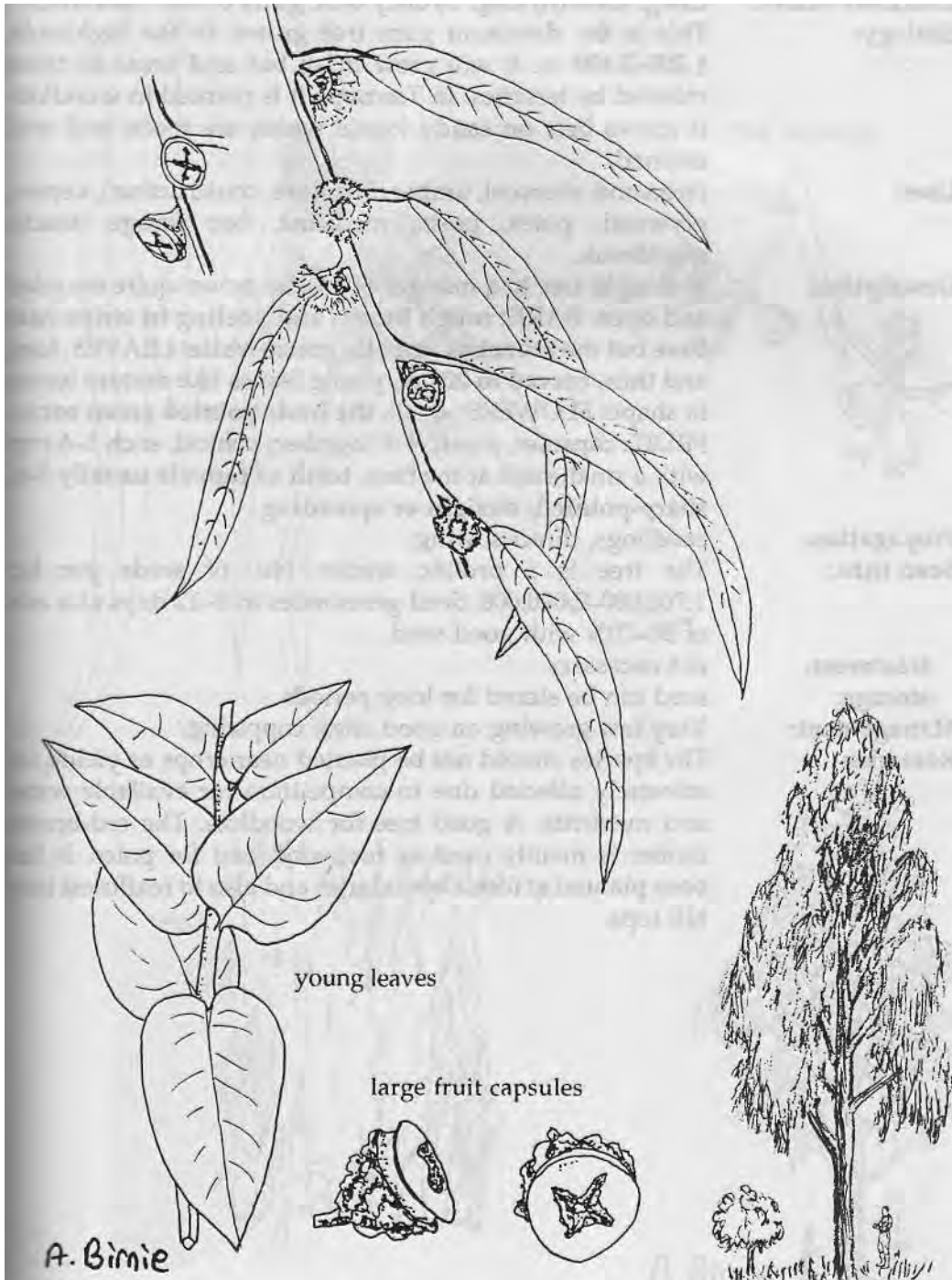


Eucalyptus globulus

Myrtaceae

South-West Australia

- Common names: Chag: mbanyi; Eng: Tasmanian blue gum; Swah: mkaratusi
- Ecology: Grows naturally in the cooler and wetter parts of **south-west** Australia. It prefers good-quality loams with adequate but not excessive moisture. The climatic range transitional and wet montane. Suitable for areas over **2,000** m above sea level.
- Uses: Firewood, charcoal, timber (heavy and light construction), poles, flooring, veneer, plywood, medicine, bee forage, windbreak, essential oils (young leaves).
- Description: A tall tree to 55 m, rather narrow, the crown rounded **and** open, the main stems straight. **BARK:** blue-grey, **smooth** peeling in long strips, rough at base. **LEAVES:** **young** leaves opposite, oval, blue-grey, without stalks and mature leaves deep blue-green, very long and thin to 30 cm, slightly curved, stalked, smelling of camphor if crushed, tip sharp. **FLOWERS:** buds grey-green wrinkled, 2.5 **cm**, usually one, rarely 2 or 3 white flowers to 4 cm **across** **FRUIT:** woody, half spheres, rough, 3 cm across, no **stalks**.
- Propagation: Seedlings, direct sowing.
- Seed info.: No. of seeds per kg: 75,000-100,000. Seeds germinate in 4-15 days, at a rate of 35-80% with good seed.
- treatment: not necessary.
- storage: seed can be stored for a long time.
- Management: Fast growing; coppicing.
- Remarks: Young leaves of this species have been used to produce a oil used in pharmaceutical products. The tree is very susceptible to attack by beetles (*Gonipterus scutellatus*). The wood is hard, heavy and strong, the oil making it termite resistant. Therefore it is often used for telegraph poles. It is believed to remove much water from the soil so is not recommended for hill-top conservation forests.



Eucalyptus saligna

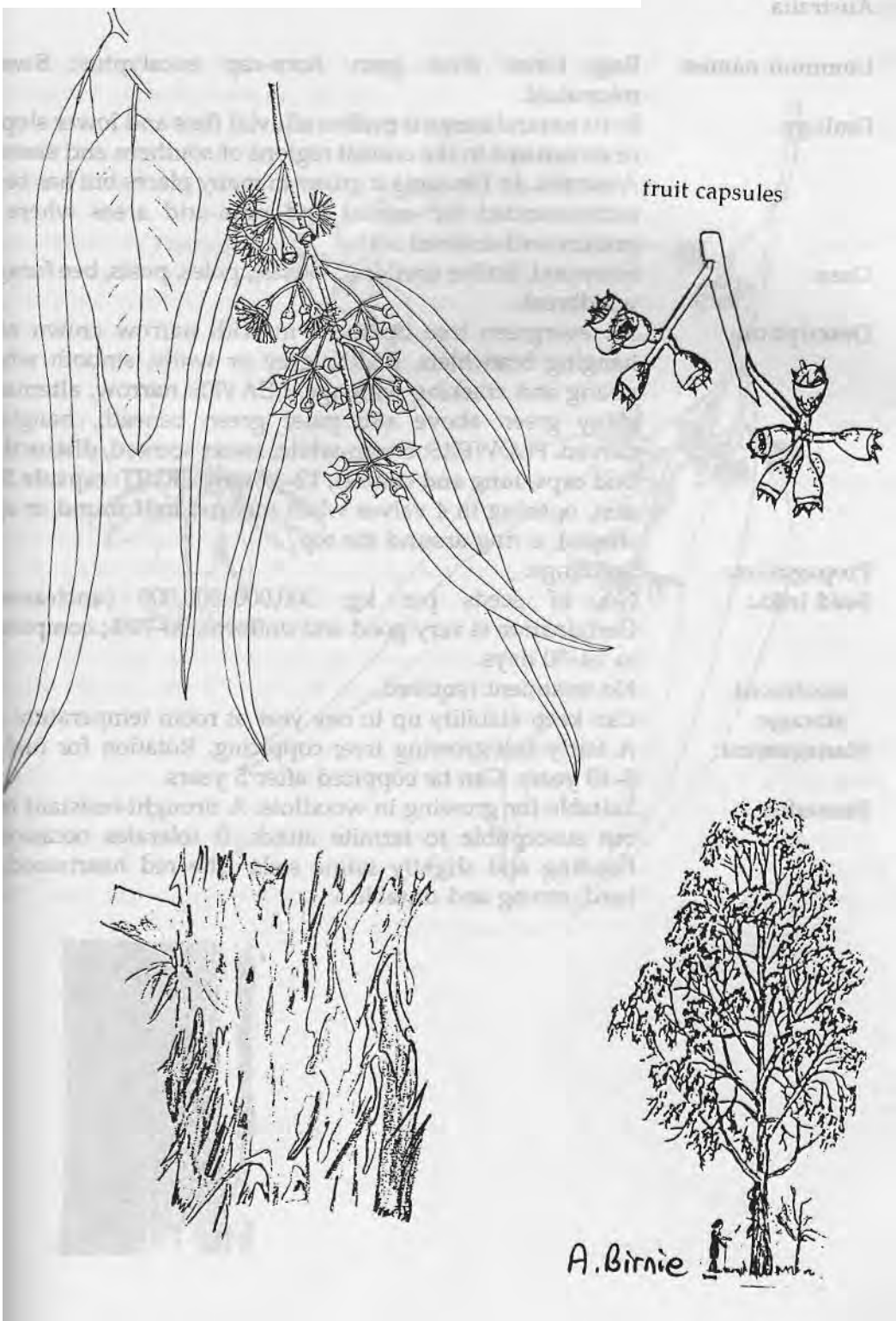
Myrtaceae

Coastal eastern Australia

- Common names:** Chag: mbanyi; **Eng:** Sydney blue gum; Swah: mkaratusi.
- Ecology:** This is the dominant gum tree grown in the highlands 1,200-2,400 m. It will grow in all but arid areas or **those** infested by termites. In Tanzania it is planted in woodlots. It grows best on sandy loams which are moist and well drained.
- Uses:** Firewood, charcoal, timber (furniture, construction), veneer, plywood, poles, posts, medicine, bee forage, **shade**, windbreak.
- Description:** A straight tree to a massive 60 m, the crown quite **rounded** and open. **BARK: rough brown and peeling in strips near** base but the branches **smooth**, green-white. **LEAVES: long and thin**, curved to 20 cm, young leaves like mature leaves in shape. **FLOWERS:** small, **the buds pointed** green cones. **FRUIT:** capsules, small, 4-8 together, conical, each 5-6 mm with a small stalk at the base, teeth of capsule usually 3-4, sharp-pointed, straight or spreading.
- Propagation:** Seedlings, direct sowing.
- Seed info.:** The tree is a prolific seeder. No. of seeds per kg 1,700,000-2,000,000. Seed germinates in 3-12 days at a **rate** of 30-70% with good seed.
- treatment:** not necessary.
- storage:** seed can be stored for long periods.
- Management:** Very fast growing on good sites; coppicing.
- Remarks:** The species should not be planted near crops as yields are adversely affected due to competition for available **water** and nutrients. A good tree for woodlots. The red-brown timber is mainly used as fuelwood and for poles. It has been planted at forest boundaries and also to reforest bare hill tops.

Eucalyptus saligna

Myrtaceae



Eucalyptus tereticornis

Myrtaceae

Australia

Common names: **Eng:** forest river gum, horn-cap eucalyptus; **Swah:** mkaratusi.

Ecology: In its natural range it prefers alluvial flats and lower slopes of mountains in the coastal regions of southern and eastern Australia. In Tanzania it grows in many places **but** has been recommended for coastal and semi-arid areas where **it** prefers well-drained soils.

Uses: Firewood, timber (building, boxes), poles, posts, bee forage, windbreak.

Description: An evergreen tree up to 30 m with narrow crown **and** hanging branchlets. **BARK:** grey or white, smooth **when** young and cracking with age. **LEAVES:** narrow, alternate, shiny green above and paler green beneath, hanging, curved. **FLOWERS:** cream-white, sweet scented, **distinctive bud caps, long and conical, 12-17 mm.** **FRUIT: capsule 5-8 mm,** opening in 4 valves when mature, **half round** or **egg** shaped, a ring around the top.

Propagation: Seedlings.

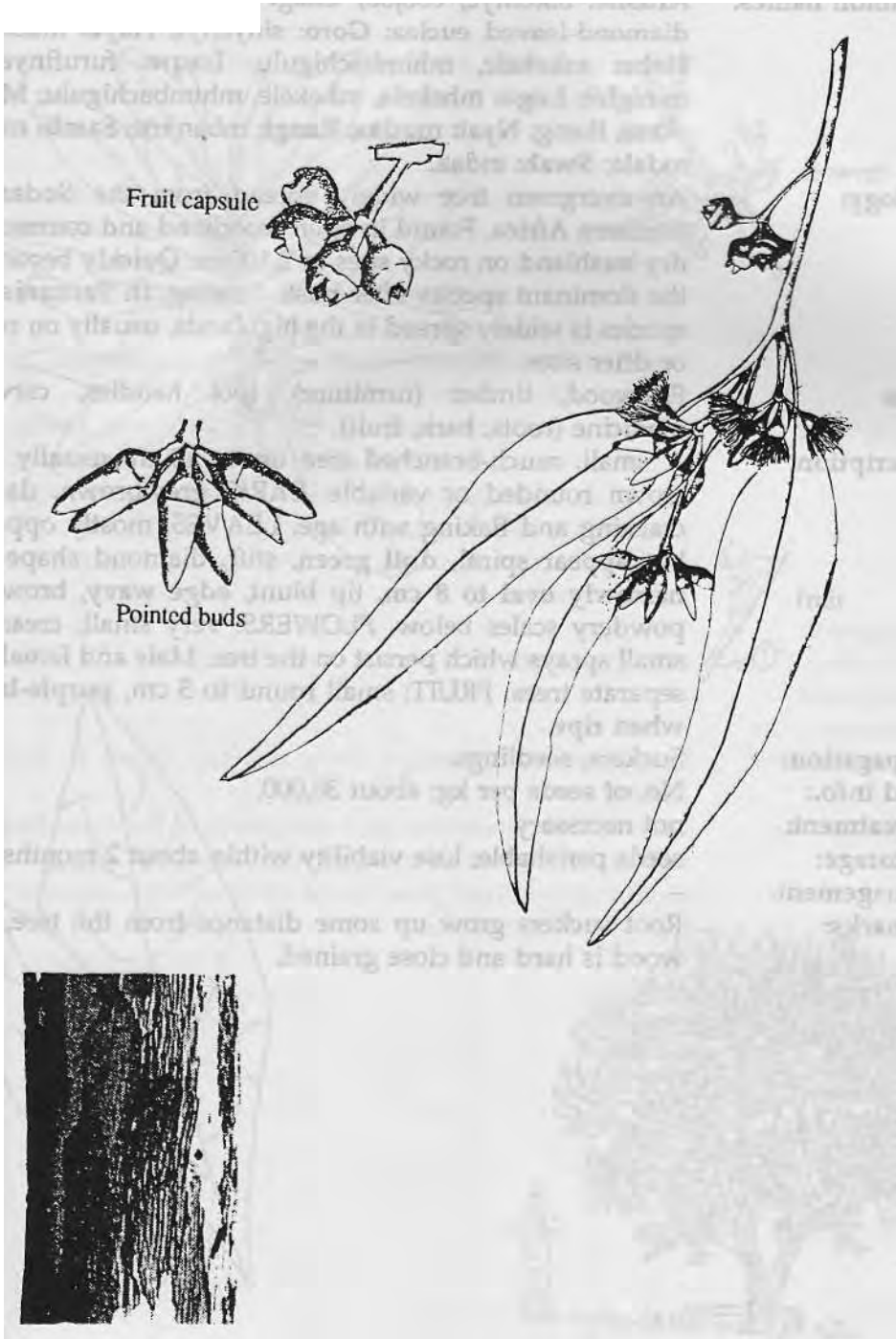
Seed info.: No. of seeds per kg: 300,000-500,000 (uncleaned): Germination is very good and uniform, 30-70%; completed in 14-30 days.

treatment: No treatment required.

storage: Can keep viability up to one year at room temperature.

Management: A fairly fast-growing tree; coppicing. Rotation for fuel is 8-10 years. Can be coppiced after 5 years.

Remarks: Suitable for, growing in woodlots. A drought-resistant **tree** but susceptible to termite attack. It tolerates occasional flooding and slightly saline soils. The red heartwood **is** hard, strong and durable.



Euclea divinorum

Ebenaceae

Indigenous

Common names: **Arusha:** olkoinye, osojoo; **Chag:** iwaruka, mkenye; **Eng:** diamond-leaved euclea; **Goro:** sinyanyi; **Haya:** musikizi; **Hehe:** mhekele, mhimbachigulu; **Iraqw:** furufinyanyi, minighit; **Lugu:** mhekela, mhekele, mhimbachigulu; **Meru:** ekeni, ikeng; **Nyat: madaa;** **Rangi:** mbanjiru; **Samb:** mdaa, mdala; **Swah:** mdaa.

Ecology: An evergreen tree widely spread from the Sudan to southern Africa. Found in open woodland and common in dry bushland on rocky sites to 2,100 m. Quickly becoming the dominant species after bush clearing. In Tanzania the species is widely spread in the highlands, usually on rocky or drier sites.

Uses: Firewood, timber (furniture), tool handles, carving medicine (roots, bark, fruit).

Description: A small, much-branched tree up to 10 m, usually less, crown rounded or variable. **BARK:** grey-brown, darker, cracking and flaking with age. **LEAVES:** mostly opposite but appear spiral, **dull green**, stiff, diamond shaped or **narrowly oval to 8 cm**, tip blunt, **edge wavy**, brownish powdery scales below. **FLOWERS:** very small, cream in small sprays which persist on the tree. Male and female on separate trees. **FRUIT:** small round to 5 cm, **purple-black when ripe.**

Propagation: Suckers, seedlings.

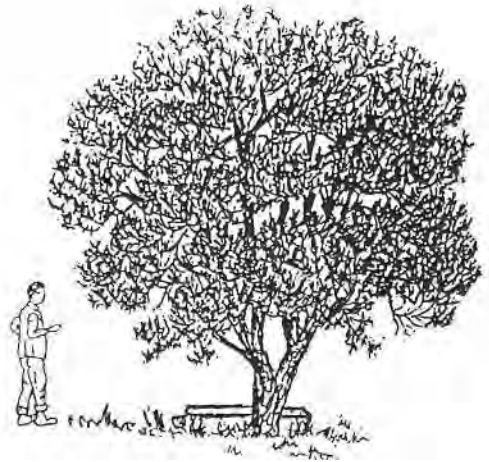
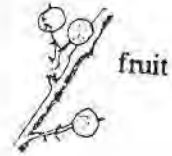
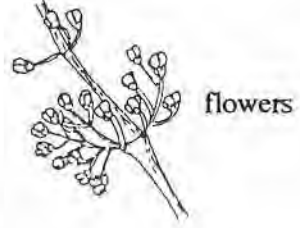
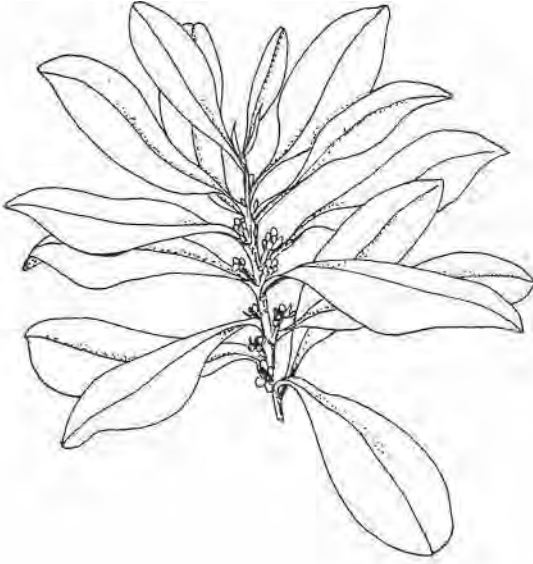
Seed info.: No. of seeds per kg: about 30,000.

treatment: not necessary

storage: seeds perishable; lose viability within about 2 months.

Management:

Remarks: Root suckers grow up some distance from the tree. The wood is hard and close grained.



Euphorbia tirucalli

Euphorbiaceae

Indigenous

- Common names:** **Bond:** sapu; **Eng:** finger euphorbia; **Gogo:** manyala, manyara; **Goro:** mulughwai; **Hehe:** mgofu; **Iraqw:** manyari; **Lugu:** kigomvu; **Maasai:** ol aile, oloile; **Nyam:** manyala; **Nyat:** munyaa; **Rangi:** luwundu, mnyala; **Samb:** sapu; **Suku:** inala, mhunga shalo, munyala; **Swah:** mnyara, mwasi, utupa; **Zinza:** mangara, mnyara.
- Ecology:** A succulent shrub frequently planted as a *botna* fence in dry areas but also found as a tree. It may have come from India but is now widespread and naturalized throughout Africa. In Tanzania it is common in livestock-rearing areas (Arusha, Dodoma, Mwanza and Singida).
- Uses:** Firewood, medicine (young branches), fish poison (latex), live fence, boundary marker.
- Description:** A dense straight-stemmed tree to 6 m or more, **the branchlets are smooth green, cylindrical in dense masses.** LEAVES: small, present on young stems, soon dropping. FLOWERS: yellow-cream, small, in dense clusters. FRUIT: **three-part capsules, hard, purple-green,** less than 1 cm across.
- Propagation:** Cuttings.
- Seed info.:** Not important.
- treatment:**
- storage:**
- Management:** Fast growing; coppicing, trim and top prune to make a hedge.
- Remarks:** Latex is very poisonous and dangerous to the eyes. Human milk is said to be a remedy if the latex gets into the eyes. Medicine from the plant must be used with extreme care due to its high toxicity.



Fagaropsis angolensis

Rutaceae

Indigenous

- Common names:** **Arusha:** olmoirijoi; **Bara:** marambit; **Chag:** mfu, mtua; **Eng:** fagaropsis; **Iraqw:** garumo, mtongoti, taewi; **Maasai:** olmoljoi; **Samb:** mkunguni.
- Ecology:** Common in dry evergreen forest and at the edges of wetter rain forests, 1,200-2,000 m. In Tanzania it is found in Kilimanjaro, West Usambara, Arusha, Mbulu and Iringa.
- Uses:** Firewood, timber (furniture, flooring).
- Description:** Medium or large deciduous tree from 7 m, occasionally to 20 m, with spreading crown. Sometimes with buttresses. **BARK:** grey-brown, slightly corky, branchlets purple-brown, **hairy, dotted with pale lenticels.** **LEAVES:** compound, opposite on a **stalk to 30 cm without hairs**, with 2-4 pairs of ovate leaflets and one terminal leaflet, 4-9 cm long, **aromatic when crushed.** Lateral leaves unequal sided. **FLOWERS:** small, inconspicuous, green-yellow, produced **in heads or on branched flowering stalks up to 12 cm long** on the bare tree. Sepals white, hairy outside. Male and female flowers separate on the same tree. **FRUIT: rounded to 1 cm** across, pale green with dark raised gland dots, soft, **shiny purple when ripe.**
- Propagation:** Seedlings, root suckers.
- Seed info.:** No. of seeds per kg: 4,000-4,500. The germination is very good and fast.
- treatment:** not necessary
- storage:** can keep viability for only a short time (2 months) at room temperature.
- Management:** Fairly fast growing; coppicing.
- Remarks:** The timber is fine, grey, moderately hard but not durable. Heavily exploited and threatened in the West Usambara Mountains as the timber is highly valued. It is easy **to** saw, finishes well and can make beautiful furniture and panelling.



Faurea saligna

Proteaceae

Indigenous

Common names: **Arusha:** ol garian; **Chag:** mfuka, mudi; **Eng:** beachwood; **Fipa:** msega; **Hehe:** mhenyi, mwemba; **Iraqw:** behetoh; **Lugu:** mhenyi, mwemba; **Mako:** nsese, sese; **Mate:** mteteleka; **Nyiha:** sense; **Samb:** msisi, msize, msizi mgosi.

Ecology: A tall tree found in both low- and high-altitude forest as far north as Nigeria and the Sudan and south to southern Africa. It is common around forest edges of Mts. Kilimanjaro and Meru, the Usambaras and Mbulu.

Uses: Firewood, charcoal, timber (furniture, construction), poles, posts, bee forage, medicine (roots, bark), mulch, ornamental, windbreak, tannin (bark), dye (bark).

Description: A deciduous shrub or slender forest tree to 20 m with a dense crown. Bole 7-10 m, often twisted. It resembles a gum tree. **BARK:** almost black, rough with deep grooves. **LEAVES:** leathery, **shiny and drooping, long and narrow, to 12 cm**, tip pointed, edge wavy, often slightly curved, a short red stalk. **FLOWERS:** dense **silky spikes, cream-purple, honey scented and attracting bees**, calyx red and hairy. **FRUIT:** small nutlets, with silky white hairs, the reddish styles persist and appear as **woolly pinkish-white spikes**.

Propagation: Seedlings.

Seed info.: No. of seeds per kg: about 165,000.

treatment: fresh seed should be sown for best results,

storage: perishable; loses viability within a month.

Management: Slow growing.

Remarks: The species is often left standing in croplands. Wood is resistant to termites. Hard, yellow-brown wood with an attractive grain, valued for furniture and panelling.



Ficus sycomorus (F. gnaphalocarpa)

Moraceae

Indigenous

- Common names: Eng: sycamore fig; **Fiome:** kuyu; Fipa: kivuzi; Gogo: mkuyu; Hehe: njombe; Maasai: ol gngangboli, ol mangulai, ol nanboli; Nyam: mkuyu; Rangi: mkuyu; **Zara:** mkuju.
- Ecology: A fig tree widespread all over Africa. It is found in all regions of Tanzania near rivers or where the watertable is high, always left standing when riverine forest is cut down. It prefers rich well-drained soils and elevations of 0-2,000 m.
- Uses: Firewood, carving, food (fruit), medicine (milky latex), shade, mulch, ornamental, soil conservation, **soil** improvement, bee hives, ceremonial.
- Description: A large deciduous spreading tree to 25 m, sometimes **with** stem buttresses and the **base commonly spreading over the ground**. **BARK: distinctive yellow to cream-brown. smooth.** **LEAVES:** oval to **almost circular**, to 15 cm, upper surface **rough** to **touch**, margin wavy, roughly tocihed, base heart **shaped**, a hairy stalk to 3 cm. **FRUIT:** in **leaf** axils or in dense **clusters** on **main branches and trunk**, each rounded 2-4 cm, yellow-red when ripe, edible.
- Propagation: Cuttings strike readily, wildings.
- Seed info.: No. of seeds per kg: 800,000-1,000,000.
- treatment: not necessary
- storage: seeds should not be stored.
- Management: Fairly fast growing; pruning, lopping.
- Remarks: The fruits are eaten by livestock, birds and wild animal. They can be dried and have a high food value. The tree **can** be intercropped and managed to reduce shade. In Kilimanjaro and Arusha bananas are grown underneath. The wood is light, pale and easy to work.

Ficus sycomorus (F. gnaphalocarpa)

Moraceae



Ficus thonningii

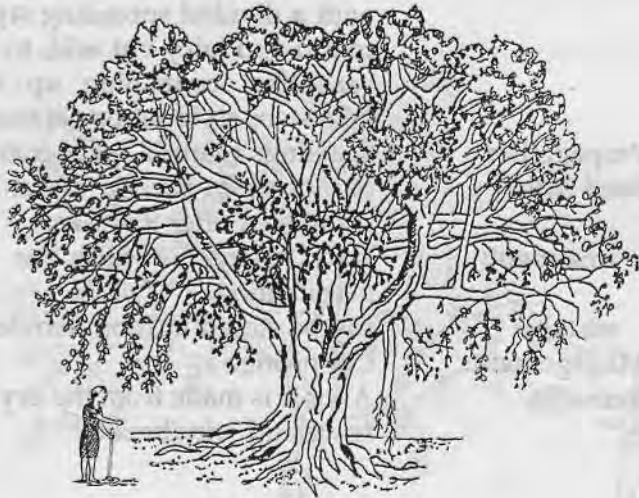
Moraceae

Indigenous

- Common names: Chag: mkuu; Eng: strangler fig; **Fiome**: tiita; **Gogo**: mlumba; Ha: mshasha, mtenza, mtoma mtenza, munyam-wonyu, Maasai: oreteti; Mako: ndola; **Ngoni**, mlandege, ndengo; Nyam: mlumba, mugumo, mla-ndaeje; **Nyir**: mugumo-wa-ntwike; Rangi: mumu-muzura; **Samb**: mvumo; Swah: mrumbapori.
- Ecology: Among the commonest figs in Tanzania. Widespread **in** Africa, often starting as an epiphyte on another tree, **then** buttressed or multi-stemmed from the growth of **aerial** roots. Widespread in upland forest, open grassland and riverine areas from 1,000-2,500 m. It is always left standing in cropland. Grows on a variety of soils.
- Uses: Medicine (bark), fodder, mulch, shade, ornamental, fibres glue, live fence, ceremonial.
- Description: A deciduous tree to 25 m. **BARK**: thin, **grey and smooth** often many **aerial stem roots**. **LEAVES**: very variable, oval to 12 cm, often smaller, **apex mostly rounded, base** rounded or tapering, shiny green, young leaves pale and hairy below **FRUIT**: in **axillary clusters** at **the** ends of **branches**, prominent on the bare tree, **round** to 1.5 cm, smooth or bumpy, **yellow or purple-red when ripe**. Two **small** leafy bracts **remain** at **the** base of **the** fig.
- Propagation: Large cuttings normally used.
- Seed info.: No. of seeds per kg: about 90,000.
- treatment: not necessary
- storage: seeds should not be stored.
- Management: Fast growing from cuttings and better than seed.
- Remarks: The fruit is eaten by small mammals and birds—thus dispersing the seed. The species should be protected **from** browsing when young. Usually not planted near buildings as the roots may crack foundations. Like all figs the extensive root system penetrates into the smallest crack **in** the soil or buildings where water might accumulate. Fig roots probably have a stronger suction force to draw **in** water than other trees—a reason why parasitic plants do not grow on fig trees.



young epiphytic seedling

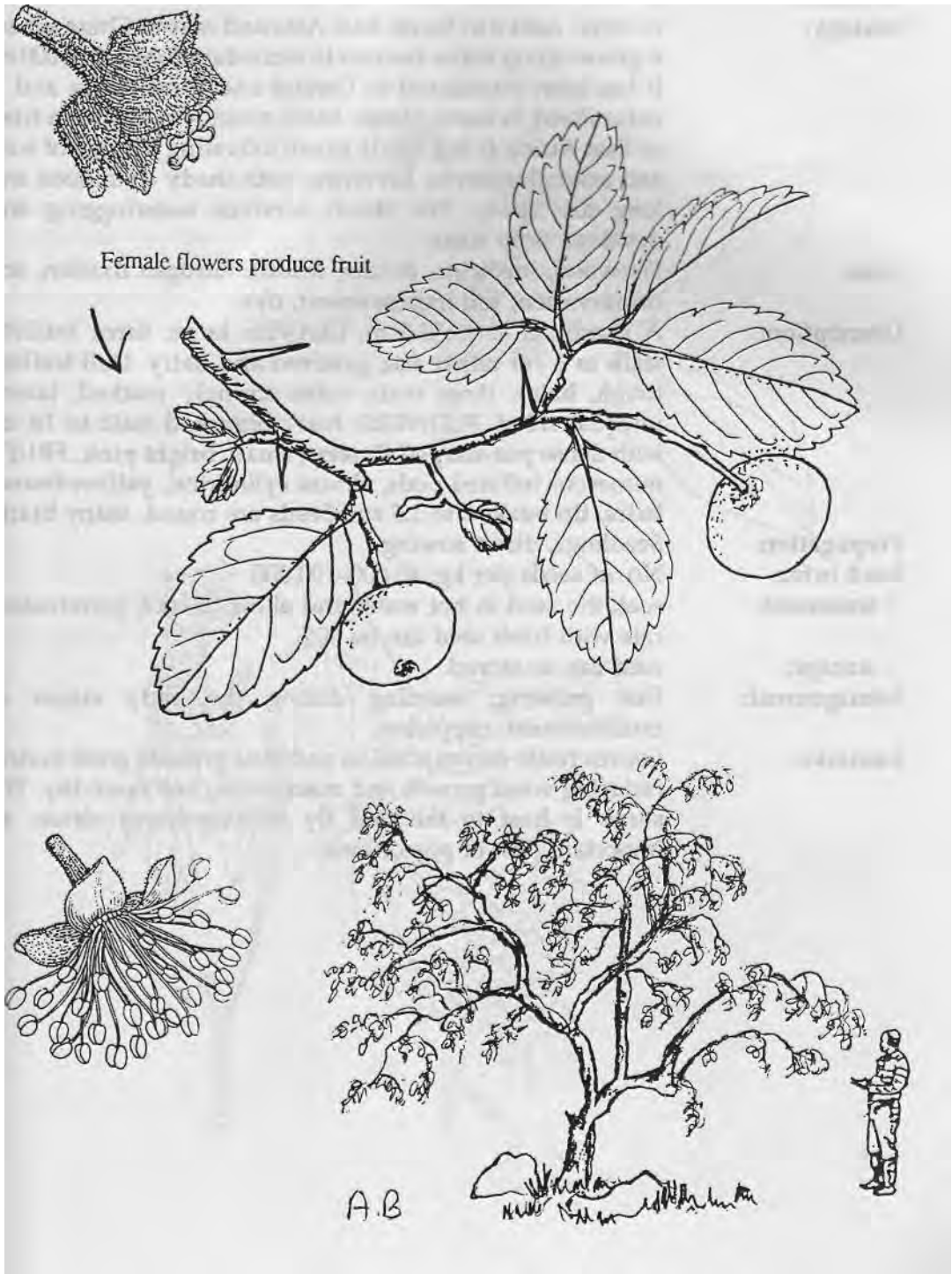


Flacourtia indica

Flacourtiaceae

Indigenous

- Common names:** Bende: msunga; Chag: msambuchi; Fipa: mwanga; Goro: tsapenai; Hehe: mgola; Iraqw: sokhaimo; Lugu: mgora; Mate: mbilipili, mngfunga; Mwera: mtawa; Nyam: mpuguswa, msingila; Nyat: musingisa; Rangi: mtundukarya; Suku: mpuguswa; Zara: mtawa; Zigua: mgola; Zinza: msungusu.
- Ecology:** Widespread in tropical Africa, this tree occurs in woodland from sea level to about 1,600 m. Common in Brachystegia woodland, it can grow in a variety of climates and soils but prefers sandy soil, a high watertable and a lot of sunlight
- Uses:** Firewood, timber, farm tools, fodder (leaves), food (fruit), medicine (leaves, bark, roots), live fence.
- Description:** A deciduous shrub or tree usually 3-5 m in height, but sometimes reaching 10 m. The trunk may be very spiny with characteristic branched masses. **BARK:** usually pale grey, powdery yellow at first, rather smooth, but may become brown-dark grey and flaking, revealing pale orange patches, the branches unarmed or armed with large spines. Leaves and branches with or without dense soft short hairs. **LEAVES:** variable in size, oval to round, to 12 cm, edge toothed, becoming leathery, 4-7 pairs veins clear on both surfaces, stalk to 2 cm. Leaves turn brilliant red-purple before they fall. **FLOWERS:** small, cream, fragrant. Male flowers with very many yellow stamens, female flowers with a divided spreading style. **FRUIT:** Red-purple-black, round and juicy but acid, to 2.5 cm across, hanging on the bare tree, containing up to 10 seeds, hard and flat. Persistent style set one-sided on fruit.
- Propagation:** Seedlings (natural regeneration).
- Seed info.:** No. of seeds per kg: about 200,000. Germination is slow, completed after 9 weeks.
- treatment:** crack, pierce or nick the hard seed coat to improve germination.
- storage:** can be stored at room temperature up to 6 months.
- Management:** Coppicing.
- Remarks:** A tonic is made from the dry leaves. It can be used as a live fence and windbreak.



Flemingia macrophylla (F. congesta)

Papilionoideae

South-East Asia

Common names:

Ecology:

A shrub native to South-East Asia and east to China where it grows along water courses in secondary forest, 0-2,000 m. It has been introduced to Central and West Africa and is naturalized in some places. More recently it has been tried in East Africa. It is a hardy plant, tolerating a range of soils and rainfall patterns, surviving both shady conditions and long dry spells. The shrub survives waterlogging and develops deep roots.

Uses:

Firewood, medicine, fodder, mulch, nitrogen fixation, soil conservation, soil improvement, dye.

Description:

A shrub, to about 2.5 m. LEAVES: large, three leaflets, stalk to 3 cm rather flat, grooved and hairy. Dull leaflets, tough, hairy, three main veins strongly marked, lateral unequal sided. FLOWERS: hairy branched stalk to 18 cm with dense pea-shaped flowers, small, bright pink. FRUIT: numerous inflated pods, almost cylindrical, yellow-brown hairs, tip beaked to 1.5 cm. Seeds are round, shiny black.

Propagation:

Seedlings, direct sowing.

Seed info.:

No. of seeds per kg: 45,000-100,000.

treatment:

soak the seed in hot water and allow to cool; germination rate with fresh seed can be 50%.

storage:

seed can be stored.

Management:

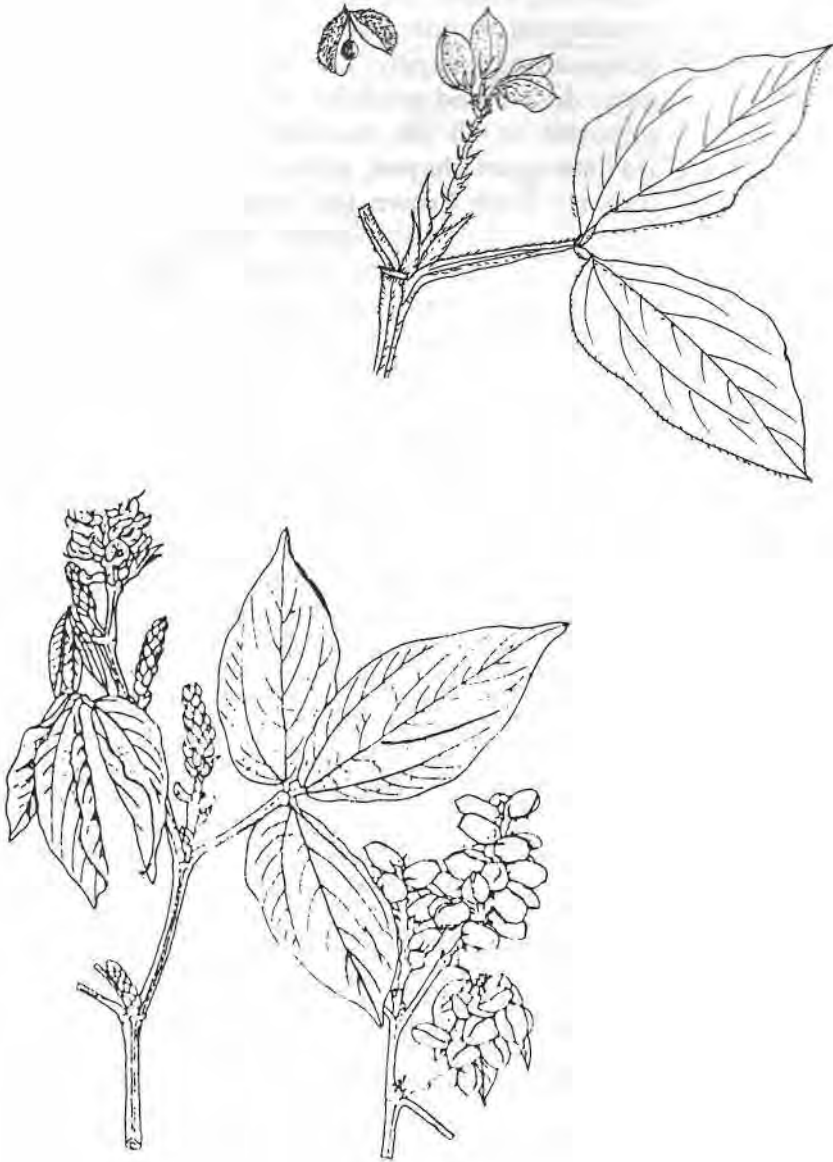
Fast growing; weeding during the early stages of establishment, coppicing.

Remarks:

Leaves resist decomposition and thus provide good mulch, reducing weed growth and maintaining soil humidity. The shrub is host to the pod fly *Melanogromyza obtusa*, an important pest of pigeon pea.

Flemingia macrophylla (F. congesta)

Papilionoideae

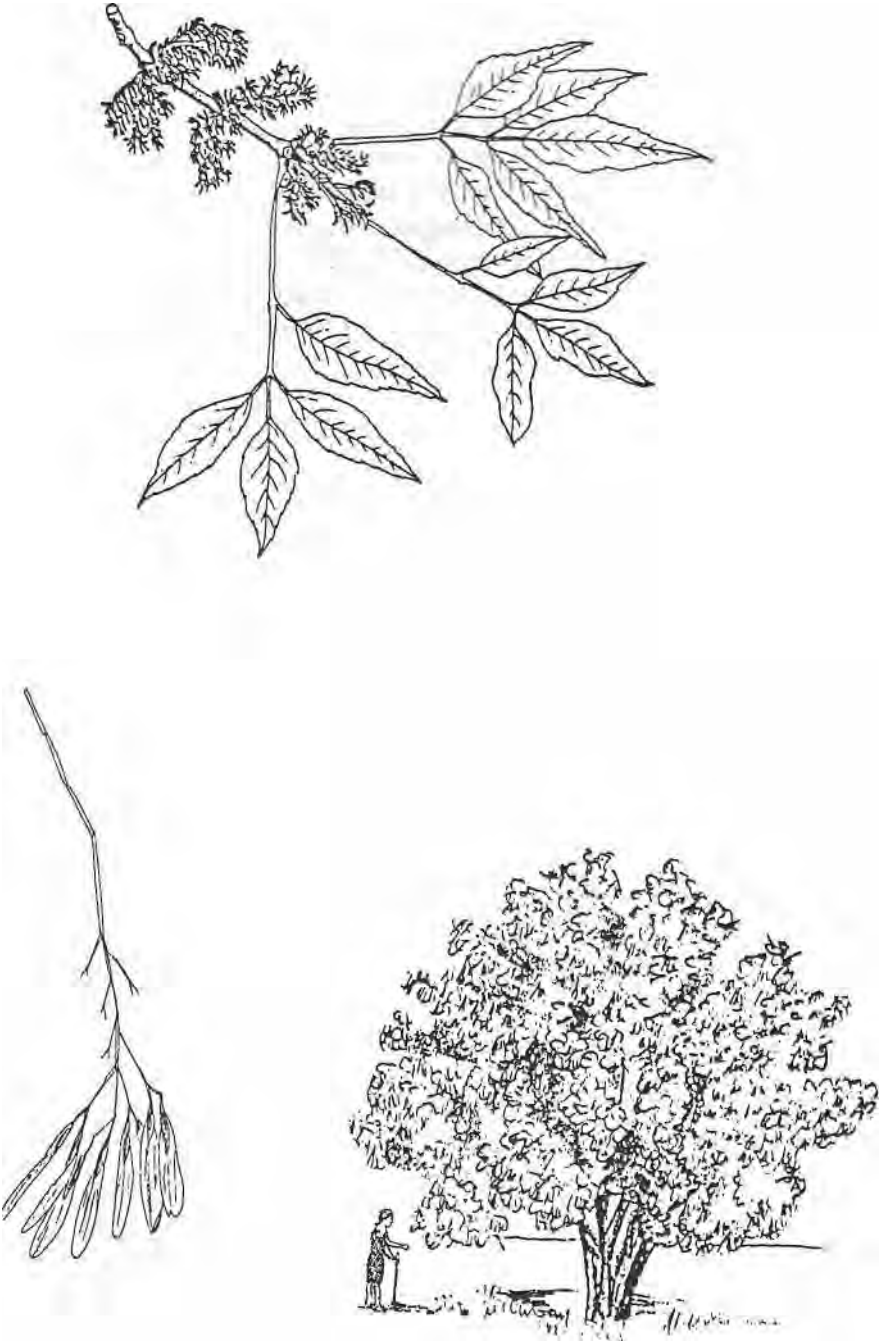


Fraxinus pennsylvanica

Oleaceae

North America

- Common names: Eng: Mexican ash.
- Ecology: Ash trees are usually native to temperate zones but a few extend to the tropics. This species is fairly widely planted in Tanzania at high altitudes, 1,500-2,800 m.
- Uses: Firewood, timber, posts, fodder (leaves), bee forage, shade, ornamental, windbreak.
- Description: A spreading, shapely, deciduous tree up to 15 m. BARK: grey, darker and cracking with age. LEAVES: compound, opposite, to 30 cm, **crowded at the ends of branches, leaflets spear shaped**, up to 10 cm long, edge irregularly toothed. **Dark brown leaf buds** conspicuous before they open and new lime-green leaves appear. FLOWERS: without petals, **male stamens purple-brown**, female separate and very small, both in terminal sprays. FRUIT: single winged **and up to 5 cm on thin stalks**, hanging a long time in **clusters on the tree**.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 26,000-28,000.
- treatment: soak in cold water for 12 hours.
- storage: can retain viability up to 6 months at room temperature.
- Management:
- Remarks: In some areas of Tanzania this tree has been planted as a shade tree.

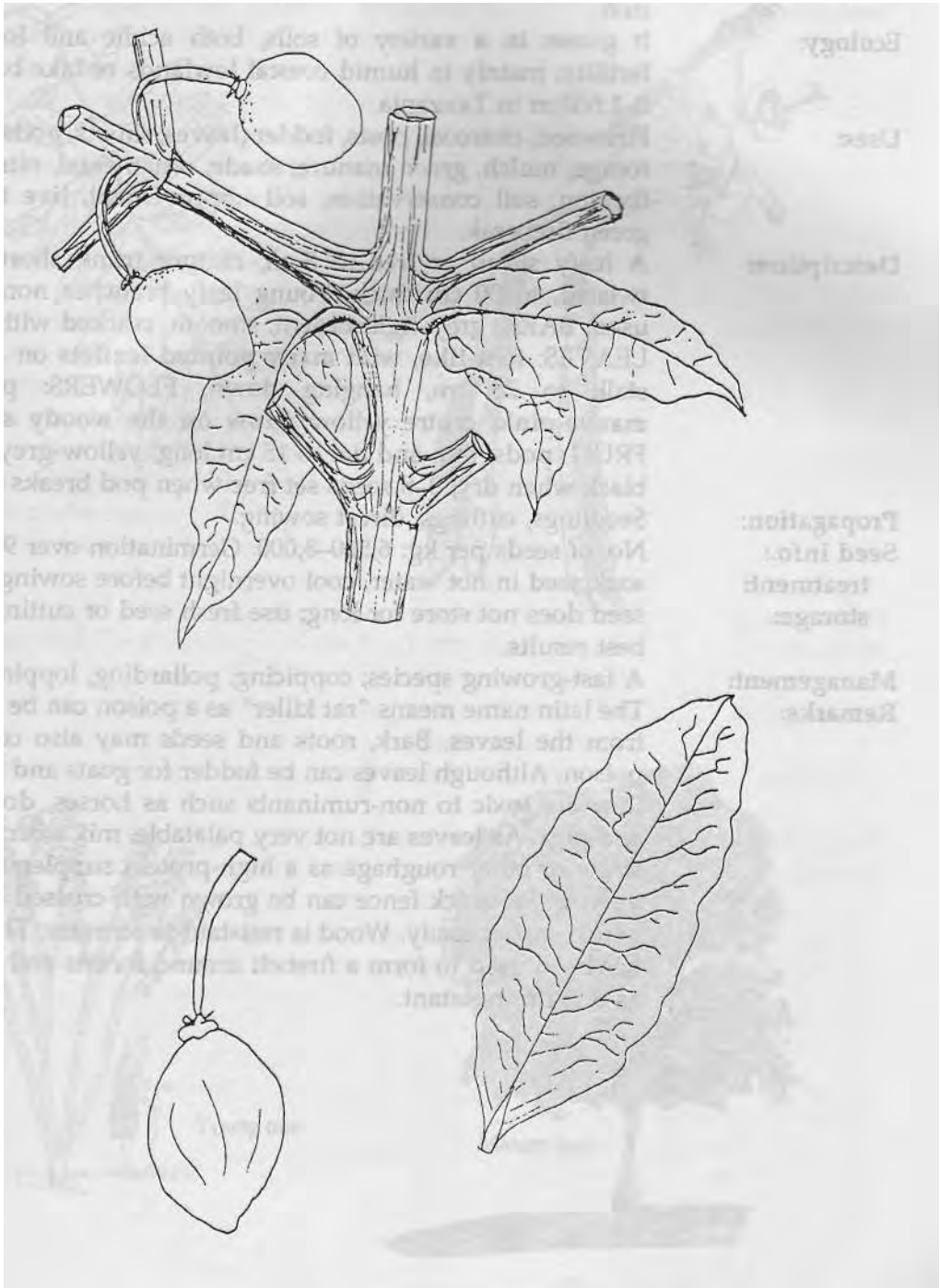


Garcinia livingstonei

Guttiferae

Indigenous

- Common names:** **Hehe:** mpipete; **Nyam:** kanala; **Swah:** mpekechu, mutumbi.
- Ecology:** This tree is widespread in riverine forest and in open woodland in low-altitude tropical Africa, 0-1,800 m; often under larger trees.
- Uses:** Food (fruit), medicine (leaves), utensils (twigs), soil conservation, fodder.
- Description:** A distinctive evergreen tree or shrub, 2-10 m, with a short bole. Garcinia bark exudes drops of yellow to red latex when damaged. **Tough erect branches** producing a heavy conical crown. **BARK:** dark grey-black, ridged. **LEAVES:** stiff and leathery **in pairs or threes**, 4–14 cm, edge usually wavy, **the veins irregular and raised on shiny upper surface**. **FLOWERS:** cream-green, in small clusters, a sweetish smell, small green buds sticky with resin. **FRUIT:** **yellow-orange oval, 2.5 cm** diameter, very many, edible, acid-sweet, up to 5 seeds.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: about 500. Germination is good and fast.
- treatment:** not necessary.
- storage:** seeds should not be stored; they lose viability within a few weeks.
- Management:** Fairly fast growing.
- Remarks:** Trees in this family have yellow sap and resin or oil glands. Leaf extracts have shown some antibiotic properties. Wild animals browse the leaves. Twigs are used in some areas to stir porridge.



Gliricidia sepium

Papilionoideae

Central America, Mexico

Common names: **Eng:** Mexican lilac, mother of cocoa, quick stick, tree of iron.

Ecology: It grows in a variety of soils, both acidic and low in fertility, mainly in humid coastal lowlands or lake basins, 0-1,600 m in Tanzania.

Uses: Firewood, charcoal, posts, fodder (leaves, shoots, pods), bee forage, mulch, green manure, shade, ornamental, nitrogen fixation, soil conservation, soil improvement, live fence, green firebreak.

Description: A leafy shrub or tree to 8 m, mature trunk short and twisted, to 30 cm thick. Young leafy branches normally used. **BARK:** grey-light brown, smooth, cracked with age. **LEAVES:** **fern-like**, with **many pointed leaflets** on a leaf stalk to 25 cm, hanging down. **FLOWERS:** pretty, **mauve-pink**, centre yellow, **grow on the woody stems**. **FRUIT:** pods, thin and flat to 15 cm long, yellow-grey then black when dry; 3-8 seeds set free when pod breaks open.

Propagation: Seedlings, cuttings, direct sowing.

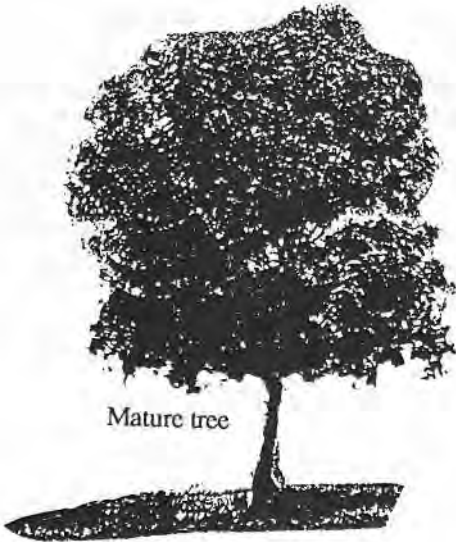
Seed info.: No. of seeds per kg: 6,500-8,000. Germination over 90%.

treatment: soak seed in hot water, cool overnight before sowing,

storage: seed does not store for long; use fresh seed or cuttings for best results.

Management: A fast-growing species; coppicing, pollarding, lopping.

Remarks: The latin name means "rat killer" as a poison can be made from the leaves. Bark, roots and seeds may also contain poison. Although leaves can be fodder for goats and cattle, they are toxic to non-ruminants such as horses, donkeys and pigs. As leaves are not very palatable, mix with grass, straw or other roughage as a high-protein supplement. A very useful quick fence can be grown with crossed stakes which sprout easily. Wood is resistant to termites. The tree has been used to form a firebelt around forests and farms as it is fire resistant.

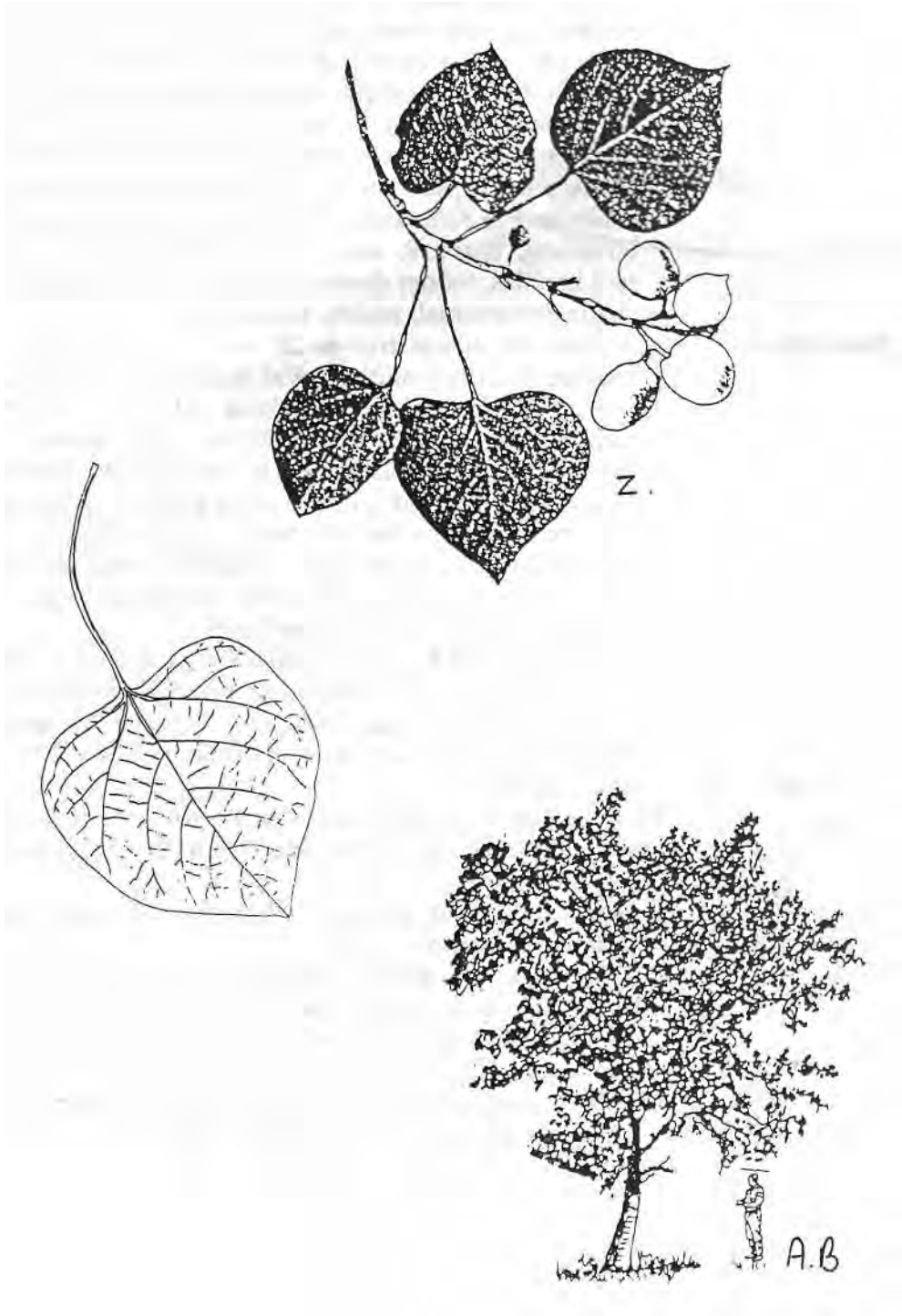


Gmelina arborea

Vetbenaceae

South Asia

- Common names:** **Eng:** gmelina, white teak.
- Ecology:** Native to the lowlands of India, Burma and Sri Lanka. A useful tree planted worldwide, 0-1,200 m, but relatively new to Tanzania. It prefers hot, humid areas with fertile well-drained loams. Avoid dry poor sands. Its climatic range is moist plateau, wet tropical and dry plateau. In Tanzania the species has performed well in Rau forest, Moshi and Geita Districts.
- Uses:** Firewood, charcoal, timber (furniture), veneer/plywood, poles, tools, fodder (leaves, fruit), bee forage, shade, ornamental, windbreak.
- Description:** A deciduous tree which may reach 26 m, usually much smaller, a fairly open crown, the base often multi-branched, **BARK:** Pale cream when young, grey-brown with age, corky, rough. **LEAVES:** large, **tip pointed, heart shaped, shiny above but pale and softly hairy below**, on stalks to 12 cm. **FLOWERS:** attractive **peach-yellow, bell shaped** abundant nectar attracts bees. **FRUIT:** **orange when ripe, 2.5 cm long** with 1-4 seeds inside. The fruity smell attracts bats.
- Propagation:** Seedlings, direct sowing, cuttings.
- Seed info.:** No. of seeds per kg: 1,400. Germination 40-80% in 20-50 days.
- treatment:** not necessary but soak in cold water for 24 hours to improve germination.
- storage:** seed can be stored for a year before it starts to lose viability.
- Management:** Fast growing; pruning, lopping, coppicing.
- Remarks:** Protect young trees from livestock. Young trees do not compete well with weeds, but once established **compete** with crops and suppress undergrowth and thus should **not** be grown near cultivated land. The soft grey-white timber is light but strong.

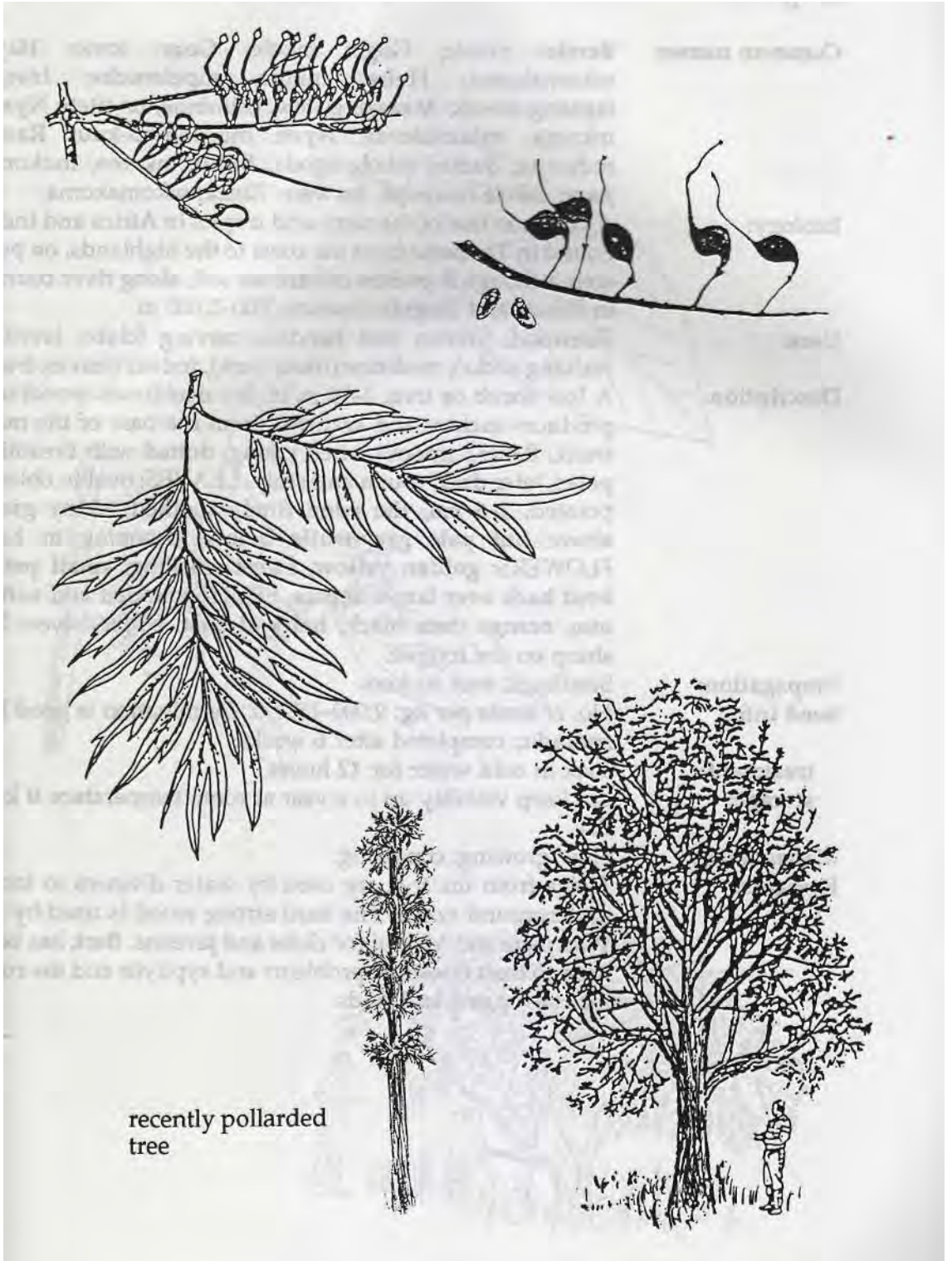


Grevillea robusta

Proteaceae

Southern and eastern Australia

- Common names: Chag: meresi; Eng: grevillea, silky oak; Swah: mgrivea.
- Ecology: Naturally growing in the forest areas of southern and eastern Australia from near sea level to over 1,000 m. It will grow on a wide variety of soils except heavy clay. It can grow well in low-rainfall areas as well as montane zones. In Tanzania it has been planted as a nurse tree for *Olea capensis* in the Usa forest project and as a commercial tree in Meru forest plantations. It has also been used as a coffee shade tree in Kilimanjaro, Arusha and Mbeya regions.
- Uses: Firewood, charcoal, timber (furniture), veneer/plywood, tool handles, fodder (leaves), bee forage, soil conservation, shade, ornamental, mulch, windbreak.
- Description: A semi-deciduous tree to 20 m with a straight trunk, angular branches and an oval leafy crown. BARK: dark grey, rough, vertically grooved. LEAVES: distinctive, fern-like, very divided, leathery, pale green above, silver-grey below. Fallen leaves are slow to decompose. FLOWERS: very many, in one-sided golden-orange spikes, with much nectar which attracts bees and sunbirds. FRUIT: capsules, about 1 cm with a slender beak, green then yellow-brown, splitting to set free 2 winged seeds.
- Propagation: Wildings commonly used, seedlings.
- Seed info.: No. of seeds per kg: 70,000-120,000. The species is a prolific seeder but the seed is difficult to collect. There are only 2-3 days between seed maturity and dispersal by wind and only mature seeds are useful. Germination rate 30%-90%.
- treatment: not necessary.
- storage: mature seed can be stored for up to three months. The storage period can be extended up to 2 years if seeds are refrigerated.
- Management: Moderate to fast growing; pollarding, lopping, pruning. Young trees coppice well.
- Remarks: This tree is important for farmers as a general utility timber and dry season fodder. Relatively easy to establish and manage. When grown with food crops, branches are pruned and pollarded and lateral roots may also be pruned to reduce competition with crops. The hard timber has an attractive grain—the colour and silky surface rather like true oak (*Quercus*).



recently pollarded
tree

Indigenous

Common names: Bende: mkole; Gogo: mkole; Goro: lomo; Haya: mkomakoma; Hehe: mkole, mpelemehe; Iraqw: lagaang-aawak; Maasai: esitete, osiminde, os siteti; **Nyam:** mkoma, mkomalendi; Nyat: musuna-nu-kuu; **Rangi:** mduwau; Samb: mkole-ngoda; **Suku:** mkoma, mukoma; Zara: mkole mweupe, mswere; Zinza: mkomakoma.

Ecology: A common tree of the semi-arid tropics in Africa and India. Found in Tanzania from the coast to the highlands, on **poor** soils although it prefers calcareous soil, along river courses in Babati and Singida districts, 800-2,000 m.

Uses: Firewood, timber, tool handles, carving (clubs, javelins, walking sticks), medicine (roots, bark), fodder (leaves, fruit).

Description: A low shrub or tree, 2-10 m in dry deciduous woodland, •produces suckers and branches from the base of the **main** trunk. **BARK:** smooth when young, dotted with breathing pores, later dark, rough and scaly. **LEAVES:** oval to oblong, pointed, 1-8 **cm, the edge finely toothed, shiny green** above but pale grey-white **below**, drooping in **heat**. **FLOWERS:** **golden yellow**, sweet smelling, **small petals** bent back **over** larger sepals. **FRUIT:** rounded and soft 5 **mm**, orange then black, hairy at first, edible, sweet **but** sharp on the tongue.

Seedlings, root suckers.

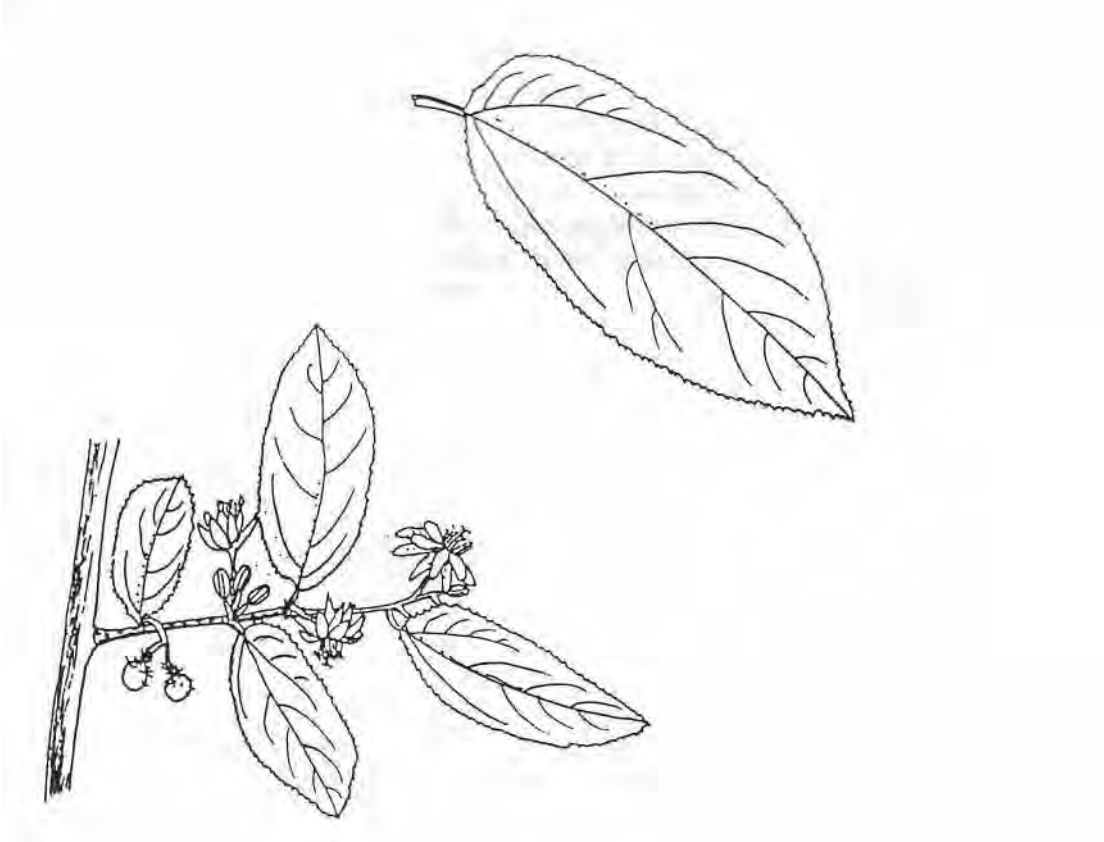
No. of seeds per kg: 9,000-15,000. Germination is good **but** sporadic; completed after 6 weeks.

soak in cold water for 12 hours.

can keep viability up to a year at room temperature if **kept** dry.

Slow growing; coppicing.

Twigs from the tree are used by water diviners to **locate** underground water. The hard strong wood is used by **the** Waarusha and Maasai for clubs and javelins. Bark has **been** used to treat intestinal problems and syphylis and the roots for chest pains and colds.

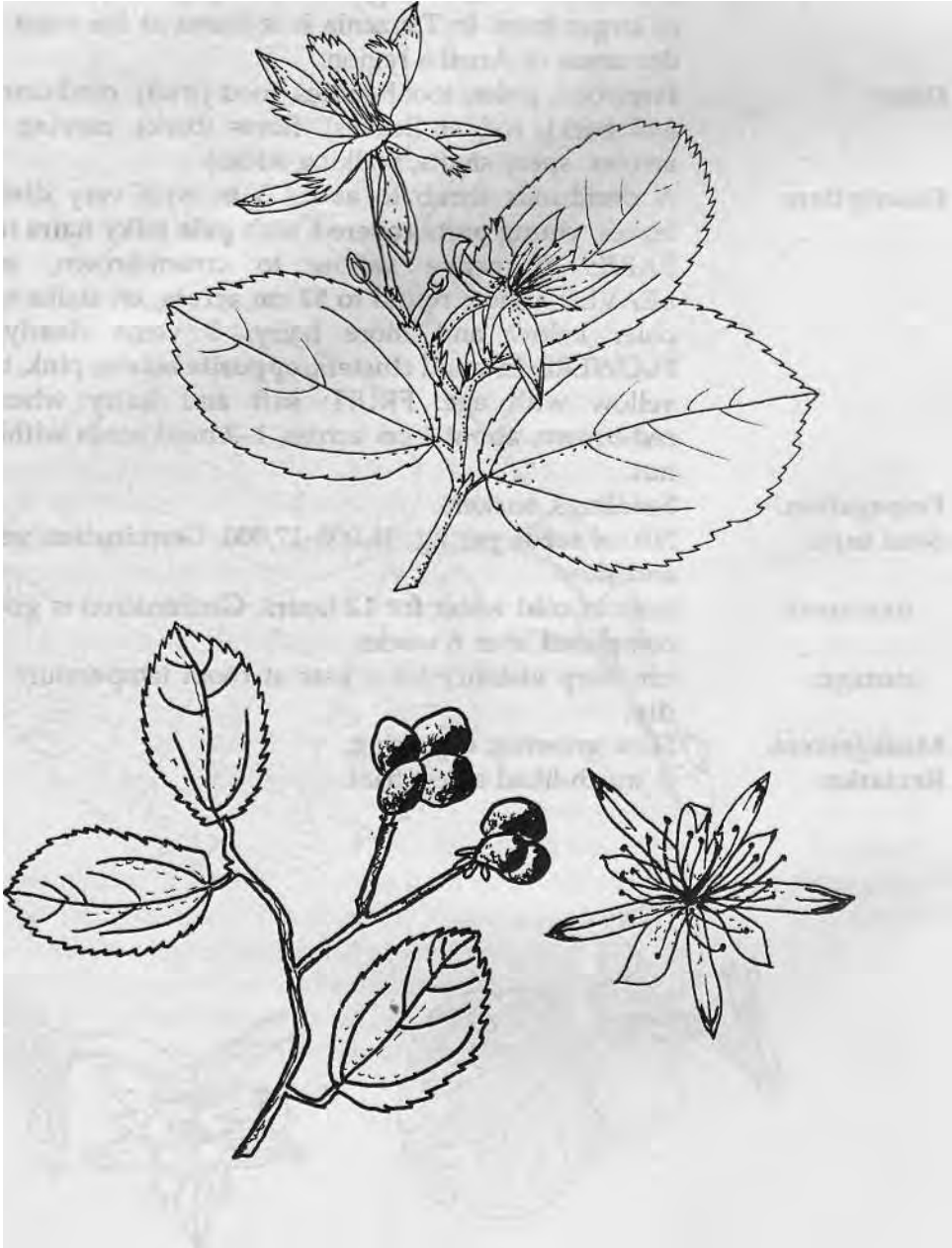


Grewia similis

Tiliaceae

Indigenous

- Common names: Bond: mnangu; Goro: saski; Hehe: mpelemehe; Iraqw: furudou, mgombaryandi, saski; Nyam: mkomabubu; Nyat: mukhantokhanto; Nyir: mukuma; Rangi: mnangu; Samb: mnangu; Swah: mkole; Zara: mkole mweupe.
- Ecology: Widespread along the coast and in Acacia woodlands and dry montane forests. In Tanzania it is common in the Usambara Mountains, in coastal areas, Mbulu, Iringa and Njombe.
- Uses: Firewood, poles, utensils (storage pots), food (leaves, fruit), medicine (bark), fodder (leaves).
- Description: A shrub, 2-3 m, sometimes a climber. BARK: grey or grey-brown, smooth at first, becoming rough and flaking with age; fibrous. LEAVES: shiny dark green above, hairy below, oval to rounded, about 5 cm long, often smaller, tip rounded or notched, base rounded, not one-sided, 3 *clear* veins from the base, edge finely toothed. FLOWERS: bright mauve or pink, sometimes white. Produced in terminal shoots or between the leaf and branchlet, 3-6 together, star shaped, 5 sepals pointed and mauve inside, as long or longer than petals. FRUIT: small fleshy berries. bright red or orange when ripe, deeply 4-lobed, each 6 mm across.
- Propagation: Seedlings, suckers.
- Seed info.: No. of seeds per kg: 10,000-15,000. Germination is good but takes a long time (6 weeks),
- treatment: soak in cold water for 12 hours.
- storage: can keep viability for a year at room temperature if kept dry.
- Management: Slow growing; coppicing.
- Remarks: Potential for use along contour strips and on slopes Pounded leaves are used as a dry-season vegetable in West Usambara. The sticky substance under the bark has been used as a cure for sores.



Grewia villosa

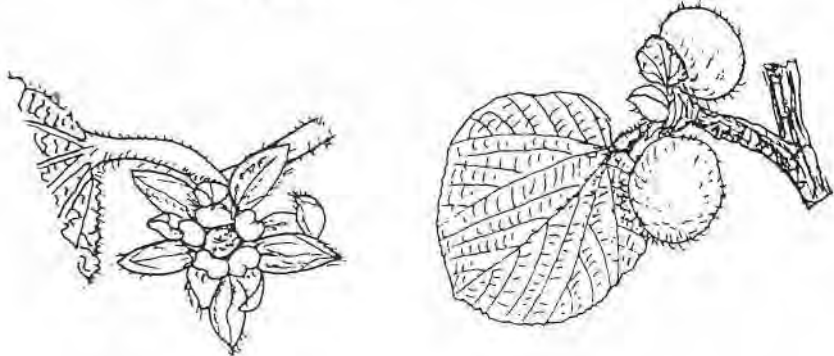
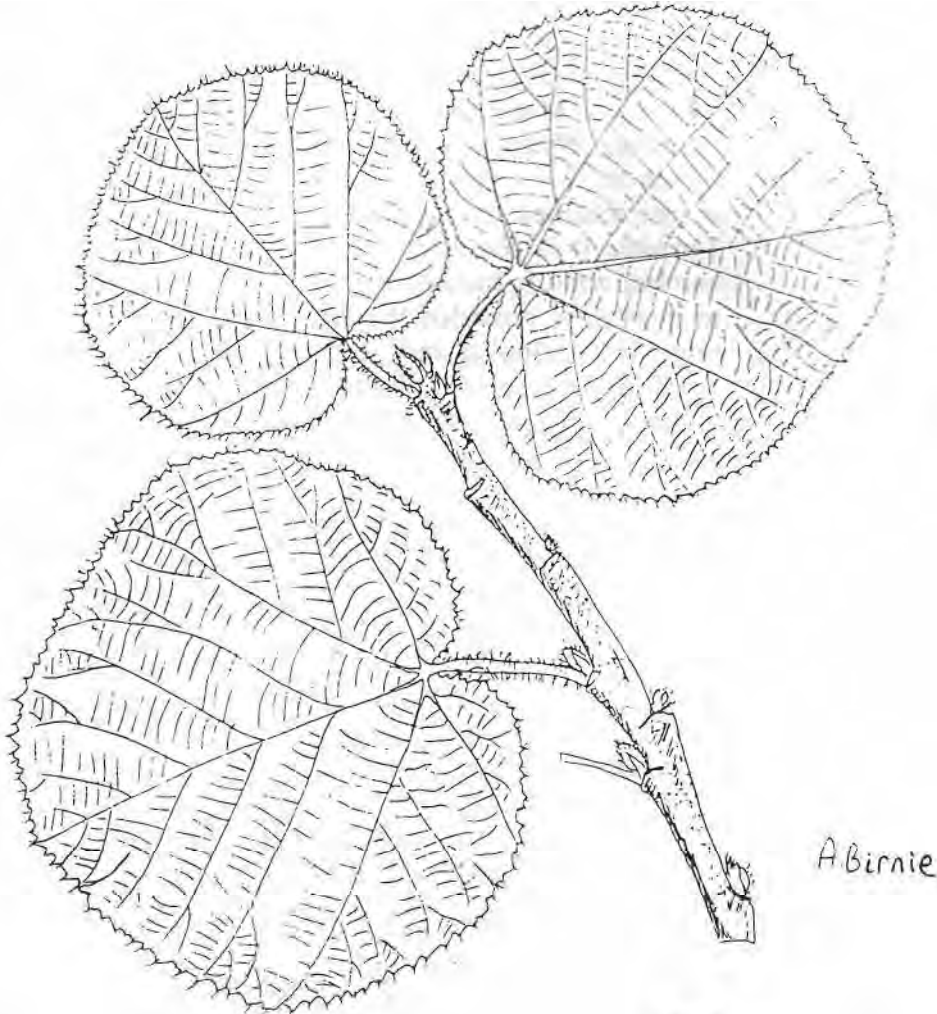
Tiliaceae

Indigenous

- Common names: Arusha: olmalungai; **Fiome**: lomo; **Iraqw. amu**; **Mbug**: motoo; Nyat: mumpembe.
- Ecology: A shrub of the arid areas in Africa and India, often on river banks liable to flooding, or on stony ground, in the shade of larger trees. In Tanzania it is found at the coast and in dry areas of Arusha region.
- Uses: Firewood, poles, tool handles, food (fruit), medicine (roots and bark), fodder (leaves), fibres (bark), carving (bows, arrows, spear shafts, walking sticks).
- Description: A deciduous shrub to about .3 m with very distinctive leaves, **young parts covered with pale silky hairs** (*villosa*). **BARK**: distinctive yellow to cream-brown, smooth. **LEAVES**: **almost round to 12 cm across**, on stalks to 4 cm. paler below and more hairy, 5 veins clearly seen. **FLOWERS**: **in small clusters, opposite leaves**, pink, **turning yellow** with age. **FRUIT**: **soft and hairy** when ripe, **red-brown, about 1 cm** across, 1-2 hard seeds within each nut.
- Propagation: Seedlings, suckers.
- Seed info.: No. of seeds per kg: 16,000-17,000. Germination very **low** and slow.
- treatment: soak in cold water for 12 hours. Germination is good **and** completed after 6 weeks.
- storage: can keep viability for a year at room temperature if **kept** dry.
- Management: Slow growing; coppicing.
- Remarks: A much-liked sweet fruit.

Grewia villosa

Tiliaceae



Hagenia abyssinica (H. anthelmintica)

Rosaceae

Indigenous

Common names: Arusha: alchani-lengai, lengijabe, ol kijabe; Eng: hagenia; Bena: mfoono; Chag: ihanga, mlaagi, mlanga, mwalanga, mwanga; Hehe: mdobole; Maasai: alchani-lengai, ngivavi songejaye; Meru: mlanga; Nyak: mtulanya, mturunga. nturunga; Nyiha: mkumburu, mturunga; Samb: luziluzi, mrosirosi.

Ecology: A tree confined to East Africa extending into Ethiopia. In Tanzania it is common in the mist belt, often above the bamboo zone, in mountain areas. Reported to be indifferent to most soils provided they are well drained. Its climatic range is transitional and wet montane, 2,000-3,000 m, but it will grow at lower altitudes.

Uses: Firewood, timber (furniture, flooring, general purpose), carving, medicine (bark, roots, flowers), mulch, ornamental, soil conservation.

Description: A tree to 20 m, the crown leafy and rounded, usually with thick branches. BARK: red-brown, flaking irregularly, branchlets covered in silky brown hairs and ringed with leaf scars. LEAVES: compound to 40 cm in large terminal tufts, leaflets bright green, silvery hairs below, red and sticky when young, leaf edge toothed and fringed with hairs, stalk winged, hairy. FLOWERS: large attractive masses to 60 cm, female heads pink-red, male heads more feathery, orange-white. Male and female trees. FRUIT: small, dry, one-sided.

Propagation: Seedlings, wildings.

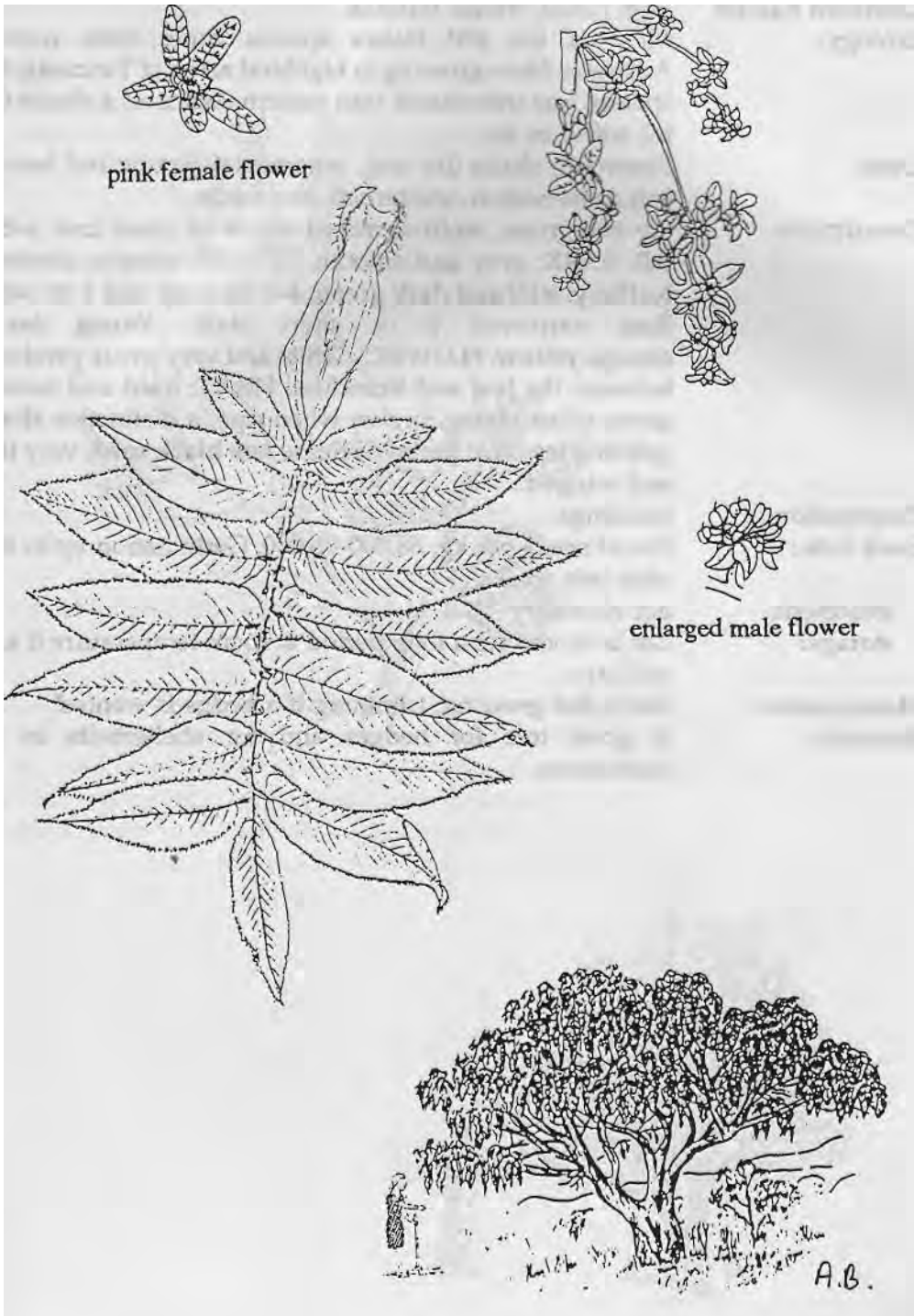
Seed info.: No. of seeds per kg: 176,000-200,000.

treatment: not necessary.

storage: seed can be stored for up to 6 months.

Management: Regeneration by seed (naturally), slow-growing; coppicing.

Remarks: *Hagenia abyssinica* is widely used in the southern highlands of Tanzania as a timber tree for all purposes. The wood is dark red and hard but attacked by borers. Not competitive with crops if managed to prevent shading. It constantly sheds leaves forming a carpet of dry leaves below the tree. Dry female flowers are used as a deworming treatment—anthelmintic.



Hakea saligna

Proteaceae

Australia

Common names: **Eng:** hakea; **Swah:** mhakia.

Ecology: Most of the 100 Hakea species come from western Australia. Now growing in highland areas of Tanzania, this species was introduced into eastern Africa as a shade tree for coffee or tea.

Uses: Firewood, shade (for tea), ornamental (young red leaves), soil conservation, shelterbelt, live fence.

Description: An evergreen, multi-stemmed shrub or small tree 3-6 m tall. **BARK:** grey and smooth. **LEAVES:** simple, alternate, **leathery, stiff and dark green, 4-8 cm long** and 1 cm wide. Base narrowed to a short stalk. **Young leaves orange-yellow.** **FLOWERS:** white and very small, produced between the leaf and branchlet. **FRUIT:** hard and woody, green when young, brown when ripe, a distinctive shape. splitting into two parts to release **one black seed, very thin and winged.**

Propagation: Seedlings.

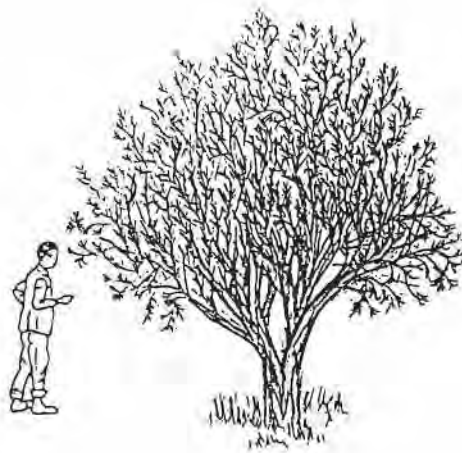
Seed info.: No. of seeds per kg: 68,000-75,000. Germination up to 80% after two weeks.

treatment: not necessary

storage: can be stored for a long period at room temperature if kept well dry.

Management: Fairly fast growing; trimming if a hedge is wanted.

Remarks: A good tree for hedges and for shelterbelts in tea plantations.



Hymenaea verrucosa

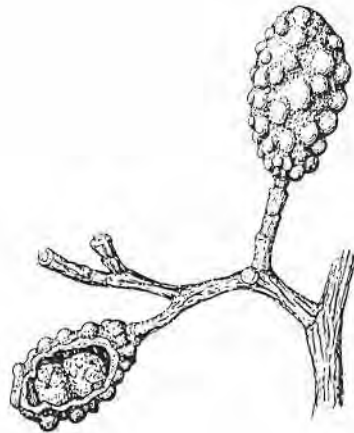
Caesalpinioideae

Indigenous

- Common names: Eng: gum copal tree; **Mwera:** mkumbi; **Swah:** msandarusi, msandaruzi, mtandaruzi, mtanderusi; **Yao:** mpasa; Zara: mnango, munanyo; Zigua: msandarusi.
- Ecology: An evergreen tree of dry lowland forest and coastal forests south to Madagascar; also found in Mauritius and the Seychelles, 0-300 m. In Tanzania it is found in the coastal forests of Tanga and Dar es Salaam.
- Uses: Timber (canoes, doors, general purposes), gum (bark, fruit).
- Description: A tree 6-25 m with a clear bole. **BARK: smooth pale grey, patterned in green, pink and cream.** **LEAVES: characteristic single pair of leaflets, shiny above, dotted with glands, unequal sided, stalked.** **FLOWERS: pink-white in loose sprays.** **FRUIT: unusual thick woody pods, 5 x 3 cm covered with gummy warts, often seen at the top of the tree most of the year.**
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: about 500. Germination is good and fairly uniform.
- treatment: soak in cold water for 24 hours.
- storage: can be stored for some years at room temperature if kept dry and free from insects.
- Management: Coppicing.
- Remarks: The tree has valuable, hard but workable timber. The gum from bark and fruit is valued for high-quality varnishes and the fossilized gum dug up under old trees is even better. The resinous sap is also used as glue. Gum copal has been a traditional tree product in Zanzibar. A previous name for this tree was *Trachylobium verrucosum*.

Hymenaea verrucosa

Caesalpinioideae

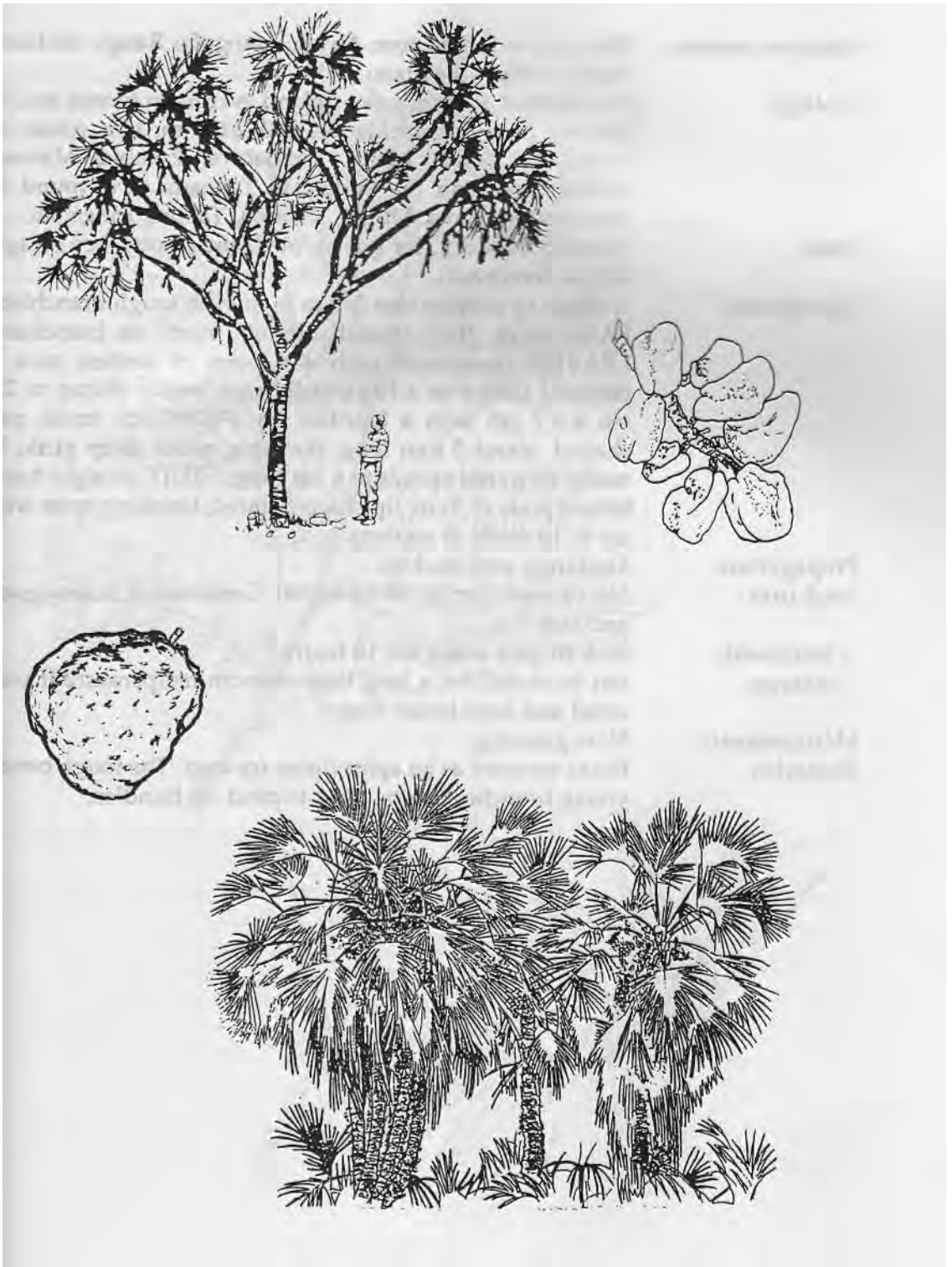


Hyphaene compressa (H. coriacea)

Palmae

Indigenous

- Common names: Eng: doum palm; Nyam: mulala; Swah: mkoche.
- Ecology: Widespread in lowland arid Africa, Madagascar, Arabia to India. Common in dry areas along river courses, and at the coast, 0-1,000 m. It requires a high watertable and hot climate for good growth.
- Uses: Firewood, poles, posts, food (fruit), drink (fruit wine from thin skin), soil conservation (sandy areas), shade, fibre, baskets, mats (leaves), roofing (leaves), fencing (cut leaf stalks), brushes.
- Description: An unusual branched palm tree, to 20 m, each branch crowned with large, fan-shaped leaves, the tree often surrounded by bushy young growth. LEAVES: have a long spiny stalk supporting the fan of leaflets. FLOWERS: male and female on separate trees. FRUIT: orange brown, hanging down in bunches, each fruit to about 10 cm long, 2 sides flattened, edible fibres below the tough shiny skin, one large hard seed.
- Propagation: Direct sowing into carefully prepared pits or any other place where water collects naturally.
- Seed info.: No. of seeds per kg: 10-15.
- treatment: nicking at the radicular end.
- storage: stores only for a very short period.
- Management: Slow growing.
- Remarks: Seed for human consumption stores well for long periods. Normally the seeds germinate naturally if they pass through the bowels of elephants. Difficult to raise in nurseries as it starts by sending out a long tap root. Buttons used to be made from "vegetable ivory", the white seed.



Indigofera swaziensis

Papilionoideae

Indigenous

Common names: Eng: velvet indigo tree; Nyam: igangula; Rangi: kinkusa; Samb: mshushulambuzi.

Ecology: Widespread at margins of upland evergreen forests and in riverine fringe of bushlands, 600-2,100 m. It is found in Swaziland, South Africa, Zimbabwe, Zambia, Malawi, Mozambique and the Sudan. In Tanzania it is found in Mwanza, Musoma, Mbulu, Kondo, Tabora, Iringa, etc.

Uses: Firewood, fodder (for goats), medicine (roots), bee forage, withes (branches).

Description: A shrub or slender tree 3-6 m high with tough branchlets. BARK: dark grey, smooth, fibrous, hairy on branchlets. LEAVES: compound with 4-8 pairs of leaflets plus a terminal leaflet on a hairy stalk, each leaflet oblong to 2-5 cm x 0.7 cm with a hair-like tip. FLOWERS: small, pea shaped, about 5 mm long, the wing petals deep pink, in many-flowered sprays to 6 cm long. FRUIT: straight hairy brown pods to 3 cm, tip sharp pointed, breaking open with up to 10 seeds in sections.

Propagation: Seedlings, root suckers.

Seed info.: No. of seeds per kg: about 83,000. Germination is very good and fast.

treatment: soak in cold water for 12 hours.

storage: can be stored for a long time at room temperature if well dried and kept insect free.

Management: Slow growing.

Remarks: Roots are used as an aphrodisiac for men. The tough bendy young branches can be used to bind up bundles.

Indigofera swaziensis

Papilionoideae



Jacaranda mimosifolia (J. acutifolia)

Bignoniaceae

Brazil, Argentina

- Common names: Eng: jacaranda, Brazilian rosewood.
- Ecology: Jacaranda is native to Brazil and Argentina but has been introduced as an ornamental tree to most parts of the tropics, though in many tropical climates its flowering is light, irregular and disappointing. In Tanzania it has been planted frequently in several of the larger towns and flowers well, e.g. in Morogoro. Jacaranda is deep rooted and grows best in well-drained loams, although it will also survive on poor shallow soils. It does not tolerate waterlogged or clay soils. It requires a mean annual rainfall exceeding 900 mm, and elevations of 500-2,000 m.
- Uses: Firewood, timber, poles, tool handles, carving, bee forage, shade, ornamental, mulch, windbreak.
- Description: A deciduous tree, up to 20 m, with spreading branches to a light crown. BARK: pale grey, smooth, rougher with age. LEAVES: compound and feathery on stalks to 40 cm, up to 30 pairs of pinnae with small pointed leaflets. FLOWERS: striking mauve-blue clusters, each flower bell shaped, tree mostly in flower when not in leaf. FRUIT: rounded, woody capsules to about 7 cm, splitting on the tree to release numerous light seeds with transparent wings.
- Propagation Seedlings, wildings.
- Seed info.: No. of seeds per kg: 63,000-80,000. Seeds profusely. Germination rate 50%-85%.
- treatment: not necessary.
- storage: seed does not store well. Sow fresh seed for best germination results.
- Management: Very fast growing on good sites; lopping, pollarding coppicing, pruning (young trees).
- Remarks: A greedy feeder; few plants or crops can grow below Jacaranda.

Jacaranda mimosifolia (J. acutifolia)

Bignoniaceae

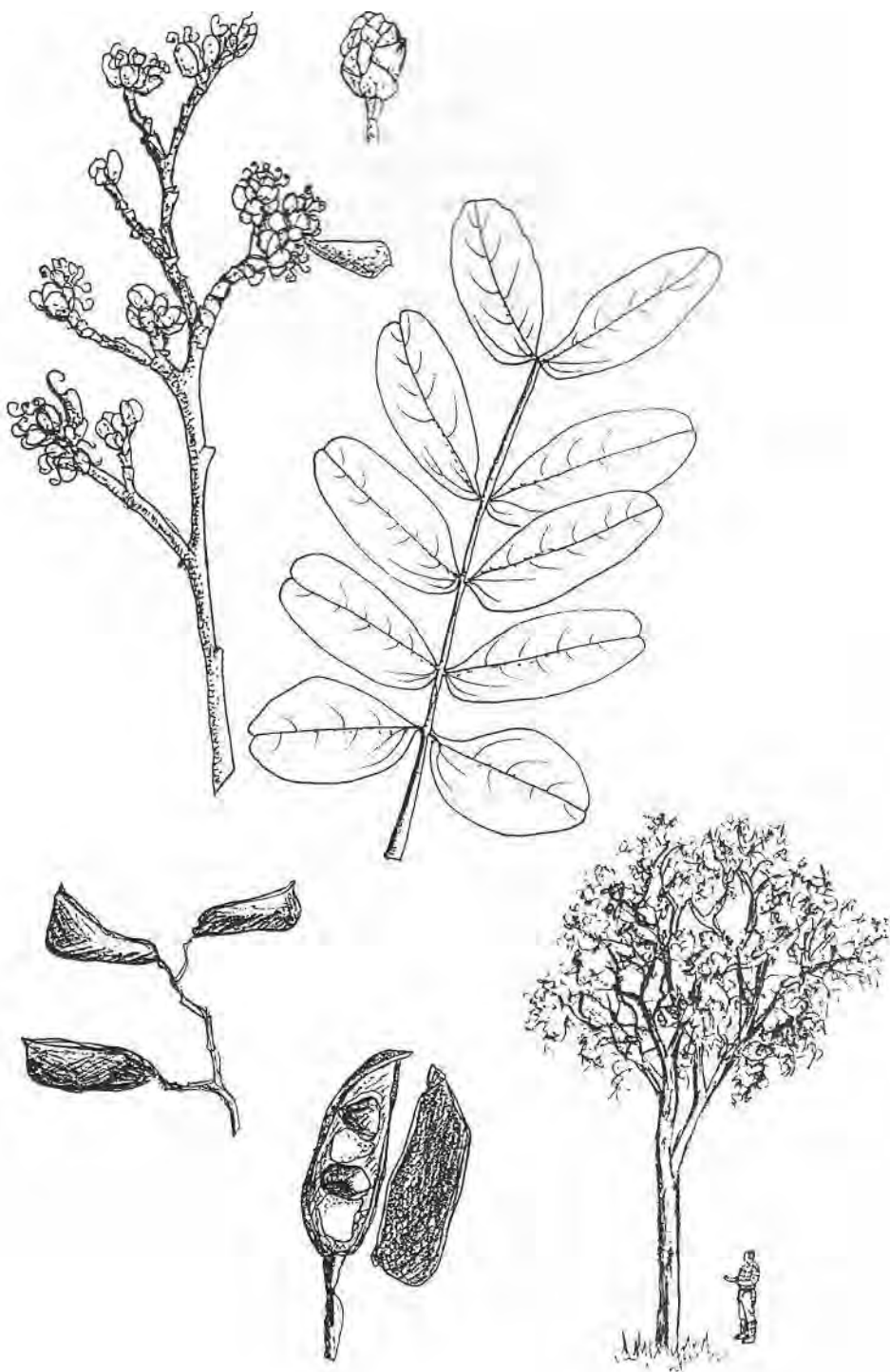


Julbernardia globiflora

Caesalpinioideae

Indigenous

- Common names:** Eng: julbernardia; Fipa: msima; Gogo: mguji; Hehe mpinati; Iraqw: hewasi; Mwera: mchenga; Nyam: muva; muba; Rangi: mhangala, mtata; Sand: innee; Swah: mtondo; Zigua: mhangala, mtorvdoro.
- Ecology:** A tree found in miombo woodlands, 500-2,000 m. It is also found in Zaire, Mozambique, Zambia, Malawi, Zimbabwe, Botswana, South Africa and Angola.
- Uses:** Firewood, charcoal, tool handles, bee hives, medicine (bark), bee forage, storage pots (bark), ropes (bark), sacks (bark).
- Description:** A well-branched deciduous tree 5-15 m high with flat or rounded spreading crown and large, heavy branches. Bole often crooked. **BARK:** pale grey, becoming dark grey and rough with age. **LEAVES:** compound with 4-8 pairs of opposite leaflets, dark green, leathery, tip rounded or notched, finely hairy on both sides, 3-5 cm long, 1-4 cm wide. The edge has fine white hairs. Middle leaflets are the largest, leaf stalk rounded not grooved. **FLOWERS:** very fragrant, yellow-white, small but in clusters 6-30 cm long, stalks hairy, brown. **FRUIT:** flat, dark brown, velvety pod, 4-9 cm long, 2-3 cm wide. Dehiscent, containing up to 4 seeds. Pods are square ended and held up above the leaves on top of the tree. They split explosively when mature.
- Propagation** Seedlings, suckers.
- Seed info.:** No. of seeds per kg: 1,500-2,000. Germination is very good and fast.
- treatment:** soak in cold water for 12 hours.
- storage:** can keep viability up to a year at room temperature if kept dry and free from insects.
- Management:** Slow growing during the first few years and fast afterwards. Coppice shoots and root suckers grow very fast.
- Remarks:** An important and common tree in the mixed deciduous woodland of central Africa where it is co-dominant with *Brachystegia spiciformis*. The bark has been used as a cough medicine and to treat snake bite. Honey from the flowers is of the highest quality and has good flow.

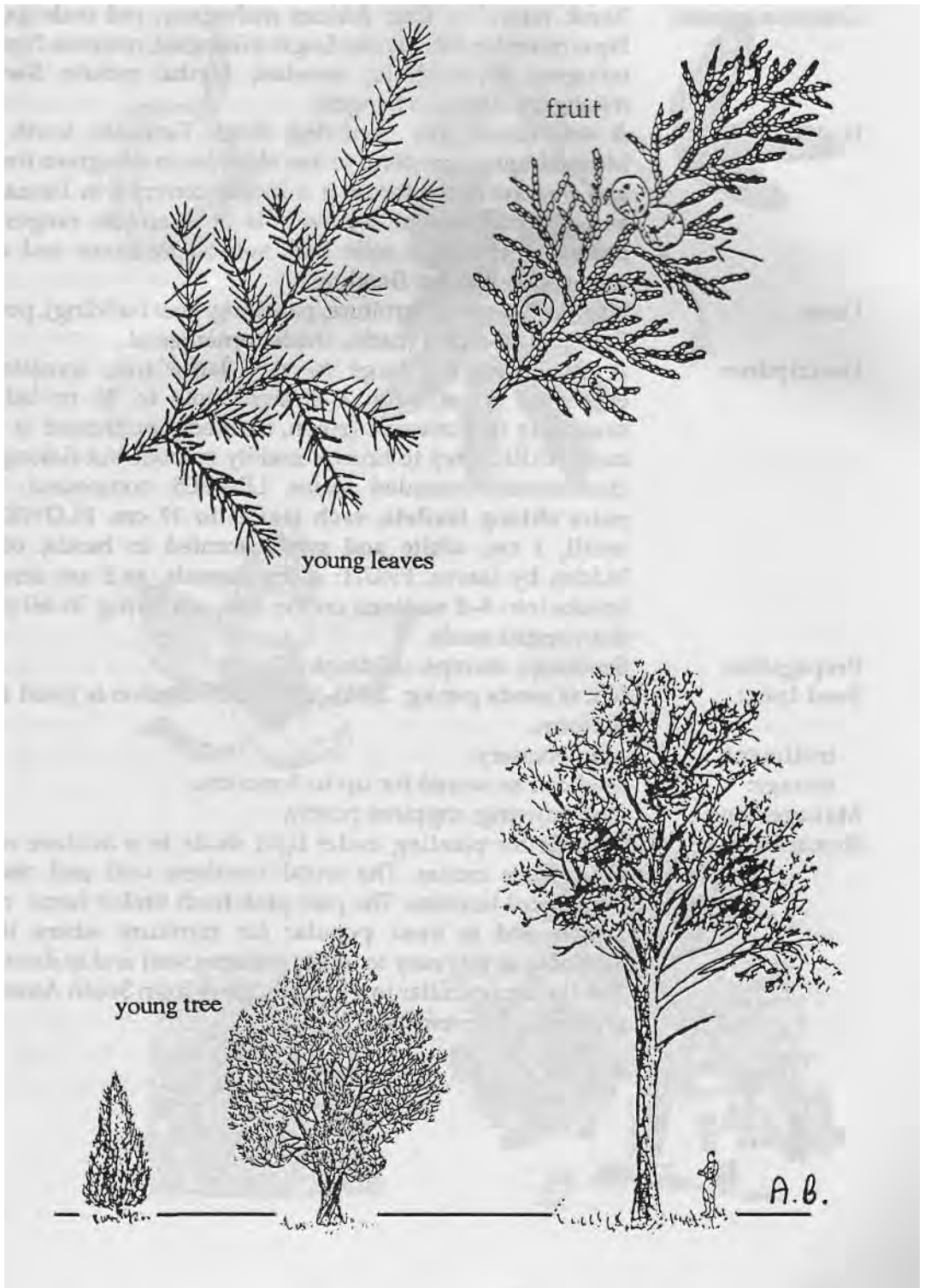


Juniperus procera

Cupressaceae

Indigenous

- Common names:** Arusha: ol darakwa, ol tarakwa; Bara: semit; Chag: nso, mdrawaka, mtarakwa, nderakwa; Eng: East African pencil cedar; Kinga: mselemko, mbechera; Maasai: ol darakwa, oltarakwa; Meru: msingo, nderakwa; Nyak: selemuka; Samb: mwangati, mlalo, mbalu.
- Ecology:** A large, valuable timber tree found in the highland forests of East Africa from Ethiopia to Tanzania, 1,500-3,000 m. It is common in West Usambaras, on the northern slopes of Mt. Kilimanjaro and on isolated mountains of Maasailand. It is the largest juniper in the world, doing best in high-rainfall areas but can survive in quite dry conditions once established.
- Uses:** Firewood, timber (joinery, pencils), poles, posts, flooring, roof shingles, beehives, medicine (bark, leaves, twigs, buds), shade, ornamental, windbreak.
- Description:** An evergreen tree to about 40 m with straight trunk and a pyramidal shape when young. The foliage is finer **and** more open than cypress. **BARK:** thin grey-brown, fissures, peeling with age. **LEAVES:** young leaves prickly to 1 cm, soon replaced by scale-like mature leaves, blue-green, triangular and closely overlapping on the branchlets **FRUIT:** cones; male cones are small and yellow with poller: female purple-blue fleshy "berries" about 8 mm, the pulp containing 1-4 hard seeds.
- Propagation** Seedlings, wildings.
- Seed info.:** No. of seeds per kg: 37,000-47,000. Germination **rate** 30-70% in 25-80 days.
- treatment:** not necessary, but to get improved results immerse in boiling water for 1 minute and soak until the water cools to room temperature.
- storage:** up to a year if stored in a cool, dry place.
- Management:** Fairly fast growing in open stands, slow growing elsewhere. Prune and thin trees for timber and poles.
- Remarks:** Resistant to fungal decay and termites. Large-dimension good timber is difficult to get as mature trees are often hollow due to heart rot. Was established as a plantation tree in Shume (Lushoto) but its slow growth **rate** discouraged further planting.

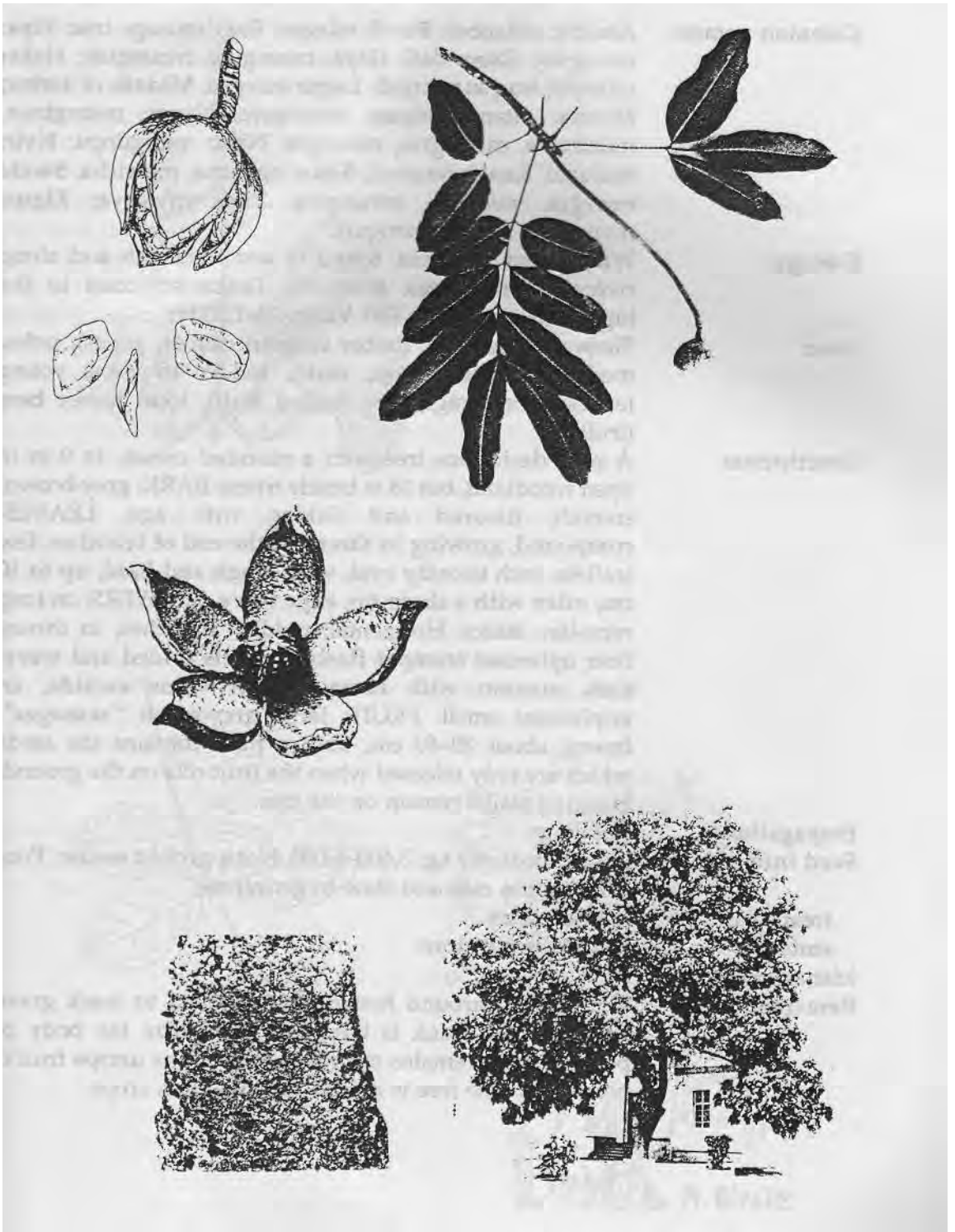


Khaya nyasica (K. anthotheca)

Meliaceae

Indigenous

- Common names: Bond: mtondoo; Eng: African mahogany, red mahogany, Fipa: mtembo; Ha: myofu; Lugu: mkangazi, mwawa; Nguu: mbogwa; Nyak: ilulu, nyaelasi; Nyiha: mbule; Swah: mkangazi; Zigua: mkangazi.
- Ecology: A tall forest tree occurring from Tanzania south to Mozambique at medium to low altitudes in evergreen forest and riverine fringe forest. It is locally common in Tanzania as a riverine tree in the foothills of mountain ranges. It prefers deep fertile soils with subsoil moisture and can withstand seasonal flooding.
- Uses: Firewood, timber (furniture, panelling, boatbuilding), posts, flooring, medicine (bark), shade, ornamental.
- Description: A semi-evergreen large to very large tree, sometimes exceeding 60 m, with a straight bole to 30 m before branching to a massive crown, markedly buttressed at the base. BARK: grey to brown, mainly smooth but flaking in characteristic rounded scales. LEAVES: compound, 2-7 pairs oblong leaflets, each leaflet to 17 cm. FLOWERS: small, 1 cm, white and sweet scented in heads, often hidden by leaves. FRUIT: a dry capsule, to 5 cm across, breaks into 4-5 sections on the tree, scattering 30-60 pale flat winged seeds.
- Propagation: Seedlings, stumps, wildings.
- Seed info.: No. of seeds per kg: 2,000-3,800. Germination is good and uniform,
- treatment: not necessary.
- storage: seed can be stored for up to 3 months.
- Management: Fast growing; coppices poorly.
- Remarks: Suitable for planting under light shade in a mixture with *Chlorophora excelsa*. The wood weathers well and resists borers and termites. The pale pink fresh timber turns red-brown and is most popular for furniture where it is available as it is easy to work, polishes well and is durable. The timber is similar to true mahogany from South America (*Swietenia macrophylla*).

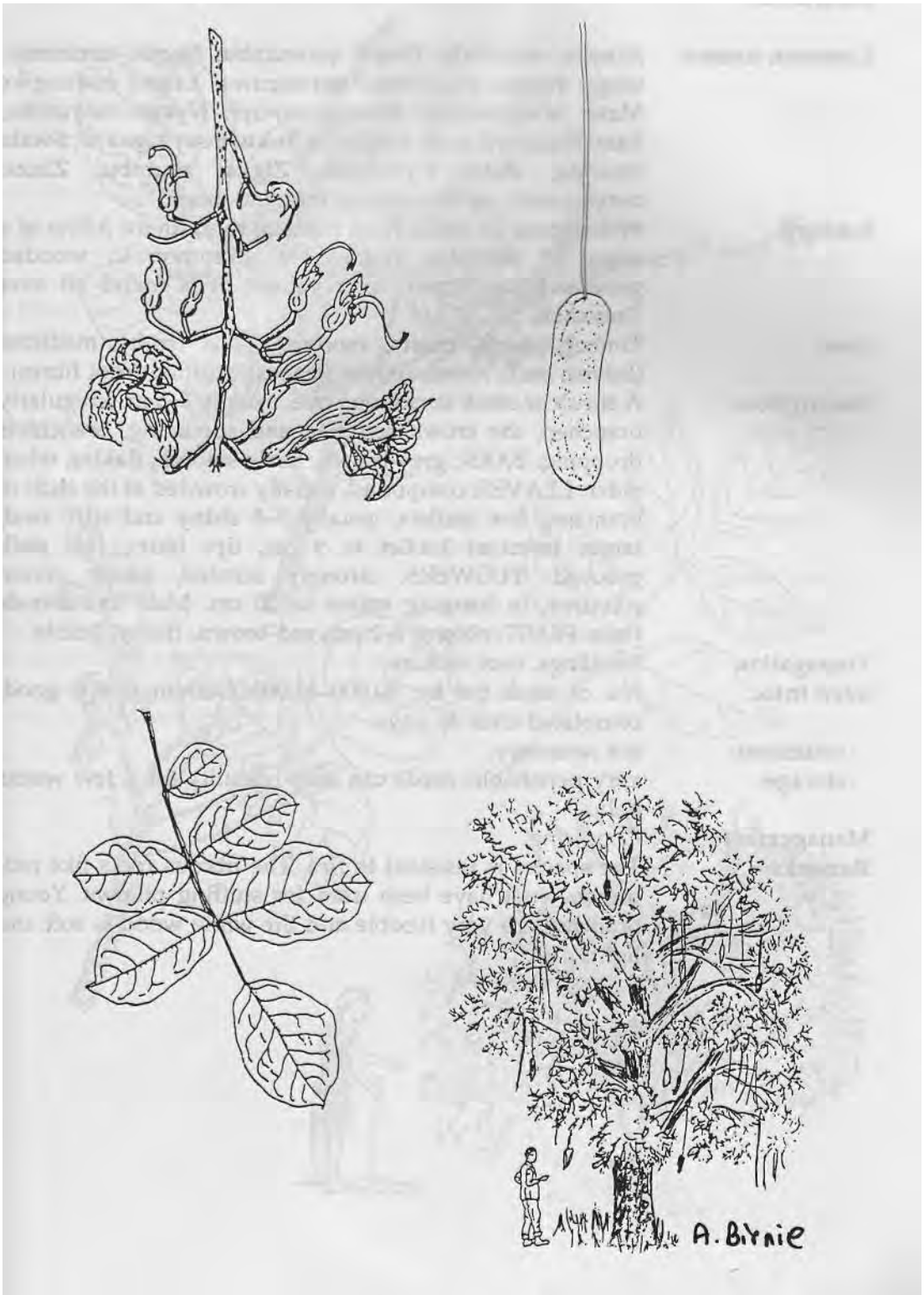


Kigelia africana (K. aethiopum)

Bignoniaceae

Indigenous

- Common names:** **Arusha:** oldaoboi; **Bond:** mlegea; **Eng:** sausage tree; **Fipa:** nzungwa; **Goro:** dati; **Haya:** mzungute, mzungute; **Hehe:** mfumbi; **Iraqw:** mangafi; **Lugu:** muegea; **Maasai:** ol darboi; Mwera: mtandi; **Nguu:** mvungwe; **Nyam:** msanghwa, mdungwa, mvungwa, mwiegea; **Nyat:** mungungu; **Nyir:** mulunzi; **Rangi:** musuva; **Suku:** ngwicha, mgwicha; **Swah:** mwegea, mwicha, mvungwa; **Zara:** myigeeya; Zigua: mvungwe; **Zinza:** mzingute.
- Ecology:** Widespread in Africa, found in wet savannah and along rivers in arid areas, from the Tanzanian coast to the highlands and in the Rift Valley, 0-1,850 m.
- Uses:** Firewood, charcoal, timber (dugout canoes, yokes), poles, medicine (fruit, leaves, bark), fodder (flowers, young leaves), bee forage, dye (boiled fruit), local honey beer (fruit).
- Description:** A semi-deciduous tree with a rounded crown, to 9 m in open woodland, but 18 m beside rivers. **BARK:** grey-brown, smooth, fissured and flaking with age. **LEAVES:** **compound, growing in threes**, at the end of branches, few leaflets, each broadly oval, **very rough and hard, up to 10 cm, often with a sharp tip, edge wavy**. **FLOWERS:** on long rope-like stalks. Horizontal, reddish branches, in threes, bear **upturned trumpet flowers, petals folded and wavy, dark maroon with heavy yellow veins outside**, an unpleasant smell. **FRUIT:** large **grey-green "sausages", heavy**, about 30-60 cm, fibrous pulp contains the seeds which are only released when the fruit rots on the ground. Hanging stalks remain on the tree.
- Propagation** Seedlings.
- Seed info.:** No. of seeds per kg: 3,400-6,000. Not a prolific seeder. Poor germination rate and slow to germinate.
- treatment:** not necessary.
- storage:** seed does not store.
- Management:** Slow growing.
- Remarks:** Not planted around homesteads. Planted to mark grave sites and the trunk is buried to symbolize the body of people whose remains cannot be traced. The unripe fruit is poisonous. The tree is not competitive with crops.

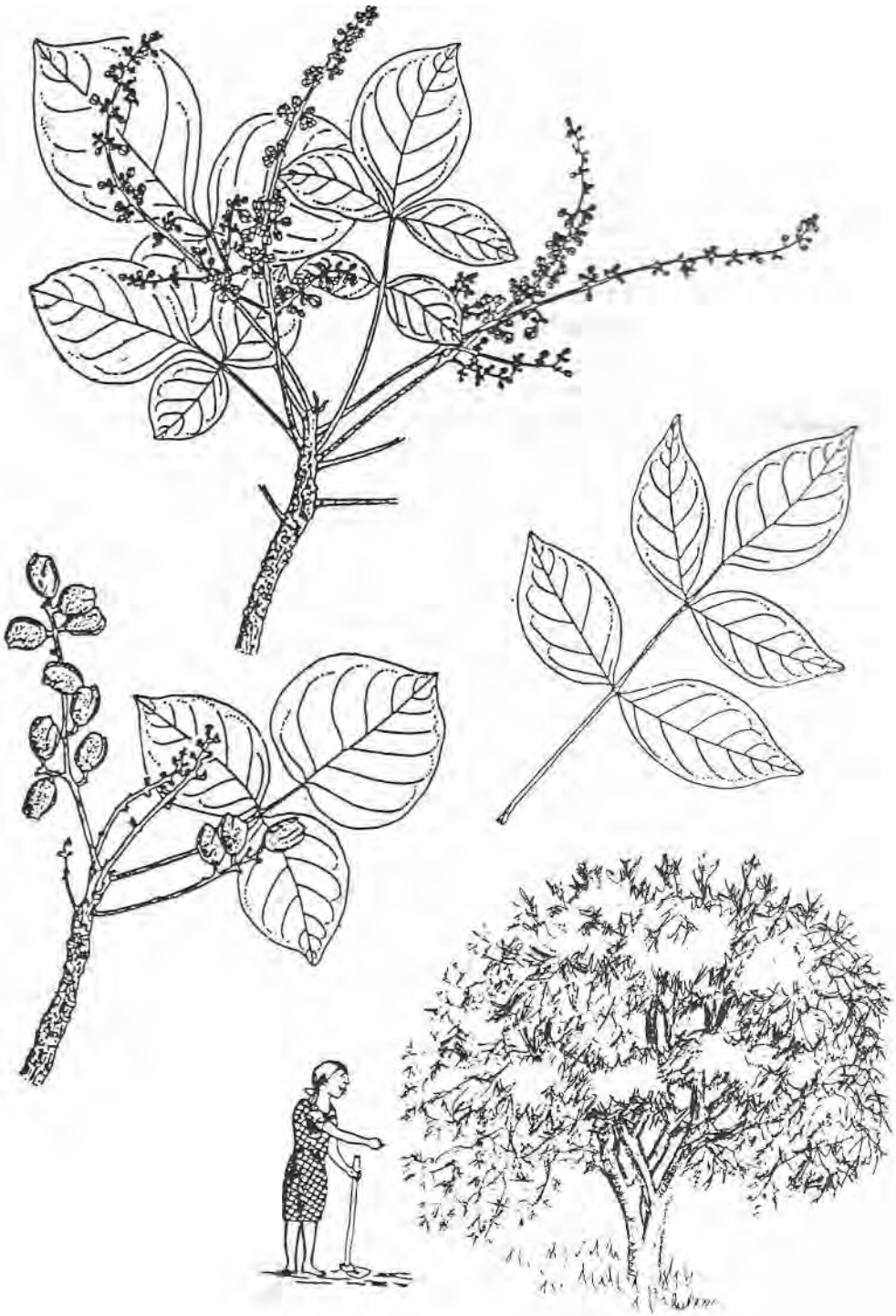


Lannea schweinfurthii var. stuhlmannii

Anacardiaceae

Indigenous

- Common names: Arusha: eravande; Gogo: muwumbu; **Iraqw**: tambaragi, thigii; **Kuria**: mumendo, omosaruwa; **Lugu**: muhingilo; **Mate**: ndelamwana; **Mwera**: mpupi; **Nyam**: mnyumbu; Pare: msighe; **Rangi**: msakawa; **Suku**: msayu, nsayu; **Swah**: mtundu; **Zara**: mpiwipwi; **Zigua**: mumbu; **Zinza**: mnyamendi, mribwampara, muhondobogo.
- Ecology: Widespread in Africa from Somalia to southern Africa at a range of altitudes, 0-1,800 m. Common in wooded grassland, dry forest, river valleys. It is found all over Tanzania.
- Uses: Timber (stools, chairs, mortars), food (fruit), medicine (leaves, bark, roots), fodder (leaves), stuffing (root fibres).
- Description: A shrub or small deciduous tree, usually 3-5 m, irregularly branched, the crown rounded and spreading, branchlets drooping. **BARK**: grey-brown, fairly smooth, flaking when older. **LEAVES**: compound, usually crowded at the ends of branches, few leaflets, usually **3-5 shiny** and stiff, oval, **larger terminal leaflet to 9 cm**, tips blunt, leaf stalk grooved. **FLOWERS**: strongly scented, small, cream coloured, in hanging spikes to 20 cm. Male and female trees. **FRUIT**: oblong **1-2 cm, red-brown**, fleshy, edible.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: 40,000-45,000. Germination is good, completed after 45 days,
- treatment: not necessary.
- storage: very perishable; seeds can keep viability for **a few weeks only**.
- Management: Coppicing.
- Remarks: The species is resistant to fire. The fibrous roots like red-brown wool have been used for stuffing pillows. **Young** branches are very flexible and the white wood is soft **and** light.

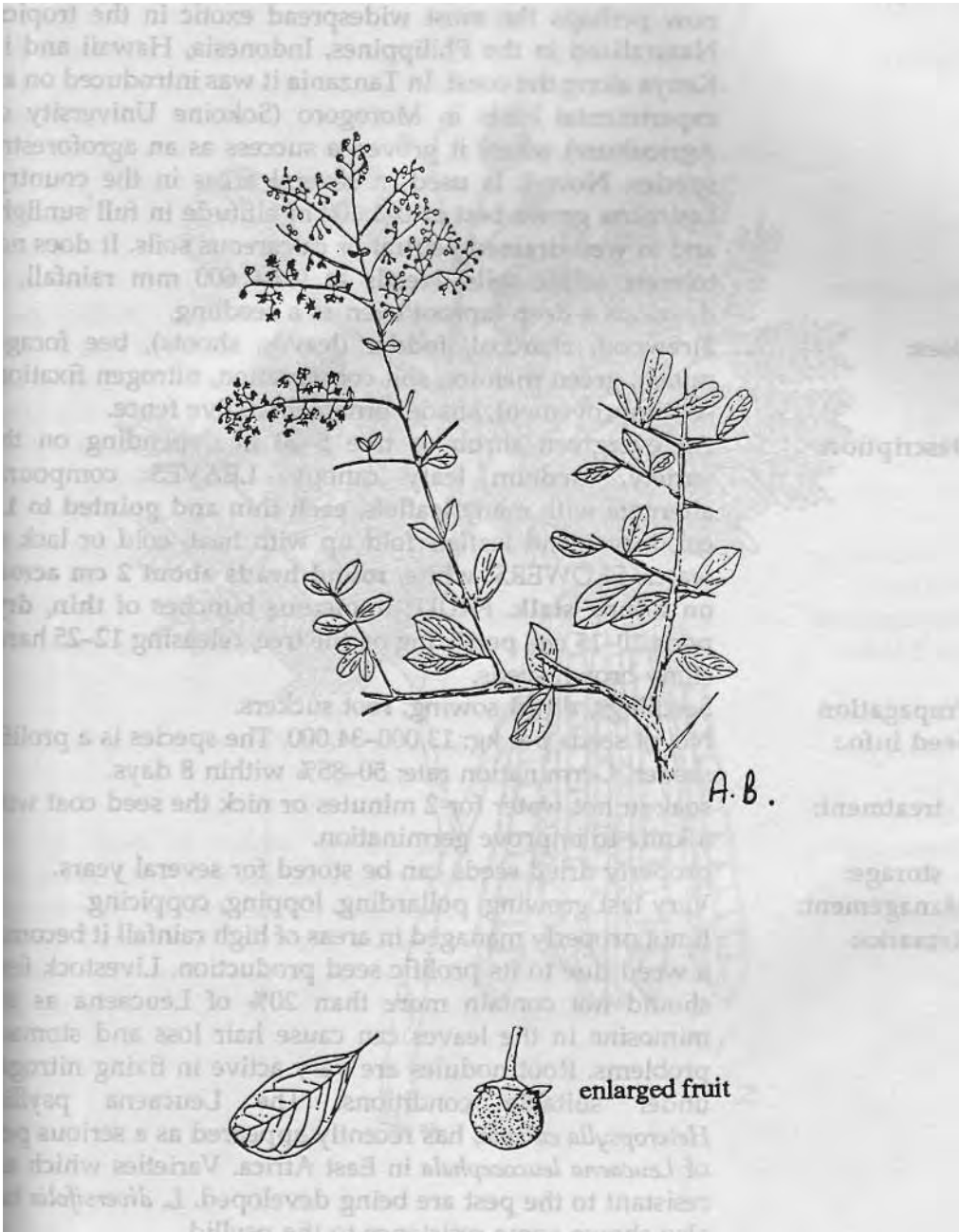


Lawsonia inermis (L. alba)

Lythraceae

Indigenous

- Common names: Eng: henna, Zanzibar bark; Swah: mhina, muina, mkokoa; Zigua: ina.
- Ecology: A shrub widely distributed from North to West and Central Africa. Common at the Tanzanian coast, along river courses and in semi-arid areas.
- Uses: Medicine, fodder (leaves), dye, perfumes, thatching, carriers for donkeys, ornamental.
- Description: A shrub or small tree to 4 m, sometimes spiny. LEAVES: small and oval, about 2-3 cm, opposite, often on short spine-tipped branchlets. FLOWERS: white and small in long branching heads, sweet-scented. FRUIT: round, small brown capsules, splitting into 4 parts.
- Propagation: Seedlings, cuttings.
- Seed info.: No. of seeds per kg: about 100,000. Germination is good: 70% after 3 weeks.
- treatment: not necessary.
- storage: can be stored for only a short period (2 months). Keep seeds insect free.
- Management: Slow growing.
- Remarks: The plant produces a volatile oil with a pleasant odour. An orange-red dye extracted from leaves and young shoots is used to dye clothes and leather, to decorate women's nails and skin, as well as to colour and condition hair ("henna"). The dye is released by using citric or tartaric acid, tea or lemon juice.

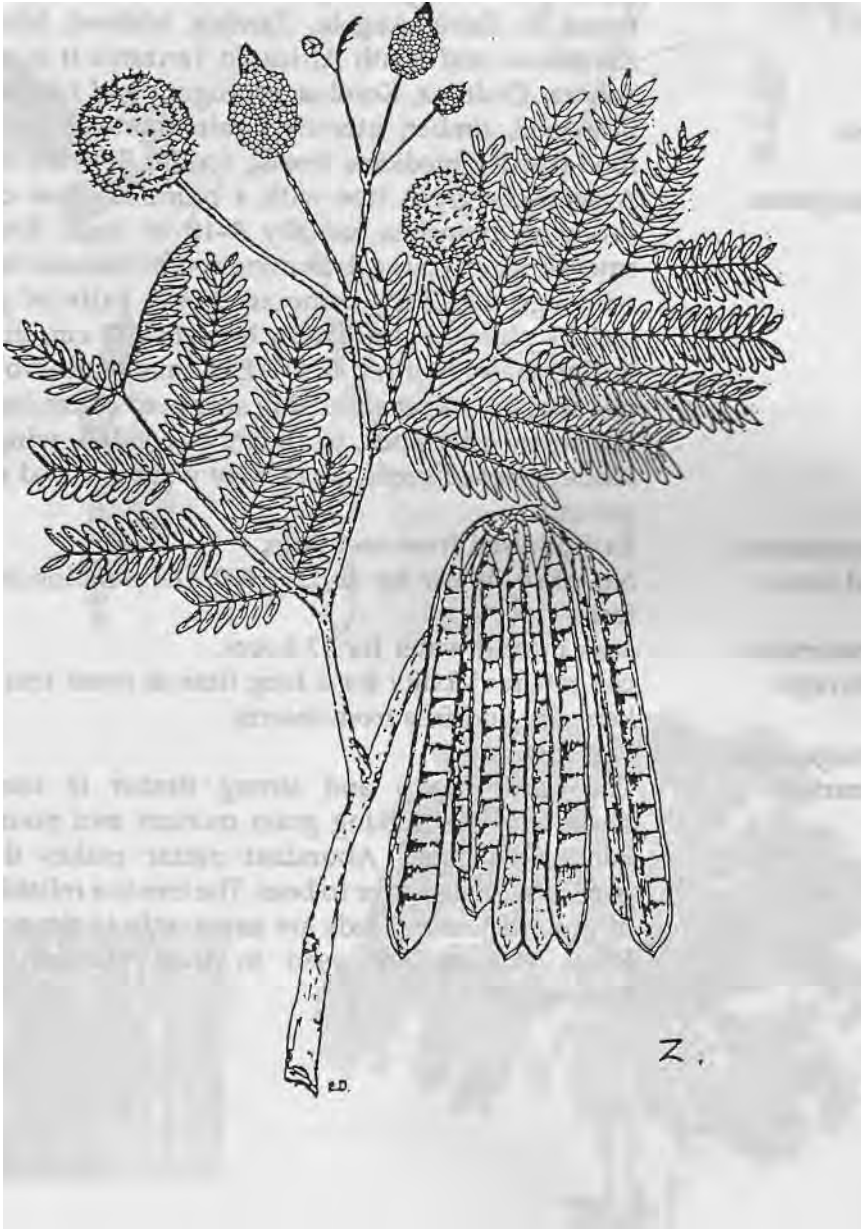


Leucaena leucocephala (L. glauca)

Mimosoideae

Central America

- Common names: Bond: mbegu; Swah: mlusina.
- Ecology: Originally from the drier western side of Central America. now perhaps the most widespread exotic in the tropics. Naturalized in the Philippines, Indonesia, Hawaii and in Kenya along the coast. In Tanzania it was introduced on an experimental basis in Morogoro (Sokoine University of Agriculture) where it proved a success as an agroforestry species. Now it is used in several areas in the country. Leucaena grows best at 0-1,600 m altitude in full sunlight and in well-drained neutral or calcareous soils. It does not tolerate acidic soils. Needs at least 600 mm rainfall. It develops a deep taproot even as a seedling.
- Uses: Firewood, charcoal, fodder (leaves, shoots), bee forage, mulch, green manure, soil conservation, nitrogen fixation, soil improvement, shade, ornamental, live fence.
- Description: An evergreen shrub or tree 5-20 m depending on the variety, medium leafy canopy. LEAVES: compound alternate with many leaflets, each thin and pointed to 1.5 cm, leaves and leaflets fold up with heat, cold or lack of water. FLOWERS: white, round heads about 2 cm across on a long stalk. FRUIT: numerous bunches of thin, dry, pods 10-15 cm, persisting on the tree, releasing 12-25 hard, shiny brown seeds.
- Propagation: Seedlings, direct sowing, root suckers.
- Seed info.: No. of seeds per kg: 13,000-34,000. The species is a prolific seeder. Germination rate: 50-85% within 8 days.
- treatment: soak in hot water for 2 minutes or nick the seed coat with a knife to improve germination.
- storage: properly dried seeds can be stored for several years.
- Management: Very fast growing; pollarding, lopping, coppicing.
- Remarks: If not properly managed in areas of high rainfall it becomes a weed due to its prolific seed production. Livestock feed should not contain more than 20% of Leucaena as the mimosine in the leaves can cause hair loss and stomach problems. Root nodules are very active in fixing nitrogen under suitable conditions. The Leucaena psyllid, *Heteropsylla cubana*, has recently appeared as a serious pest of *Leucaena leucocephala* in East Africa. Varieties which are resistant to the pest are being developed. *L. diversifolia* has also shown some resistance to the psyllid.



Indigenous

- Common names: **Eng:** lilac tree, rain tree; **Gogo:** mpaapala; **Lugu:** mfumbiri, mkunguga; **Nyam:** muvale; **Rangi:** muvare; **Samb:** mfumbii; **Sangu:** libale; **Swah:** mvale.
- Ecology: A tree found in deciduous woodland and wooded grassland, usually along water courses, 150-1,650 m. It is found in Zaire, Angola, Zambia, Malawi, Mozambique, Zimbabwe and South Africa. In Tanzania it is common in Tabora, Dodoma, Kondo, Morogoro and Iringa.
- Uses: Firewood, timber, utensils (grain mortars), tool handles, food (seeds), medicine (roots), fodder (leaves), bee forage,
- Description: A semi-evergreen tree with a rounded open crown and drooping branches, usually 4–10 m high. BARK: grey, smooth when young, becoming rough, fissured and flaking with age. LEAVES: compound, **1-3 pairs** of grey-green leaflets plus a central **larger leaflet to 15 cm**, tip rounded. leaflets hairy at first. FLOWERS: **small pink-blue-violet, pea shaped**, sweet scented in sprays to 30 cm long. FRUIT: flat cream-grey pods, to 15 cm, **one sided, wing like, 1-5** kidney shaped seeds are set free when the pod rots on the ground.
- Propagation: Easily raised from seedlings.
- Seed info.: No. of seeds per kg: about 5,000. Germination is good and fast.
- treatment: soak in cold water for 12 hours.
- storage:** can retain viability for a long time at room temperature if kept dry and free from insects.
- Management: Fast growing.
- Remarks: The hard, heavy and strong timber is used by the Nyamwezi for making grain mortars and pounders, **also** handles of tools. Abundant nectar makes the flowers particularly attractive to bees. The tree is a reliable **indicator** of ground water. Seeds are eaten only in times of **famine** Roots extracts are used to treat stomach ache and hookworm.

Lonchocarpus capassa

Papilionoideae

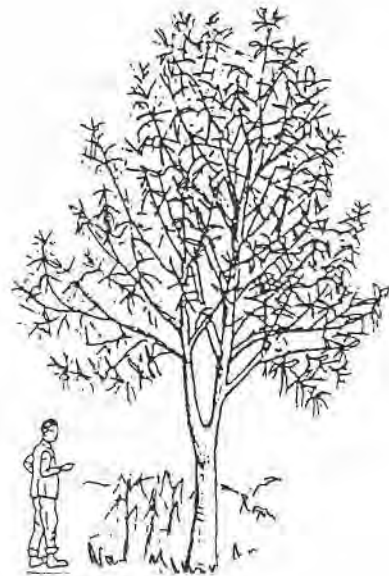


Macadamia tetraphylla

Proteaceae

Northern Australia

- Common names: Eng: macadamia nut.
- Ecology: An evergreen tree introduced in the coffee-growing areas of the Tanzanian highlands for its valuable nuts.
- Uses: Timber, charcoal (shells), food (nuts), windbreak. ornamental, bee forage, oil (used in cosmetics).
- Description: A low-branching evergreen tree to 15 m. BARK: grey, smooth. LEAVES: in fours, dull to olive-green, conspicuously wavy, edged with sharp, forward-pointing spines, to 25 cm long, young leaves and shoots pink-red. FLOWERS: in slender, drooping spikes, 25 cm, white or purple, the leaf stalks persist on the tree like stiff threads. FRUIT: a hard round nut, to 3 cm across, the husk drying black, containing a hard shiny brown nutshell. These fall to the ground and are collected for the white kernel seed within.
- Propagation: Grafting, seedlings.
- Seed info.: No. of seeds per kg: about 500. Germination is good; up to 80% after 3 weeks.
- treatment: nicking will improve germination.
- storage: can be stored for some years if kept well dry.
- Management: Grafting.
- Remarks: The tree can be intercropped with coffee and food crops. A good cash crop.



Maerua triphylla

Capparaceae

Indigenous

Common names: Eng: maerua, small bead bean; Fipa: nkana; Gogo: msinjisa mudo, mwimachigulu; Hehe: kipegero; **Iraqw:** bardiget; Nyam: kalilalila, kalilila; Pare: mdudu, mluhindi; **Samb:** mkundang'ombe; Suku: kidilalila; **Swah:** msingizi; Zara: msempelele, ududu kisazi; Zigua: mniramira; Zinza: mumemeno.

Ecology: A small densely branched evergreen tree or shrub, widely distributed in grassland and woodland from the coast to 2,000 m.

Uses: Bee forage, fodder (leaves), medicine, water purification.

Description: A small tree or shrub, usually to 4 m with a rounded crown. **BARK:** brownish-grey. **LEAVES:** dull green, **both simple** and trifoliate, trifoliate leaves having a larger central leaflet, narrowly **oval**, 2-10 cm long, **tip rounded, often notched**. **FLOWERS:** small, several flowers in a head, green-white, many **stamens prominent**, spreading **out** between 4 green sepals which are joined in a tube below the petals. **FRUIT:** on long **stalks**, variable, usually cylindrical, 5-10 **cm** long, pale yellow to **creamy brown and furry, often constricted between the seeds**.

Propagation Seedlings, root suckers.

Seed info.: No. of seeds per kg: about 14,000. Germination very **good** and fast; 90% after 2 weeks.

treatment: not necessary.

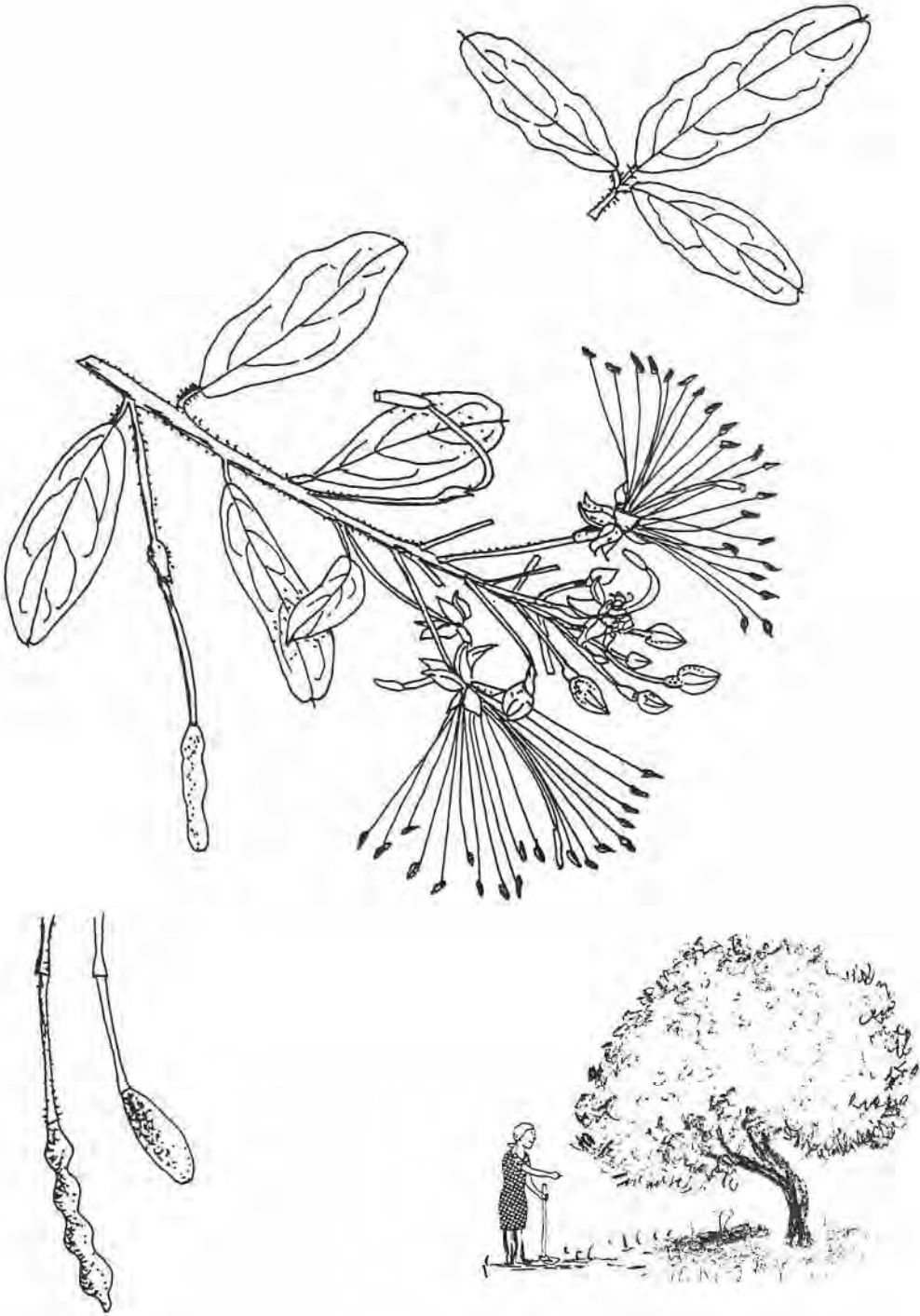
storage: seeds perishable; should be sown fresh.

Management: Coppicing. -

Remarks: The branches and roots of several Maerua species contain toxic substances which may be a health risk when used clear water. The plant has been used as an aphrodisiac and to treat snake bite. It can be used to reclaim land on poor rocky sites.

Maerua triphylla

Capparaceae



Maesopsis eminii

Rhamnaceae

Indigenous

Common names: Ha: mheru; Haya: muhumula; **Kere:** masira, msira, musira; Zinza: msira.

Ecology: A large tree indigenous to East, Central and West Africa. In Tanzania very common on islands in Lake Victoria and in the Bukoba region. It grows in wet tropical and wet montane climates. Requires deep fertile sandy loams and grows best below 2,700 m.

Uses: Firewood, timber (furniture, light construction), poles, veneer/plywood, fodder (fruit), shade (tea and coffee), ornamental.

Description: A leafy semi-deciduous tree 10-30 m, often a clear bole to 10 m, the **branches rather horizontal**, the crown flattened when young but more rounded with age. BARK: pale grey-brown, branchlets dotted with breathing pores, grooved with age. LEAVES: appear compound but alternate on the twig, on **stalks to 1 cm**, each **long and shiny**, pointed, **to 14 cm**, the edge with **characteristic well-spaced rounded teeth**. FLOWERS: small and green in heads beside leaves. FRUIT: oval, to 3 cm long, fleshy and yellow, turning **purple**, with 1-2 hard seeds.

Propagation: Seedlings, wildings, direct sowing.

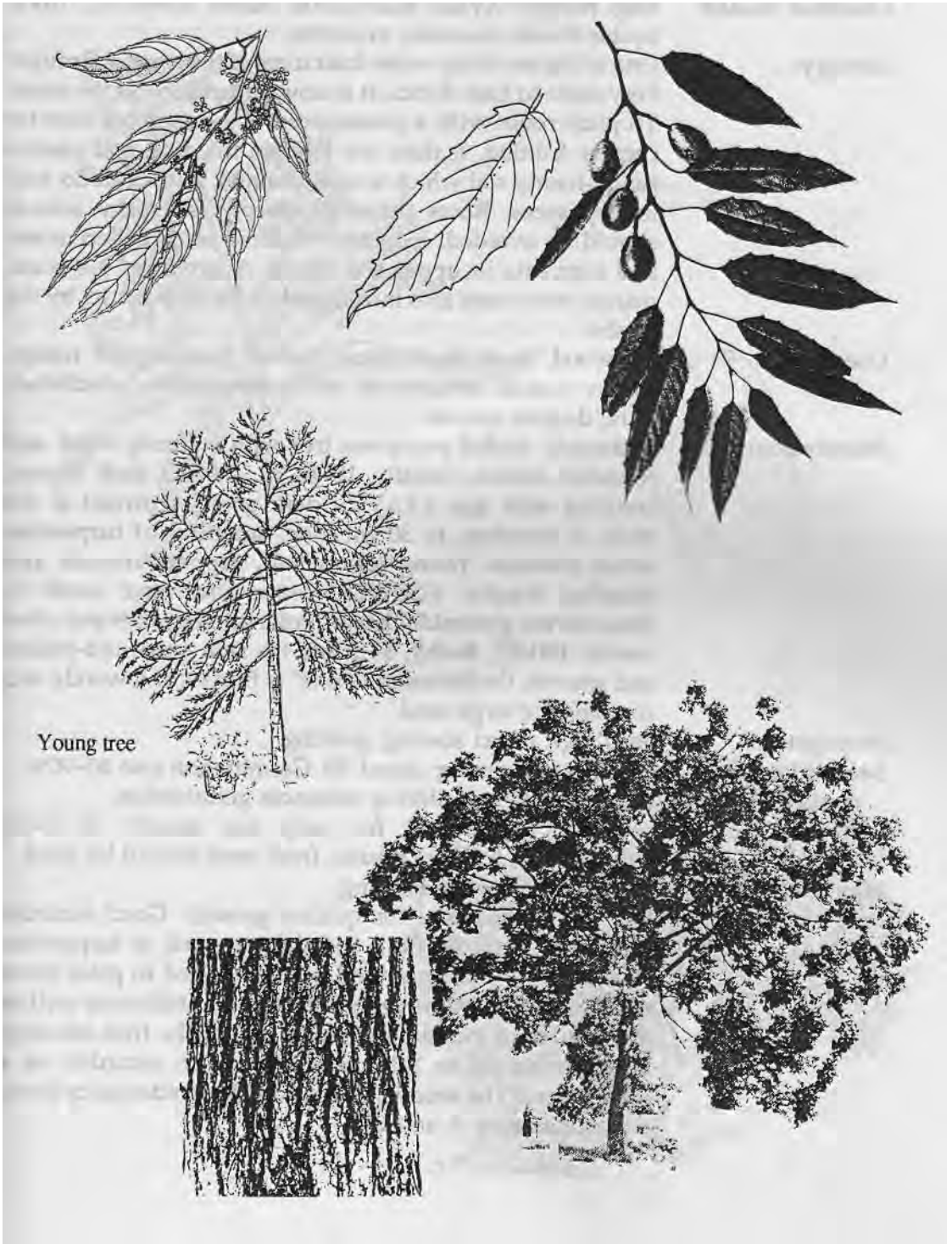
Seed info.: No. of seeds per kg: 500. Low germination rate (20-55%).

treatment: none, soak in cold water for 12 hours, or nick seed.

storage: can be stored for up to 5 months.

Management: Fast growing; coppicing.

Remarks: After its introduction in the Usambara mountains (Amani) the tree has become a weed there. It is one of the fastest growing indigenous trees and can be harvested in 25-30 years, but the timber is poor and rots quickly.



Young tree

Mangifera indica

Anacardiaceae

Northern India, Burma

Common names: Eng: mango; Nyam: munyembe; **Samb:** mwembe; Suku: nyebe; Swah: muembe, mwembe.

Ecology: One of the most important fruit trees of the tropics. Brought very early to East Africa, it is now naturalized at the coast. Tropical zones with a pronounced dry season are best for regular fruiting. It does not tolerate flooding and prefers sandy-loamy soil which is well drained, but it can do well in dry areas. Roots penetrate deeply, so rocky subsoil should be avoided. Extensive shallow roots collect water and nutrients in upper soil levels. Apart from the coast, mango trees were also introduced in Tabora district by the Arabs.

Uses: Firewood, food (fruit, juice), fodder (leaves), bee forage. shade, mulch, ornamental, soil conservation, windbreak. gum, dugout canoes.

Description: A densely leafed evergreen tree with a sturdy trunk and rounded crown, usually 10-15 m. BARK: dark brown, cracking with age. LEAVES: dark green, crowded at the ends of branches, to 30 cm long, **smelling of turpentine when crushed. Young leaves soft, copper-coloured** and hanging **limply**. FLOWERS: numerous and small in pink-brown **pyramidal** heads. Pollination by flies and other insects. FRUIT: fleshy, 8-15 cm, the skin green-red-yellow and smooth, the flattened "stone" is fibrous and woody and contains the large seed.

Propagation: Seedlings, direct sowing, grafting.

Seed info.: No. of seeds per kg: about 50. Germination rate 60-90%.

treatment: not necessary but nicking enhances germination.

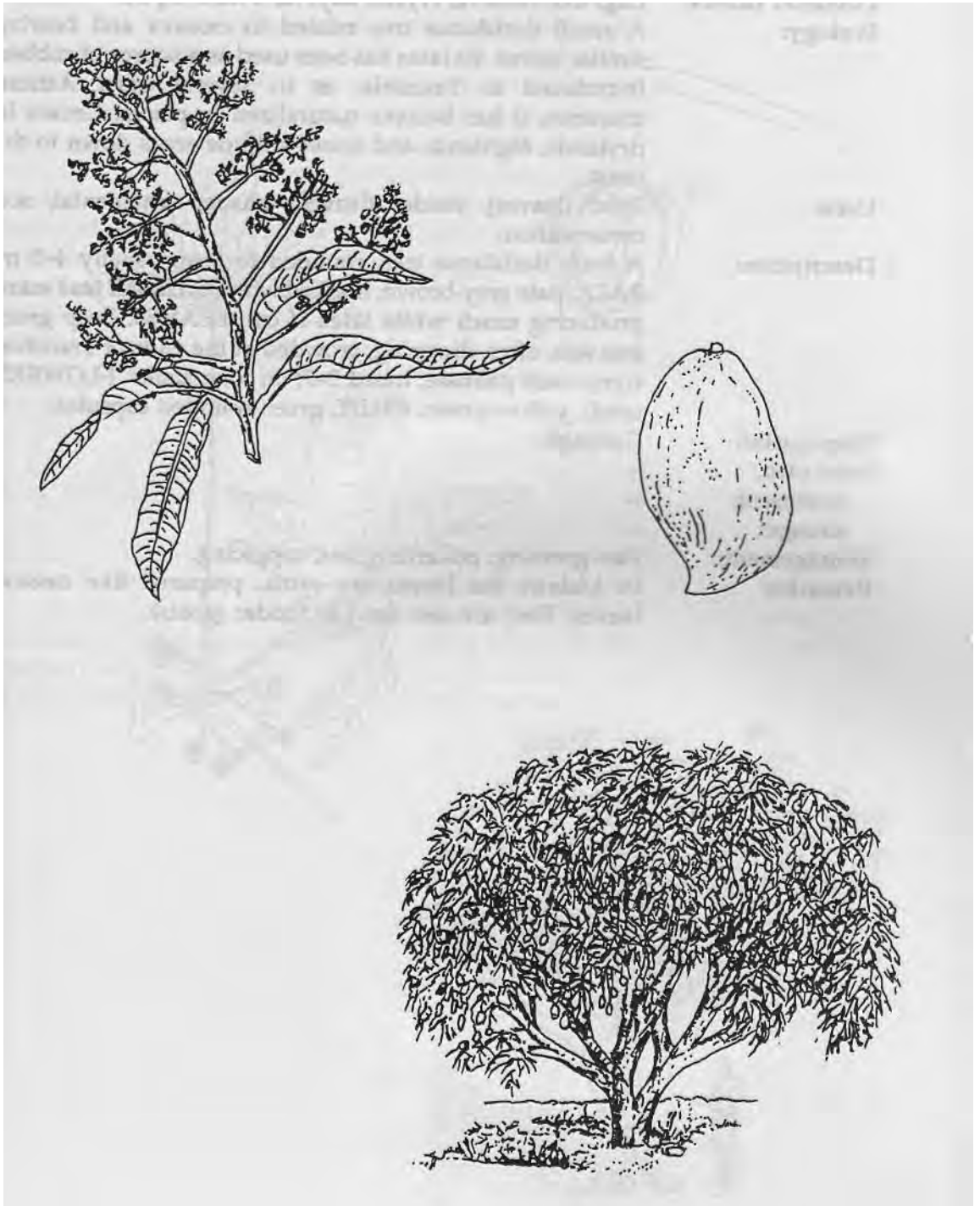
storage: seed can be stored for only one month at room temperature. For best results, fresh seed should be used.

Management: Fairly fast growing; lopping.

Remarks: Use grafted material for quicker growth. Good varieties have fruits without fibre and do not smell of turpentine. Farmers in dry areas should be encouraged to plant more mango trees to improve their family's nutrition as well as as a source of income. Relatively few of the fruit develop, but even so up to 1,000 fruit have been recorded on a mature tree. The seed is surrounded by golden juicy flesh, rich in vitamins A and C.

Mangifera indica

Anacardiaceae



Manihot glaziovii

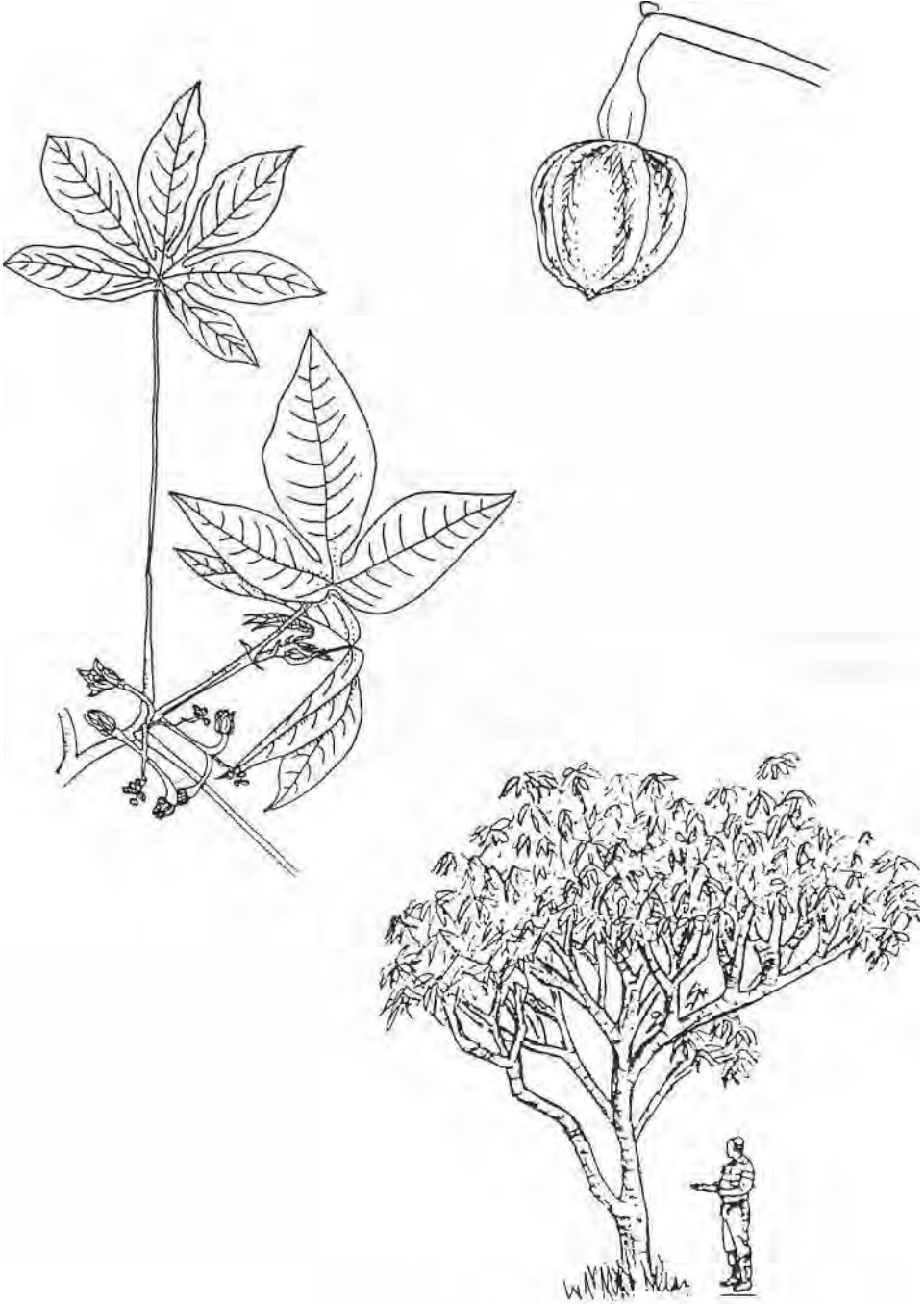
Euphorbiaceae

Brazil

- Common names: Eng: tree cassava; Nyam: kayeva; Swah: mpira.
- Ecology: A small deciduous tree related to cassava and bearing similar leaves. Its latex has been used as a source of rubber. Introduced to Tanzania, as in several other African countries, it has become naturalized in places. Grown in drylands, highlands and lower-altitude areas down to the coast.
- Uses: Food (leaves), fodder (leaves), shade, ornamental, soil conservation.
- Description: A leafy deciduous tree, rounded to 8 m, usually 4-5 m. BARK: pale grey-brown, marked with **horizontal leaf** scars. producing **much white latex if cut**. LEAVES: deep green and soft, often drooping, crowded at the ends of branches. compound palmate, lobed 3-7, on long stalks. FLOWERS: small, yellow-green. FRUIT: green rounded capsules.
- Propagation
Seed info.:
treatment:
storage:
- Management: Fast growing; pollarding and coppicing.
- Remarks: In Malawi the leaves are eaten, prepared like cassava leaves. They are also used as fodder (goats).

Manihot glaziovii

Euphorhiaceae



Manilkara mochisia

Sapotaceae

Indigenous

Common names: Eng: milk berry; Gogo: mkonze; **Haya:** mkunya; **Nyam:** mkonze; **Suku:** mkonze; **Swah:** msapa.

Ecology: A tree commonly found at low and medium altitudes in dry woodlands along the coast and in Acacia and miombo woodlands, especially on termite mounds, 0-2,100 m.

Uses: Firewood, timber (building, dhows), poles, flooring, tools, carving (spoon), food (fruit), bows.

Description A shrub or spreading evergreen tree up to 15 m with dense compact crown. **BARK:** grey and smooth at first, then black and rough with age. **LEAVES:** simple, dark green, leathery, about **6 cm long, tip rounded** or notched, base narrowed to a short stalk, usually at the end of twigs. **FLOWERS:** white or pale yellow, clustered between leaf and branchlet **FRUIT:** rounded and green when young, becoming **yellow when ripe, up to 2.5 cm long**, containing 1-3 seeds in soft edible pulp.

Propagation Seedlings.

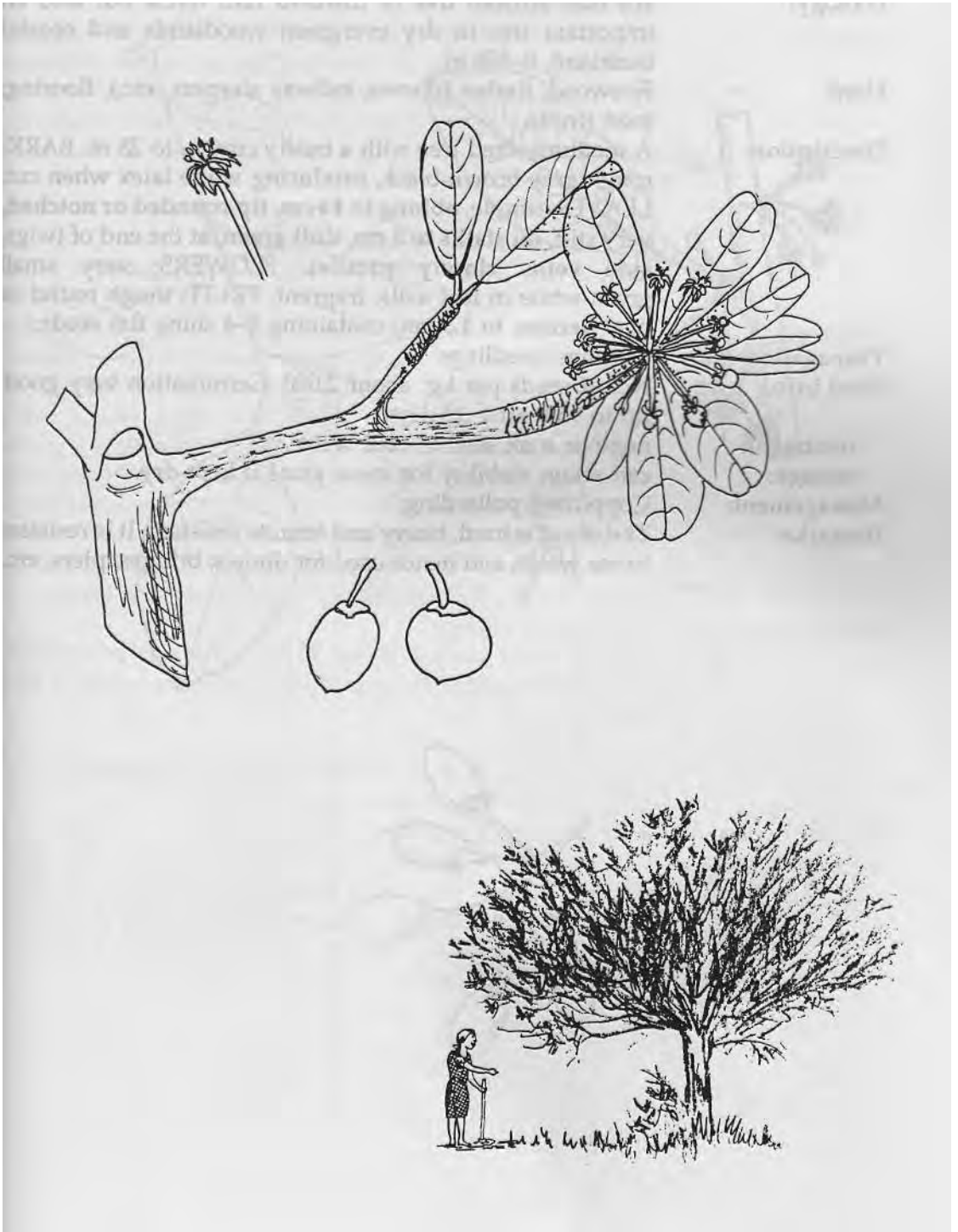
Seed info.: No. of seeds per kg: 3,500-4,000. Germination very good; 95% after 3 weeks.

treatment: not necessary.

storage: can retain viability for at least a year if kept dry.

Management: Slow growing; weed well during the first few years.

Remarks: It has durable timber. The tree is resistant to termites and has potential for agroforestry in semi-arid areas. The hard heavy timber is resistant to sea water and has been used to build dhows.

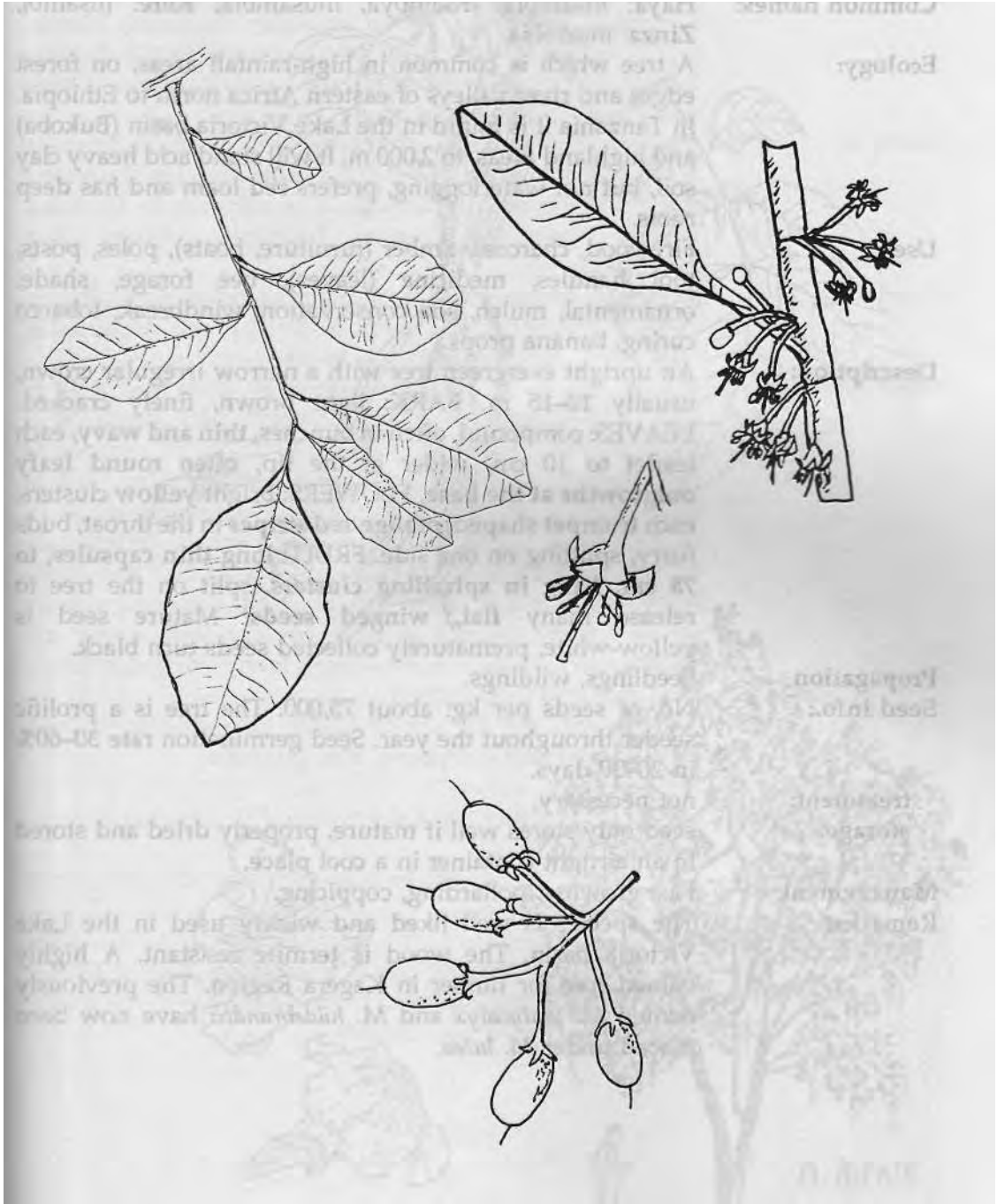


Manilkara sansibarensis (Mimusops cuneifolia) *Sapotaceae*

Indigenous

- Common names: Haya: mkunya; Swah: mgambo, mti-chuma; Zara: mtunda.
- Ecology: An East African tree of lowland rain forest but also an important tree in dry evergreen woodlands and coastal bushland, 0-300 m.
- Uses: Firewood, timber (dhows, railway sleepers, etc.), flooring, food (fruit).
- Description: A medium-sized tree with a bushy crown, to 25 m. BARK: rough grey-brown-black, producing white latex when cut, LEAVES: simple, oblong to 14 cm, tip rounded or notched, very stiff, on stalks to 3 cm, dull green, at the end of twigs; side veins closely parallel. FLOWERS: very small green-white in leaf axils, fragrant. FRUIT: tough round or oval berries, to 1.3 cm, containing \-A shiny flat seeds.
- Propagation
Seed info.: Cuttings, seedlings.
No. of seeds per kg: about 2,000. Germination very good; up to 95% after 30 days.
- treatment: none or soak seed in cold water.
- storage: can retain viability for some years if kept dry.
- Management: Coppicing, pollarding.
- Remarks: The wood is hard, heavy and termite resistant. It is resistant to sea water, and hence used for dhows, bridges, piers, etc.

Manilkara sansibarensis (Mimusops cuneifolia) Sapotaceae



Markhamia lutea

Bignoniaceae

Indigenous

- Common names: Haya: msambia, msambya, musambia; Kere: msambi; Zinza: msambia.
- Ecology: A tree which is common in high-rainfall areas, on forest edges and river valleys of eastern Africa north to Ethiopia. In Tanzania it is found in the Lake Victoria basin (Bukoba) and highland areas, to 2,000 m. It will stand acid heavy clay soil, but not waterlogging, prefers red loam and has deep roots.
- Uses: Firewood, charcoal, timber (furniture, boats), poles, posts, tool handles, medicine (leaves), bee forage, shade, ornamental, mulch, soil conservation, windbreak, tobacco curing, banana props.
- Description: An upright evergreen tree with a narrow irregular crown, usually 10-15 m. BARK: light brown, finely cracked. LEAVES: compound, often in bunches, thin and wavy, each leaflet to 10 cm, wider at the tip, often round leafy outgrowths at the base. FLOWERS: bright yellow clusters, each trumpet shaped, orange-red stripes in the throat, buds furry, splitting on one side. FRUIT: long thin capsules, to 75 cm, hang in spiralling clusters, split on the tree to release many flat, winged seeds. Mature seed is yellow-white, prematurely collected seeds turn black.
- Propagation
Seed info.: Seedlings, wildings.
No. of seeds per kg: about 75,000. The tree is a prolific seeder throughout the year. Seed germination rate 30-60% in 20-30 days.
- treatment: not necessary.
storage: seed only stores well if mature, properly dried and **stored** in an airtight container in a cool place.
- Management: Fast growing; pollarding, coppicing.
- Remarks: The species is well liked and widely used in the **Lake** Victoria basin. The wood is termite resistant. A high valued tree for timber in Kagera Region. The previously named *M. platycalyx* and *M. hildebrandtii* have now **been** placed under *M. lutea*.

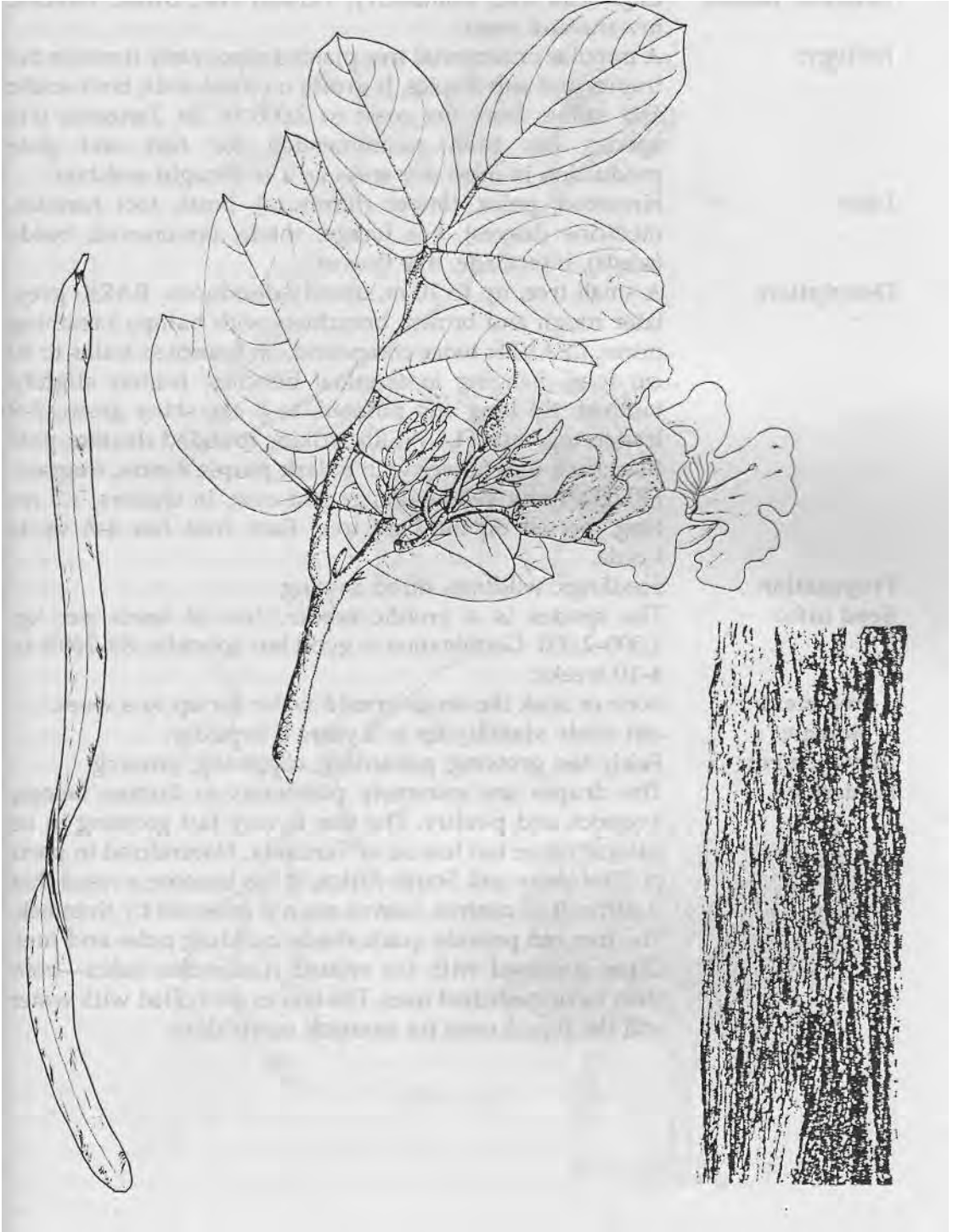


Markhamia obtusifolia

Bignoniaceae

Indigenous

- Common names:** Bende: mpapa; Bond: myuyu; Eng: golden bean tree; Gogo: mguoguo; Ha: mkola; Hehe: mguoguo, mguvani; Mwera: ngeba; Nyam: mbapa; Nyat: mlyati, mulati; Rangi: itunene; Samb: myuyu; Suku: mbapa, mtalabanda; Swah: mtarawanda; Zigua: myuyu.
- Ecology:** A tree occurring at medium to low altitudes from Kenya to South Africa in open woodlands and at margins of lowland evergreen forests. In Tanzania it is common in Mwanza, Tabora, Dodoma, Singida, Morogoro, Iringa, and Ruvuma.
- Uses:** Firewood, timber (furniture), building poles, tool handles, utensils, fodder (leaves), medicine (fruit, roots), ornamental, rope (bark), bird traps (twigs, bark).
- Description:** A much-branched deciduous shrub or small tree, 3-10 m high. **BARK:** light brown-grey, smooth with longitudinal strips peeling off in old trees. **LEAVES:** large, compound with up to 5 pairs of leaflets plus one terminal leaflet, 8-14 cm long, 4–6 cm wide, covered with dense golden hairs. Leaf stalks up to 8 cm long. **FLOWERS:** showy yellow, red-brown lines on 3 of the 5 petal lobes, buds and stalks hairy, at the end of twigs. **FRUIT:** long, flattened capsule up to 8.5 cm, usually smaller, covered with dense soft golden hairs, dehiscent, containing many winged seeds.
- Propagation:** Seedlings and root suckers.
- Seed info.:** No. of seeds per kg: about 32,000. Germination of fresh seed is good and completed after 2 weeks,
- treatment:** not necessary.
- storage:** can retain viability for a short period (3 months) at room temperature.
- Management:** Fairly fast growing; can be planted inside and along farm boundaries, coppicing.
- Remarks:** This tree can be grown with crops on farmlands. It may be bare for many months but is attractive when in flower. Later the fruit capsules often remain on the tree. The timber is very pale, heavy and durable.

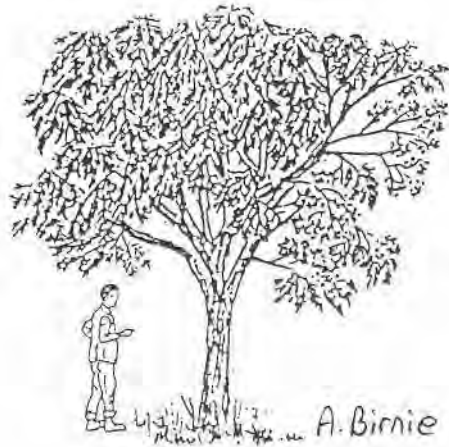
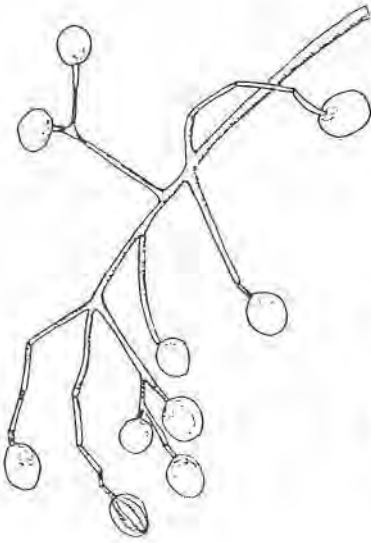


Melia azedarach

Meliaceae

Western Asia, Himalayas

- Common names: Eng: bead tree, Chinaberry, Persian lilac; **Swah:** mmelia, mwarubaini nusu.
- Ecology: A popular ornamental tree planted since early times in the tropics and sub-tropics. It grows on most soils, both acidic and saline, from the coast to 2,000 m. In Tanzania this species has been recommended for fuel and pole production in most dry areas as it is drought resistant.
- Uses: Firewood, poles, timber (furniture), posts, tool handles, medicine (leaves), bee forage, shade, ornamental, beads (seeds), insecticide, dye (leaves).
- Description: A small tree, up to 10 m, usually deciduous. **BARK:** grey, later rough and brown, branchlets with bumpy breathing pores. **LEAVES:** twice compound, on branched stalks to 40 cm long, hanging in terminal bunches, leaflets **slightly toothed, tip long and pointed, to 8 cm**, shiny green, 3-9 leaflets together. **FLOWERS:** striking **rounded clusters**, pale **lilac**, each tiny flower with a **dark purple centre**, fragrant. **FRUIT:** fleshy yellow-orange and oval, in clusters, 1.5 cm long, persist on the bare tree. Each fruit has 4-6 seeds inside.
- Propagation** Seedlings, wildings, direct sowing.
- Seed info.:** The species is a prolific seeder. No. of seeds per kg: 1,500-2,000. Germination is good but sporadic; 85-100% in 4-10 weeks.
- treatment:** none or soak the seeds in cold water for up to a week.
- storage:** can retain viability up to 2 years if kept dry.
- Management:** Fairly fast growing; pollarding, coppicing, pruning.
- Remarks:** The drupes are extremely poisonous to human beings livestock and poultry. The tree is very fast growing in its natural range but less so in Tanzania. Naturalized in parts of Zimbabwe and South Africa, it has become a weed **that** is difficult to control. Leaves are not browsed by livestock. The tree can provide quick shade, building poles and fuel. Often confused with the related *Azadirachta indica*—both trees have medicinal uses. The leaves are boiled with water and the liquid used for stomach complaints.



Milicia excelsa (Chlorophora excelsa)

Moraceae

Indigenous

Common names: Chag: mrie; **Eng:** iroko (West Africa), mvule (East Africa); Haya: muzuli, mwuli; **Hehe:** mpugusi; **Lugu:** mvule, mwule; Mwera: mtalula; Nyak: mwale; **Swah:** mvule; **Zigua:** mzule; **Zinza:** msule.

Ecology: A giant deciduous tree of lowland forest and wet savannah that is logged commercially throughout its range. Widespread throughout tropical Africa, Ivory Coast to Angola, Sudan to Mozambique. Very common in wetter lowlands of Tanzania, at the coast, and in areas around Lake Nyasa and Lake Victoria. It can grow well with mean annual rainfall as low as 700 mm provided it has access to extra water from a perennial stream or underground. It does not tolerate waterlogging and the soils must be well drained and relatively fertile.

Uses: Firewood, charcoal, timber (furniture, boats), shade, ornamental, mulch.

Description: Old trees may have a **straight trunk clear to 21 m** and **2 m in diameter**. The high umbrella crown grows from a few thick branches. Ultimate branches hang down. **BARK:** thick, pale, grey then brown, exudes slightly milky sap, as do the leaves. **LEAVES:** large, **oval to 18 cm**, rather thin, a clearly pointed tip, 10-18 pairs clear side veins, base rounded, often unequal sided, stalk to 4 cm, **leaf edge finely toothed and wavy**. **FLOWERS:** trees are male or female, both with small flowers in spikes, **male flowers in drooping catkins to 15 cm**, female shorter and thicker. **FRUIT:** like a long, green mulberry, 6-7 cm, the soft pulp attracting birds and bats. Fruits ferment rapidly on the ground. Small hard seeds in pulp.

Propagation: Seedlings, stumps.

Seed info.: No. of seeds per kg: about 475,000. The tree is not a prolific seeder and careful seed collection is needed. Germination is slow and poor, up to 45% in 45-60 days.

treatment: not necessary.

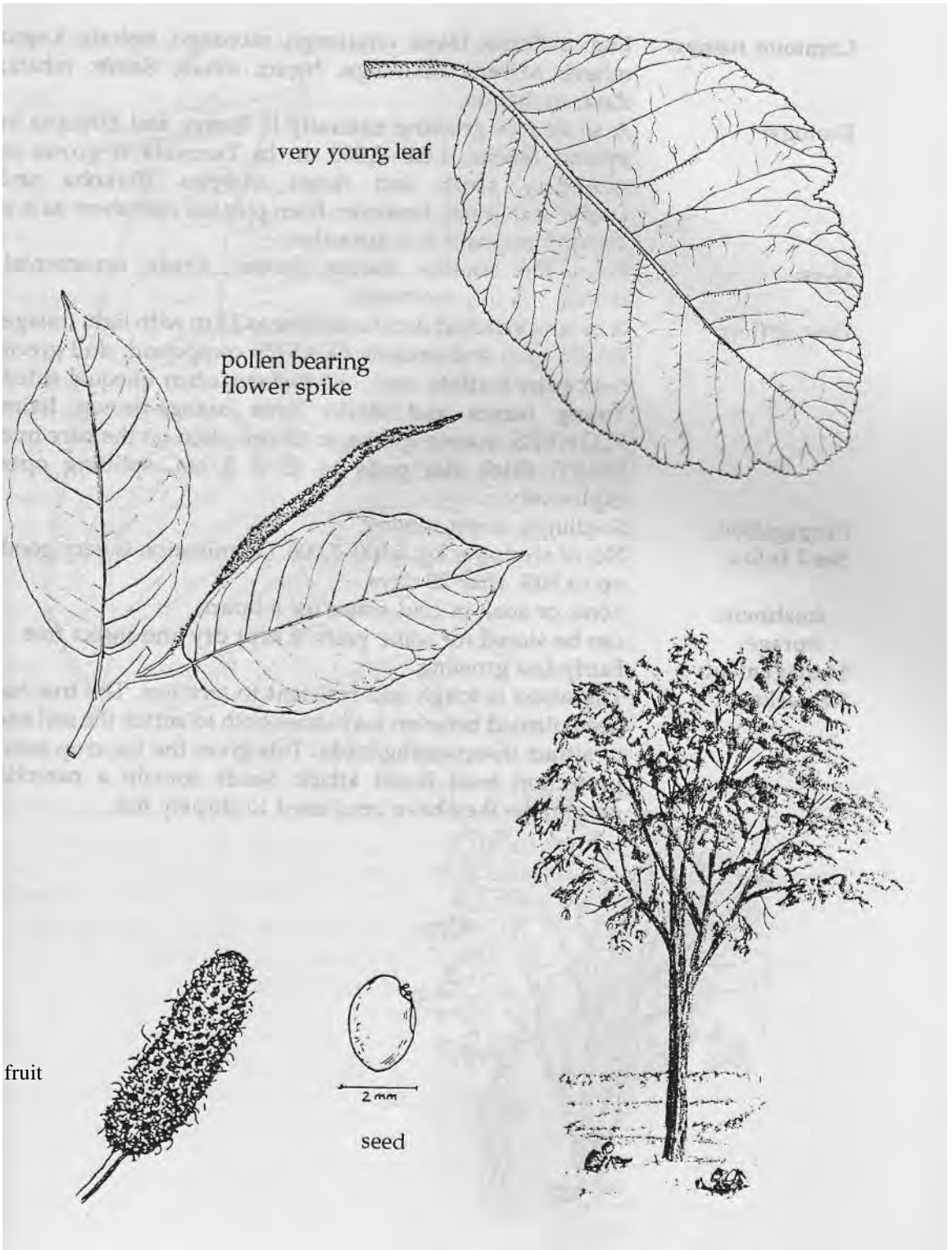
storage: seed loses viability quickly.

Management: Fast growing compared to other hardwood species. The rotation period is 100 years.

Remarks: The wood is hard, durable, termite resistant and resembles teak. Therefore it is highly valuable timber used especially for quality indoor and outdoor furniture. It is a reserved tree in Tanzania and cannot be felled without a licence. Tea estates are now required to leave the tree within their tea plantations.

Milicia excelsa (Chlorophora excelsa)

Moraceae



Millettia dura

Papilionoideae

Indigenous

Common names: **Eng:** millettia; **Haya:** omulongo, morongo, mshafa; **Lugu:** mhavi; **Mwera:** mkuunge; **Nguu:** mhafi; **Samb:** mhafa; **Zara:** muhamvi.

Ecology: A small tree growing naturally in Kenya and Ethiopia in upland forests, 1,000-2,000 m. In Tanzania it grows in secondary scrub and forest margins (Bukoba and Usambara). It has, however, been planted elsewhere as it is drought resistant and attractive.

Uses: Poles, tool handles, fodder (leaves), shade, ornamental, mulch, soil improvement.

Description: A much-branched deciduous tree to 15 m with light foliage. **BARK:** grey and smooth. **LEAVES:** compound, **dull green, 5-12 pairs leaflets**, each one to 5 cm, often unequal sided. **Young leaves and stalks have orange-brown hairs.** **FLOWERS:** **mauve sprays, to 20 cm**, often on the bare tree **FRUIT: thick flat pods** to 25 x 2 cm, splitting **open** explosively.

Propagation Seedlings, direct sowing.

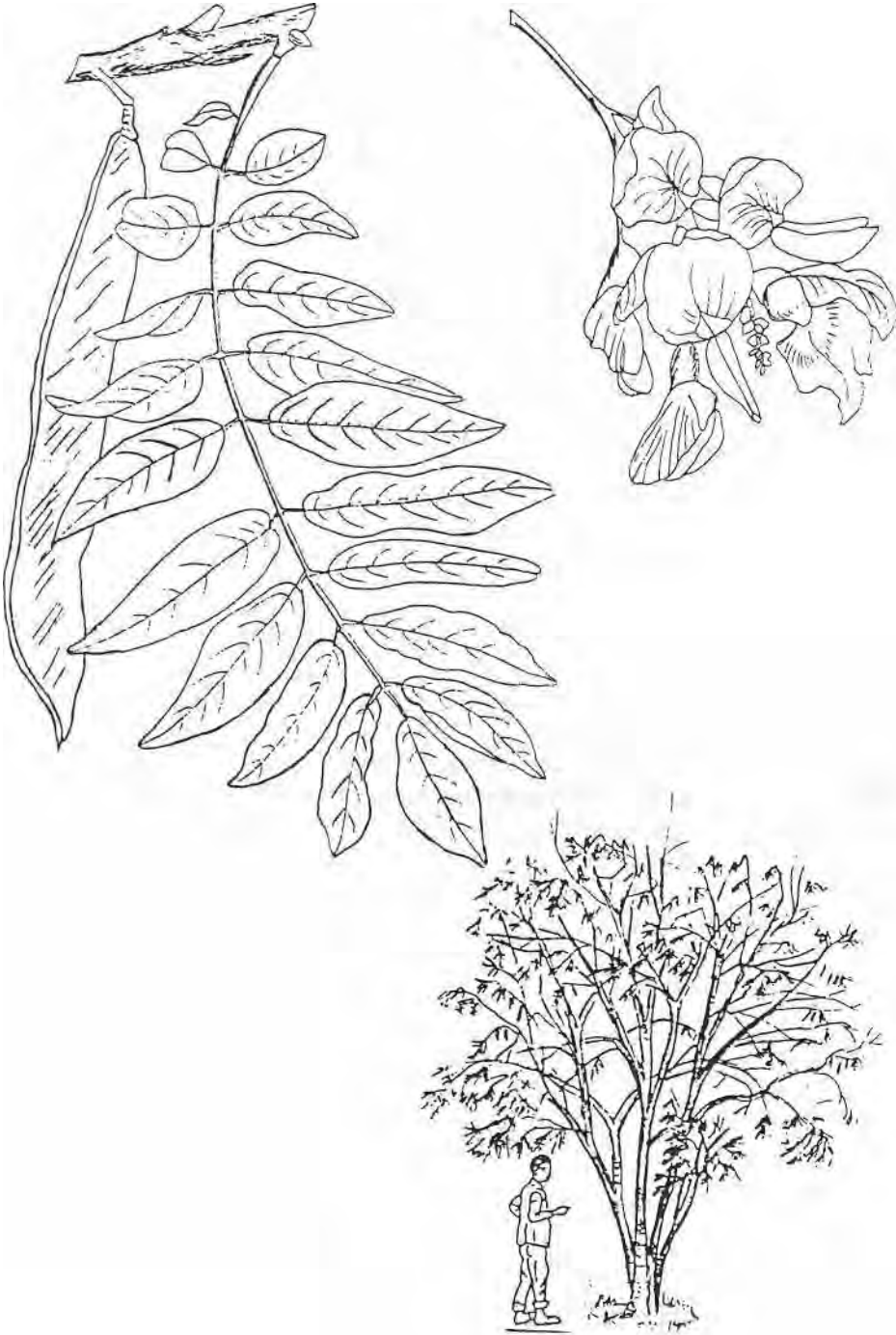
Seed info.: No. of seeds per kg: 6,000-7,000. Germination is very good; up to 80% after 20 days.

treatment: none, or soak in cold water for 6 hours.

storage: can be stored for some years if kept dry and insect free.

Management: Fairly fast growing.

Remarks: The wood is tough and resistant to termites. The tree has been planted between tea bushes both to enrich the soil and to attract insect-eating birds. This gives the tea crop some protection from insect attack. Seeds contain a narcotic, ground up they have been used to stupefy fish.

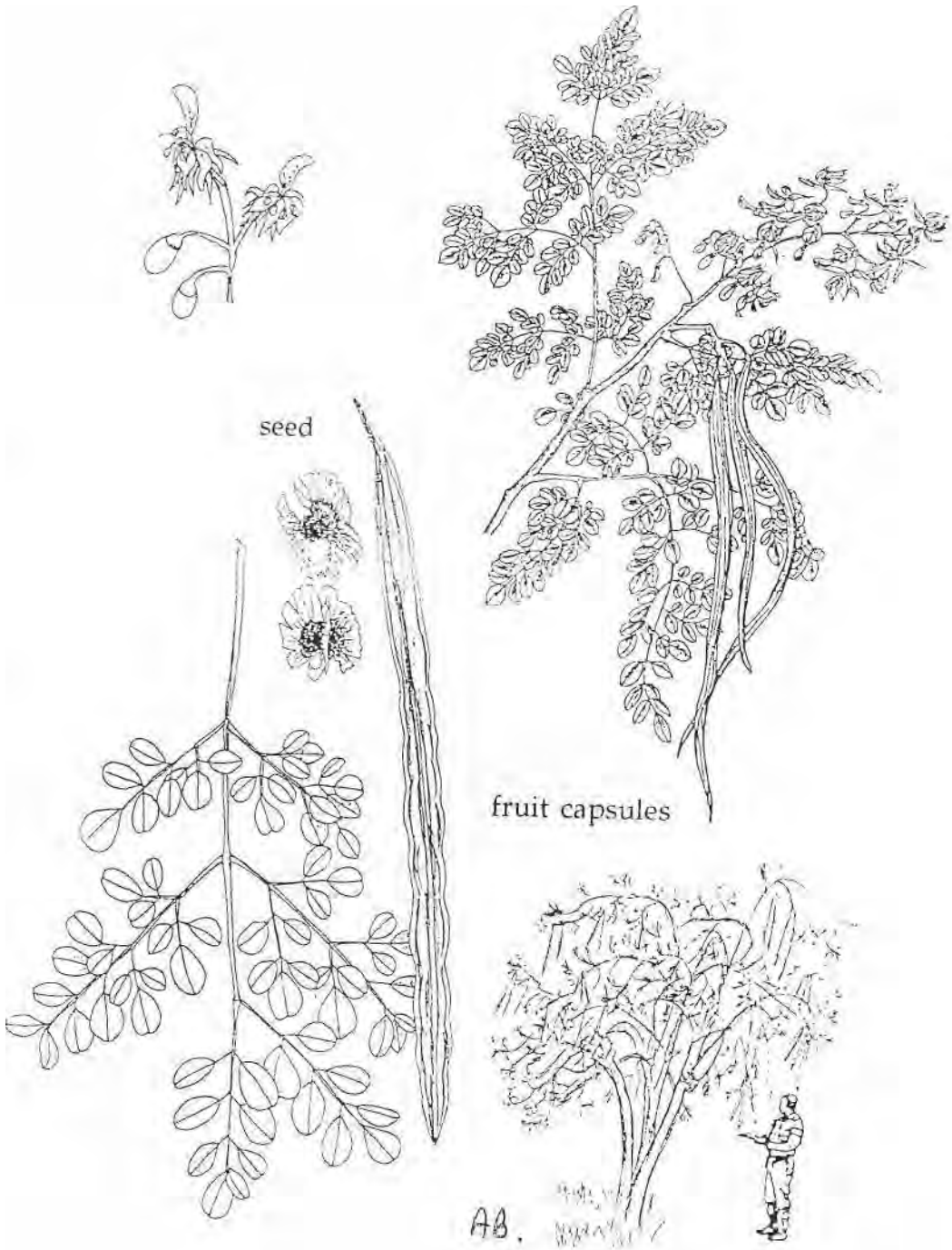


Moringa oleifera (*M. pterygosperma*)

Moringaceae

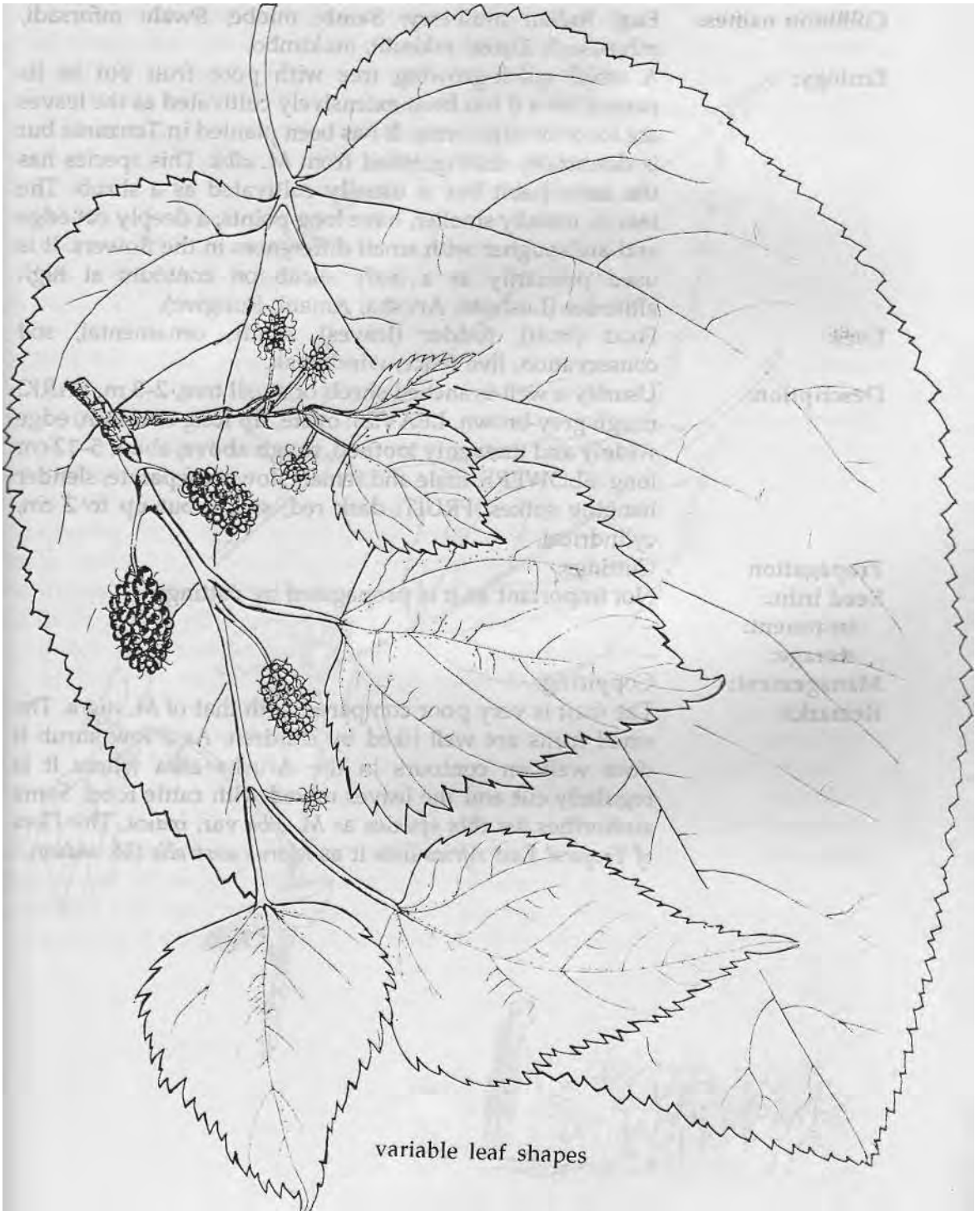
India, Himalayas

- Common names:** Eng: drumstick tree, horse-radish tree; **Lugu:** mlonge, mlonje; **Swah:** mlonge.
- Ecology:** Native to the western Himalayas and India but today planted all over the tropics. Naturalized in coastal areas of East Africa, it prefers low altitudes, usually 0-500 m, on well-drained sandy soils with a high watertable, but is also drought resistant. In Tanzania it has been planted at lower elevations throughout the country.
- Uses:** Food (young leaves, young fruit), spice/flavouring (young roots), medicine, fodder (leaves, young fruit), bee forage, shade, soil conservation, windbreak, fibre, live fence, tannin, oil (seeds), water purification (seeds).
- Description:** A deciduous tree to 10 m, usually smaller, **pale feathery foliage**. **BARK:** grey, thick and corky, peeling in patches. **LEAVES:** pale green, **thrice compound**, the whole leaf 30-60 cm, leaflets **usually oval, tip rounded 1-2 cm long**. **FLOWERS:** **cream**, fading yellow, in long sprays, sweet scented, attracting insects. **FRUIT:** long capsules to 45 cm, **bluntly triangular in sections**, splitting when dry to release **dark brown 3-winged seeds** from the pith.
- Propagation** Direct sowing, seedlings. Cuttings of more than 1 m can be used successfully.
- Seed info.:** No. of seeds per kg: 4,000-5,000. Germination rate 60-70% in 60-75 days.
- treatment:** not necessary or soak in cold water for 6 hours.
- storage:** can be stored for up to a year if kept dry.
- Management:** Fast growing; pollarding, coppicing, lopping.
- Remarks:** It is best suited to moist localities, but is also a useful tree for homesteads in dry areas because of its food value. The ground up seeds have been used successfully in the Sudan, Burundi and Kenya to clear muddy water—a very valuable property. The "Ben oil" from seeds keeps its quality and so can lubricate precision machinery, e.g. watches. It is also used for salad oil, soap and cosmetics.



China

- Common names: Eng: mulberry, white mulberry; **Samb:** mlobe; **Swah:** mforsadi, mfurusadi.
- Ecology: A tree native to warm temperate Asia, probably of mountainous China where it can reach over 20 m. Now widely cultivated in tropical Africa where it is much smaller, sometimes naturalized. It has been widely planted in Tanzania for its edible fruit, including drier areas of the country as it tolerates drought and heat once established. It does better in moist climates up to 2,000 m, and is also commonly planted in Arusha and Kilimanjaro Regions where it is frost resistant.
- Uses: Firewood, timber, tools, food (fruit, leaves), fodder (leaves, shoots), bee forage, soil conservation, ornamental, shade, windbreak, live fence, silkworms (leaves).
- Description:** A small deciduous tree, about 5 m, bole rarely straight, soon branching to a rounded crown. **BARK:** smooth pink-grey when young, long lines of lenticels. Branchlets red-brown, hang low. When cut white latex spills out. **LEAVES:** **very variable** even on the same branch, **broadly ovate to heart shaped or 3 lobed**, 3 clear nerves from the base, 5-15 cm long but **usually small**. Leaf base cordate, often unequal sided, edge coarsely toothed, tip pointed. Some hairs on both sides but **leaves feel smooth above** (not rough), nerves hairy below. A leaf stalk to 5 cm. **FLOWERS:** male and female, often on separate branches, tiny green-white flowers on **hanging spikes** about **1 cm, few or no hairs**. **FRUIT:** compound, to 2 cm with white-yellow-pink sections, may be dark red to black on one side. Edible, sweet and juicy but rather tasteless.
- Propagation** Seedlings, cuttings.
- Seed info.:** Poor germination. No. of seeds per kg: 325,000-700,000.
- treatment:** soak in cold water for 48 hours,
- storage:** can be stored a long time if kept cold.
- Management:** Fast growing, especially when grown from cuttings.
- Remarks:** Leaves are food for silkworms. The yellow-brown **wood**, hard and tough, has been used elsewhere to make hockey sticks. Saplings grown from seed produce fruit in 5-8 years but cuttings in 3 years. The tree can be used as a hedge or to stabilize slopes.



variable leaf shapes

Moras indica

Moraceae

Tropical Asia, North India

- Common names: Eng: Indian mulberry; Samb: mlobe; Swah: mforsadi, mfurusadi; Zinza: mkimbi, mukimbo.
- Ecology: A small quick-growing tree with poor fruit but in its natural area it has been extensively cultivated as the leaves are food for silkworms. It has been planted in Tanzania but is doubtfully distinguished from *M. alba*. This species has the same habit but is usually cultivated as a shrub. The leaves, usually smaller, have long points, a deeply cut edge and are rougher with small differences in the flowers. It is used primarily as a leafy shrub on contours at high altitudes (Lushoto, Arusha, Amani, Rungwe).
- Uses: Food (fruit), fodder (leaves), shade, ornamental, soil conservation, live fence, windbreak.
- Description: Usually a well-branched shrub or small tree, 2-3 m. BARK: rough grey-brown. LEAVES: ovate, tip long and thin, edge widely and unevenly toothed, rough above, about 5-12 cm long. FLOWERS: male and female flowers separate, slender hanging spikes. FRUIT: dark red, small, but up to 2 cm, cylindrical.
- Propagation: Cuttings.
- Seed info.: Not important as it is propagated by cuttings.
- treatment:
- storage:
- Management: Coppicing.
- Remarks: The fruit is very poor compared with that of *M. nigra*. The small fruits are well liked by children. As a low shrub it does well on contours in the Arusha area where it is regularly cut and the leaves mixed with cattle food. Some authorities list this species as *M. alba* var. *indica*. The *Flora of Tropical East Africa* lists it as *Moms australis* (*M. indica*).

Moras indica

Moraceae

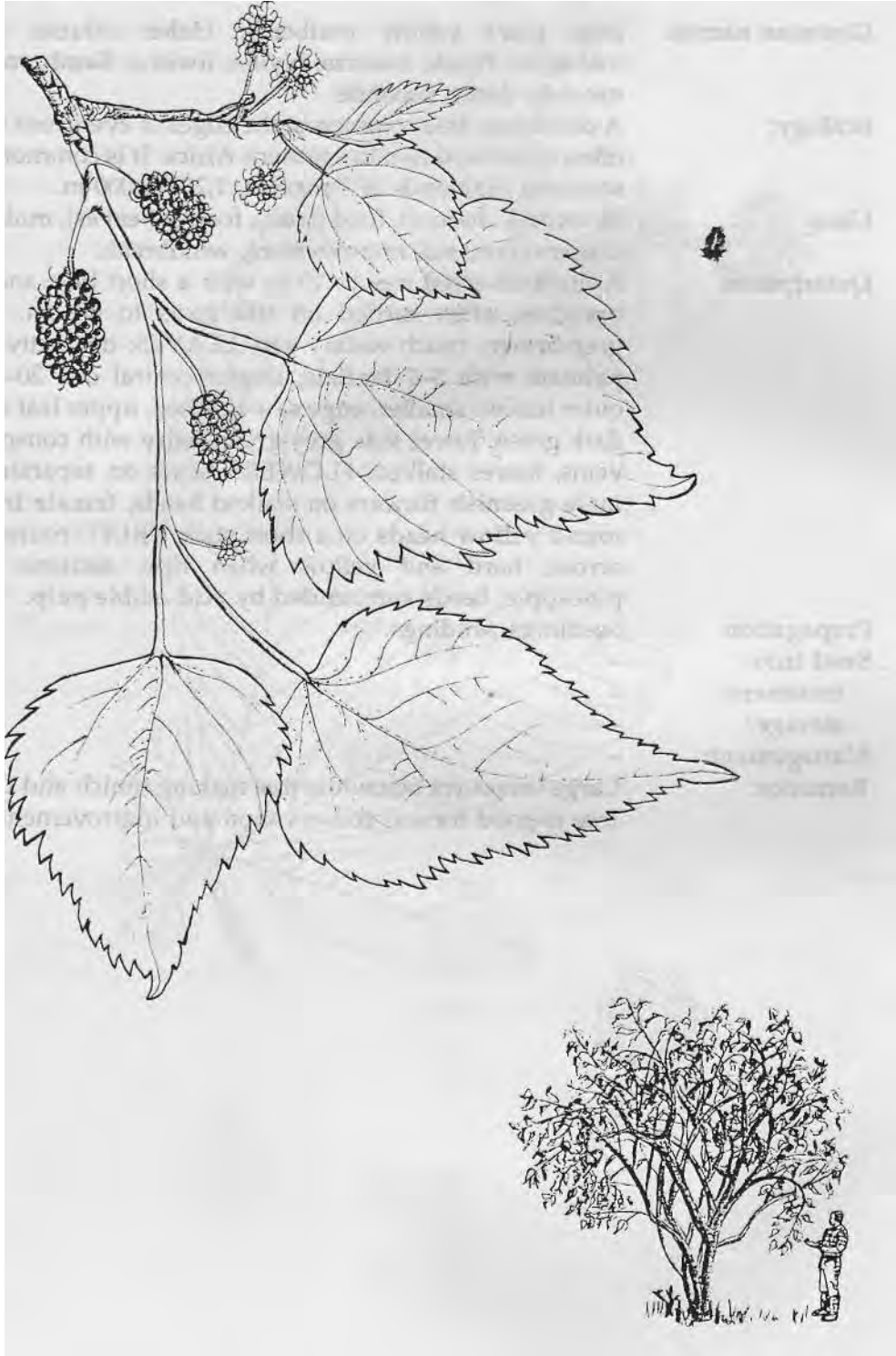


Morus nigra (M. japonica)

Moracem

Western Asia, Persia

- Common names: Eng: black mulberry; Samb: mlobe; Swah: mforsadi.
- Ecology: One of ten *Morus* species all with juicy compound fruit. Widely cultivated in the Middle East and warmer parts of Europe the Black Persian Mulberry is one variety. Both *M. nigra* and *M. alba* have been introduced to Africa, **each** species requiring different conditions. Although temperate in origin, *Morus* species grow surprisingly well in **arid** conditions from sea level to 2,000 m with little attention and taking easily from cuttings. *M. nigra* grows best at lower altitudes and at the coast and is preferred for its abundant sweet fruit and ornamental shape. It is not as widespread in Tanzania as *M. alba*.
- Uses: Firewood, food (fruit), fodder (leaves, fruit), bee forage, medicine (roots), ornamental, live fence.
- Description: A semi-deciduous shrub, usually 2-5 m, or a well-branched tree to 7 m with a spreading rounded crown. BARK: grey-brown, rough with age, resinous gum if cut. LEAVES: **large** and heart shaped, or broadly ovate, not lobed, 10-20 cm, the edge with large teeth, tip pointed, dull green **and** rough above, slightly hairy below. FLOWERS: sexes separate on the same tree, small green-white flowers on drooping spikes, female flowers with long soft hairs, small and crowded. FRUIT: compound, cylindrical, red **then** purple-black when ripe to 2.5 cm long (stains badly).
- Propagation: Cuttings.
- Seed info.: Not important as the tree is propagated from cuttings.
- treatment:
- storage:
- Management: Fast growing.
- Remarks: The tree grows rapidly from cuttings and bears fruit about 3 years. Both goats and cattle browse the leaves and shoots so young saplings need protection. The fruit is a favourite with children but is not grown commercially.



Myrianthus holstii

Moraceae

Indigenous

Common names: Eng: giant yellow mulberry; Hehe: mfutsa; Kinga: mabagala; **Nyak:** mswiza; Nyiha: liwisha; **Samb:** mkonde, mkonde dume, moonde.

Ecology: A deciduous tree common at the edges of evergreen forests, often riverine, down to southern Africa. It is common in **the** southern highlands of Tanzania, 1,200-2,000 m.

Uses: Firewood, charcoal, food (fruit), fodder (leaves), mulch, **soil** conservation, soil improvement, windbreak.

Description: A medium-sized tree to 10 m with a short bole and large branches, often carried on stilt roots to 60 cm. **BARK:** grey-brown, much watery sap. **LEAVES:** distinctive large **palmate with 5-7 leaflets**, largest central one 20-30 cm. outer leaflets smaller, edge **saw-toothed**, upper leaf smooth dark green, **lower side grey-green hairy** with conspicuous veins, leaves stalked. **FLOWERS:** sexes on separate trees. **male greenish flowers** on stalked heads, **female in small round yellow heads** on a short stalk. **FRUIT:** round, 4cm across, hard and yellow when ripe, sections like a pineapple. Seeds surrounded by acid edible pulp.

Propagation

Seed info.:

treatment:

storage:

Management:

Remarks:

Seedlings, wildings.

Large leaves rot below the tree making mulch and thus the tree is good for soil conservation and improvement.

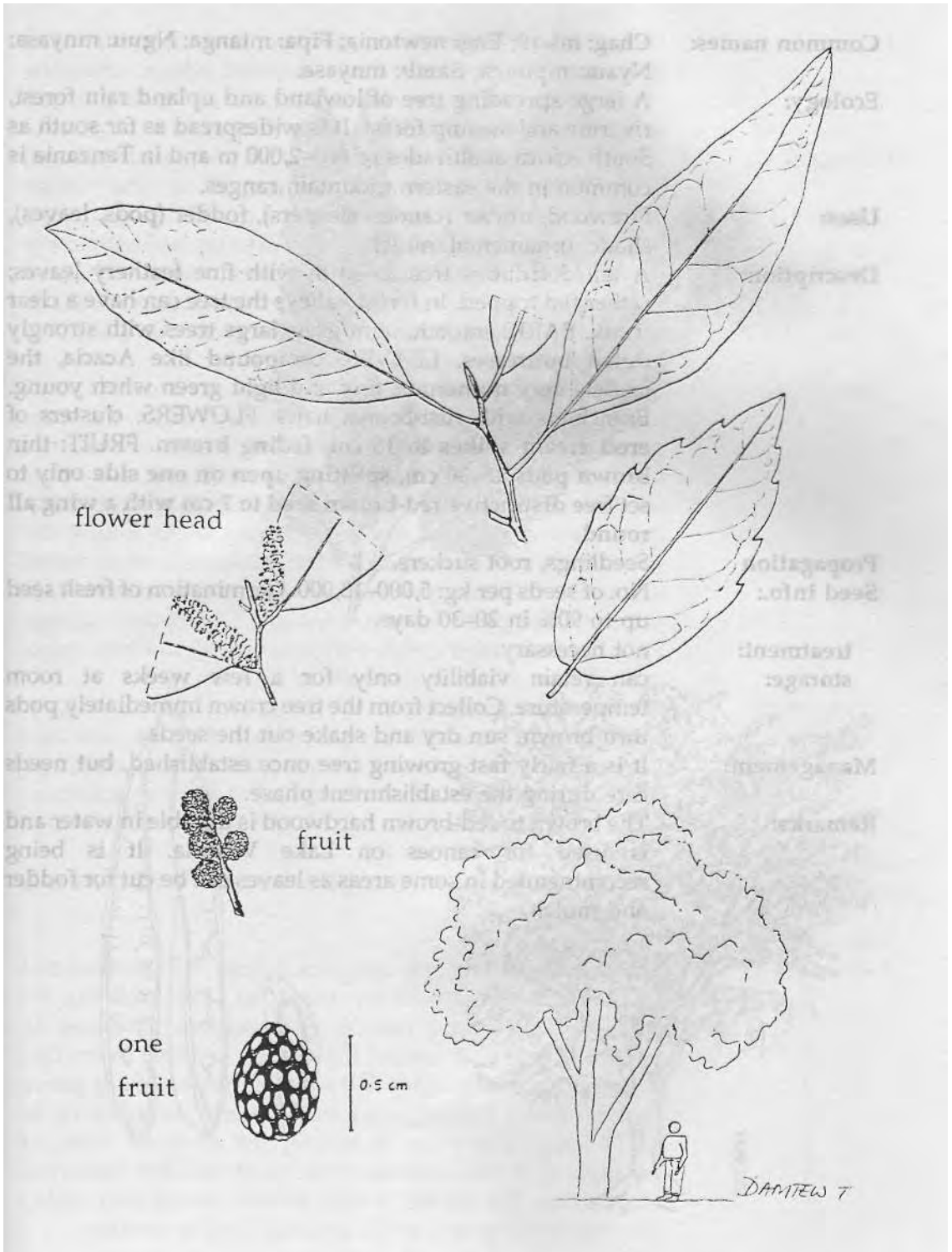


Myrica salicifolia

Myricaceae

Indigenous

- Common names: Chag: mfurukwe, mpache; **Hehe:** ndaita, mwefi; **Lugu:** kivumba; Maasai: olgetalasua; **Mate:** nkuguti; Pare: muangwi; **Samb:** mshegheshe.
- Ecology: A tree found in Kenya, Malawi, Zambia and Ethiopia, 1,600-3,300 m, and widespread on many mountain ranges in Tanzania above 1,200 m. Prefers shallow soils, heath and rocky areas.
- Uses: Firewood, timber (local carpentry only), medicine (leaves, seeds, roots, bark).
- Description: An evergreen shrub or much-branched tree up to 15 m high with a compact crown. BARK: dark grey, brown or black, smooth at first becoming rough, fissured and furrowed with age. Young twigs glandular and hairy. LEAVES: simple, alternate, up to 8.5 cm long, dark green above and pale green beneath with toothed margins, **dotted with golden glands, especially below**, giving a **spicy aromatic** smell when crushed. FLOWERS: small, yellow, fragrant and dotted with oil glands, male and female separate. FRUIT: On **a spike**, to **4 cm**, **each fruit berry-like** and round, very small, **purple with white waxy dots all over**.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: about 300,000. Germination is fast, but germination rate poor.
- treatment: treatment is not required.
- storage: can retain viability only for a short time (2 months) at room temperature.
- Management: Slow growing; coppicing.
- Remarks: The tree can easily be confused with young camphor (*Ocotea usambarensis*). Bark extracts are used to treat body pains and fatigue, and seeds and roots are used as an anthelmintic and to treat coughs. The wood is soft and light and of poor quality.

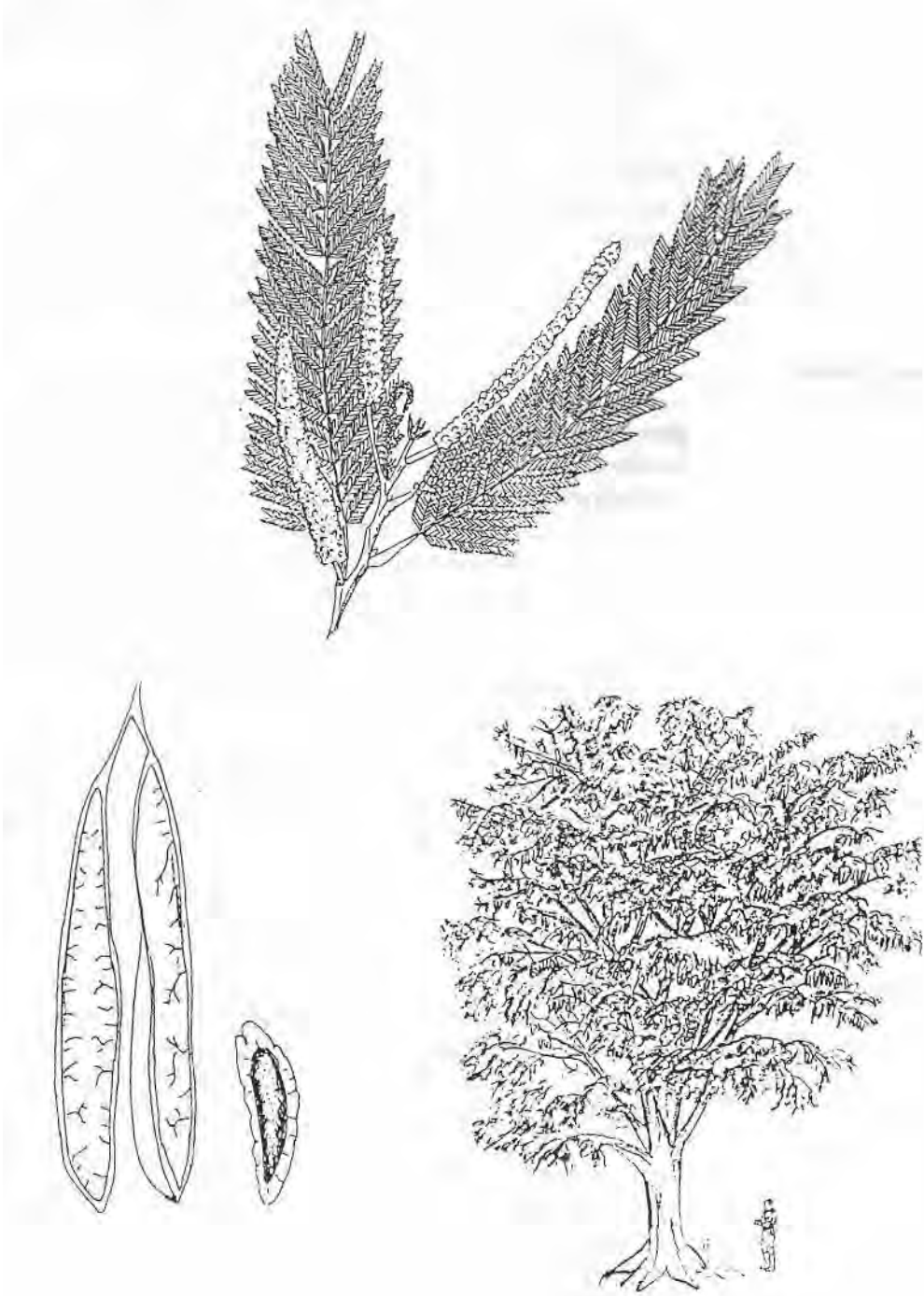


Newtonia buchananii

Mitnosoideae

Indigenous

- Common names: Chag: mkufi; Eng: newtonia; Fipa: mtanga; **Nguu:** mnyasa; Nyam: mpunga; Samb: mnyasa.
- Ecology: A large spreading tree of lowland and upland rain forest, riverine and swamp forest. It is widespread as far south as South Africa at altitudes of 600-2,000 m and in Tanzania is common in the eastern mountain ranges.
- Uses: Firewood, timber (canoes, sleepers), fodder (pods, leaves), shade, ornamental, mulch.
- Description: A tall deciduous tree to 40 m with fine feathery leaves; rather flat topped. In forest valleys the tree can have a clear trunk. **BARK:** smooth, light grey, large trees with strongly fluted buttresses. **LEAVES:** compound like Acacia, the leaflets very numerous, tiny and light green when young. Branchlets with rust-brown hairs. **FLOWERS:** clusters of erect cream spikes to 18 cm, **fading brown**. **FRUIT:** thin brown pods 15-30 cm, **splitting open on one side** only to set free distinctive red-brown seed to 7 cm with a wing all round.
- Propagation Seedlings, root suckers.
- Seed info.: No. of seeds per kg: 5,000-13,000. Germination of fresh seed up to 90% in 20-30 days.
- treatment: not necessary.
- storage: can retain viability only for a few weeks at **room** temperature. Collect from the tree crown immediately pods turn brown, sun dry and shake out the seeds.
- Management: It is a fairly fast-growing tree once established, but needs care during the establishment phase.
- Remarks: The brown to red-brown hardwood is durable in water and is used for canoes on Lake Victoria. It is being recommended in some areas as leaves can be cut for fodder and mulch.

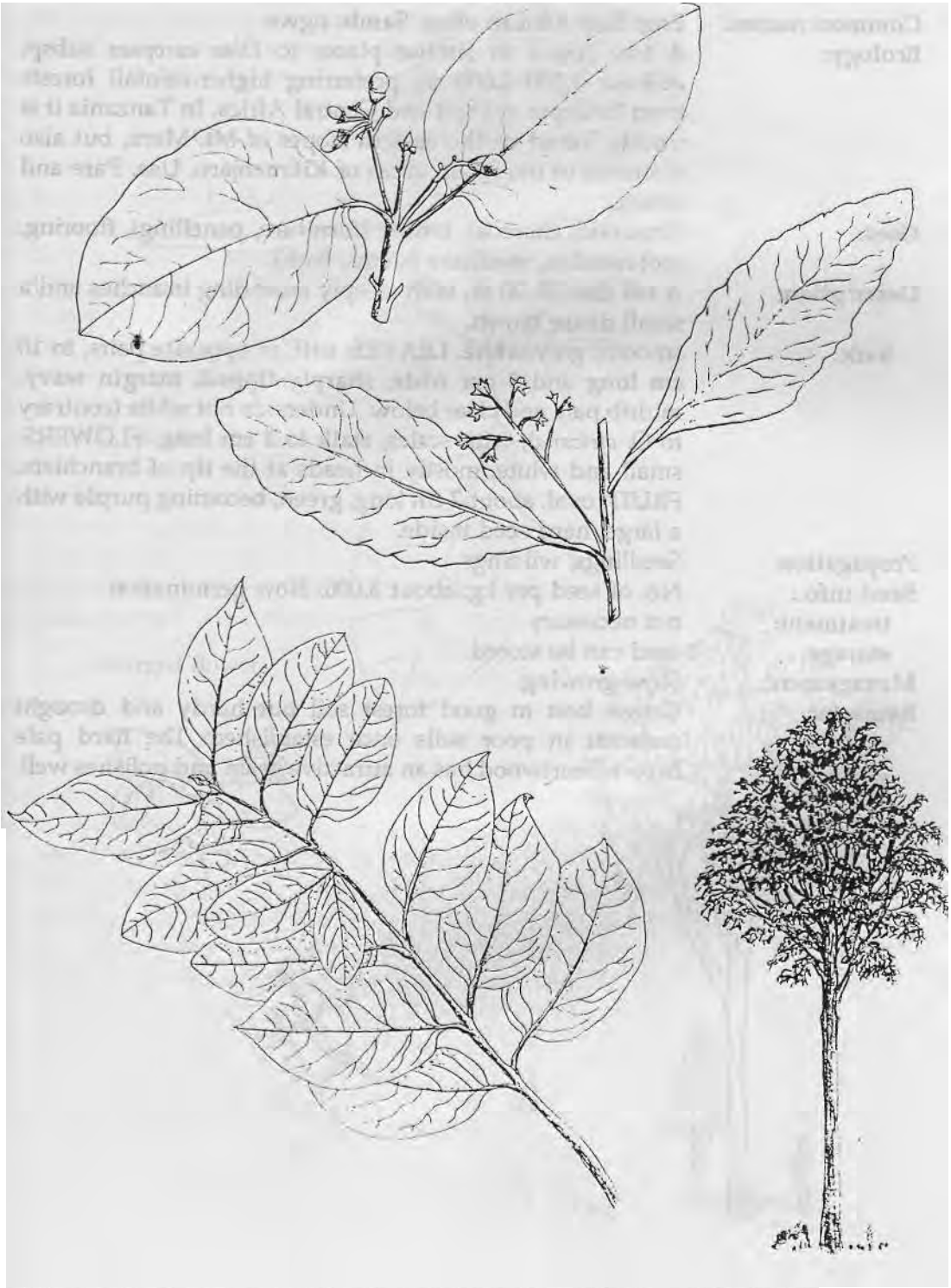


Ocotea usambarensis

Lauraceae

Indigenous

- Common names: Chag: mseri, muwong, mwawong; Eng: camphor, East African camphor wood; Hehe: muheti; **Kinga**: mbawira; Nyak: msibisibi; **Nyiha**: nsebi; **Pare**: maase, maasi; **Samb**: mkulo, mtoa-mada; **Samb** (west): mkenene.
- Ecology: A majestic evergreen timber tree widely distributed throughout East Africa and common in the wetter mountain forests of Tanzania, e.g. Kilimanjaro, the Usambaras, Pares, Ulugurus, and Tukuyu and Iringa. For optimum growth, it requires deep fertile soils with good drainage. Its climatic range is wet montane up to 2,600 m.
- Uses: Timber (joinery, furniture), veneer/plywood, panelling, medicine (roots, inner bark).
- Description: Mature trees may reach 40 m with a massive trunk up to 3 m across, slightly fluted at the base. Young trees are green-grey shapely cones. Leaves and wood are camphor scented but not the bark. **BARK**: grey, granular, then **red-brown**, scaling in **large rectangular flakes**. **LEAVES**: shiny dark green, oval to rounded, **grey-white below**, the veins wavy **and** brown, **the** edge **thickened**, often curled under. **FLOWERS**: separate male and female flowers, 8-10 yellow-white-green flowers, very small, hairy and stalked. **FRUIT**: smooth and green, very small, oval, to 6 mm, calyx cup very small, seeds surrounded by pulp.
- Propagation: Root suckers, seedlings.
- Seed info.: Fruit may be attacked by insects but the tree produces plenty of seed. No. of seeds per kg: 6,600. In best conditions 45% germination in 30-45 days, but it is often sporadic, within 2-3 months,
- treatment: not necessary.
- storage: sow seed immediately after extraction from the fruit as they do not store.
- Management: Fast growing.
- Remarks: In Tanzania, the natural camphor forests in Usambara and Kilimanjaro are intensively managed. The tree can be multiplied by lifting natural root suckers produced in profusion near and around the stumps of felled trees. This is encouraged due to the fact that camphor seed is scarce except during "mast" years which occur every third or fourth year. Camphor is among the reserved trees of Tanzania as it produces one of the most valuable timbers in East Africa. The timber is dark brown, strong and highly resistant to fungi and acids, although not to termites.



Olea capensis subsp. *hochstetteri* (*O. hochstetteri*) *Oleaceae*

Indigenous

Common names: Eng: East African olive; **Samb:** ngwe.

Ecology: A tree found in similar places to *Olea europaea* subsp. *africana*, 1,500-2,600 m, preferring higher-rainfall forests from Ethiopia to West and Central Africa. In Tanzania it is mainly found on the eastern slopes of Mt. Meru, but also scattered in mountain areas of Kilimanjaro, Usa, Pare and Mbulu.

Uses: Firewood, charcoal, timber (furniture, panelling), flooring, tool handles, medicine (stems, bark).

Description: A tall tree 10-20 m, with steeply ascending branches and a small dense crown.

Dark: smooth, grey-white. LEAVES: stiff, in opposite pairs, **to 10 cm long and 3 cm wide, sharply tipped, margin wavy**, midrib pale and clear below. Underside not white (contrary to *O. africana*), with scales, **stalk to 3 cm long**. FLOWERS: small and white, mostly in heads at the tip of branchlets. FRUIT: oval, about 2 cm long, green, becoming purple with a large, hard seed inside.

Propagation: Seedlings, wildings.

Seed info.: No. of seed per kg: about 3,000. Slow germination.

treatment: not necessary.

storage: seed can be stored.

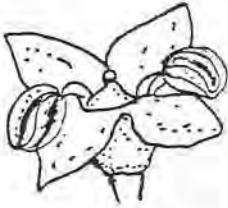
Management: Slow growing.

Remarks: Grows best in good forest soil but hardy and drought resistant in poor soils once established. The hard pale brown heartwood has an attractive grain and polishes well.

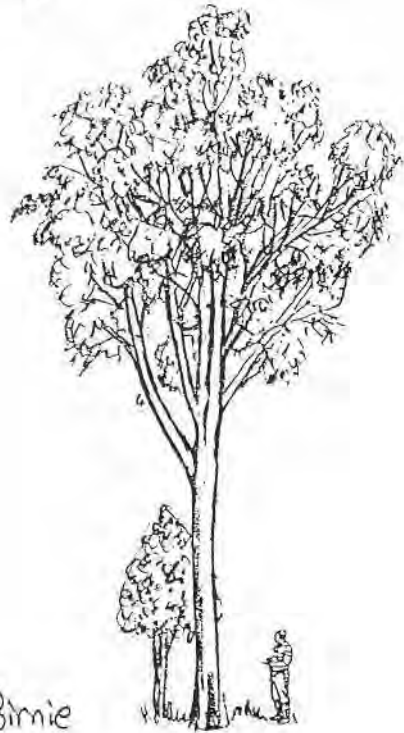
Olea capensis subsp. *hochstetteri* (*O. hochstetteri*) *Oleaceae*



enlarged flower



fruit



A. Birnie

Olea capensis subsp. *welwitschii* (*O. welwitschii*) *Oleaceae*

Indigenous

Common names: Arusha: lolyondo, olmasi; **Chag:** mchiyo, mshio, mudi; Eng: Elgon olive, loliondo; Fipa: sasi; **Iraqw:** sahati; Maasai: ololiondoi, olmasi; **Meru:** olmasi, mshiyo; **Pare:** lolyondo; Swah: loliondo.

Ecology: A tree with attractive timber found in Angola, Zambia, Kenya, Tanzania and Uganda in lowland rain forest to upland dry evergreen forest, 750-2,000 m. In Tanzania, found mainly on the south-eastern slopes of Mt. Meru and scattered on the slopes of Kilimanjaro.

Uses: Firewood (branches), timber (furniture), veneers, medicine (bark).

Description: A tree with a straight bole and small crown, can reach up to 25 m. BARK: pale grey to white and fissured vertically. LEAVES: opposite, large (15 x 5 cm), the **tip drawn out and pointed**, on a **stalk to 3 cm** (not white below contrary to *Olea africana*). FLOWERS: small and white, in profuse sprays to 8 cm long. FRUIT: narrow, oval and small, dark green when mature, remaining on the tree.

Propagation: Seedling, wildings.

Seed info.: No. of seeds per kg: 3,100-3,500. Cracking seed coat and removing it improves germination rate. Germination in 35-90 days.

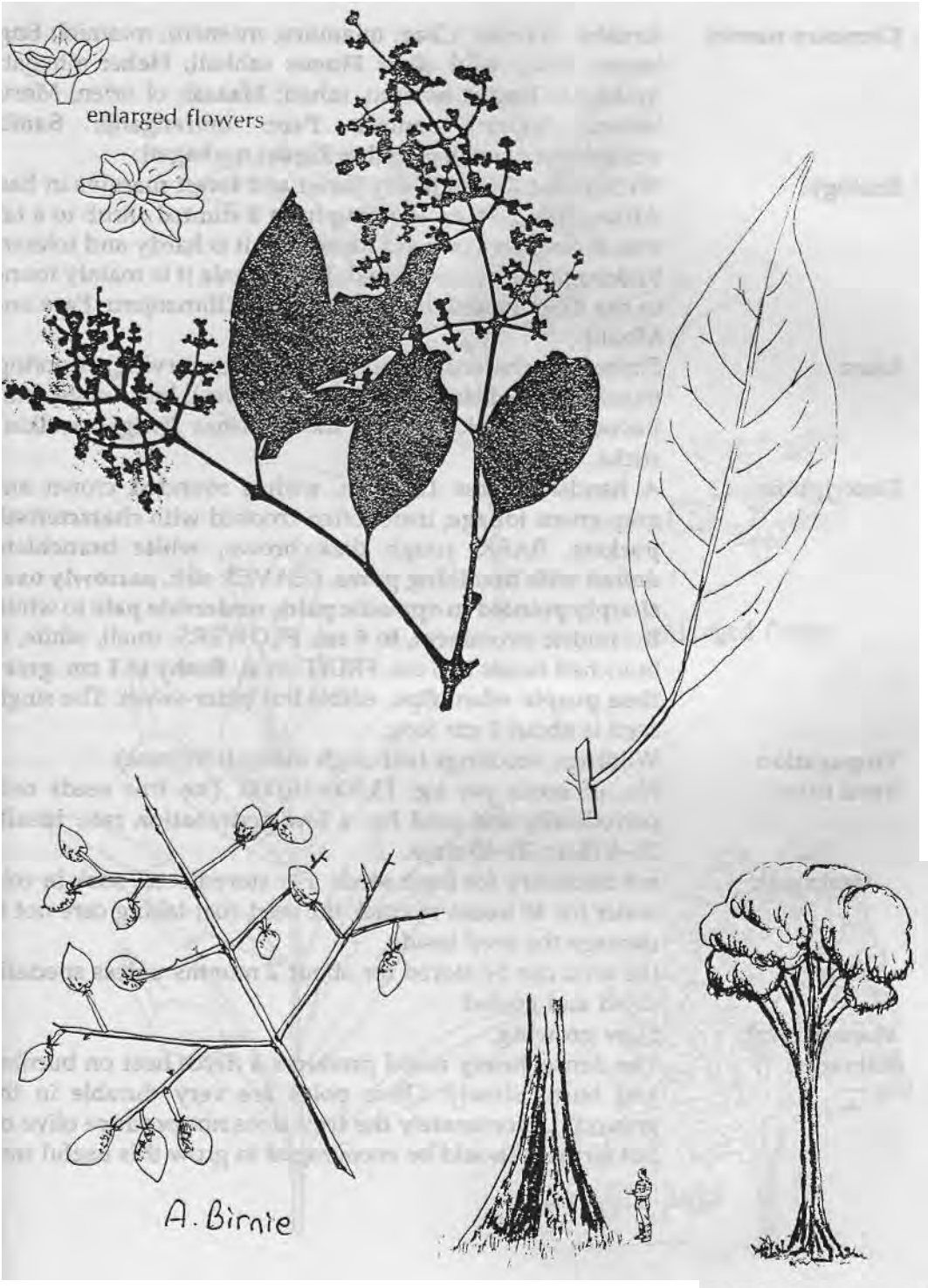
treatment: soak seed in cold water.

storage: seed can be stored up to 3 months but only if dried, stored in airtight containers and kept cool.

Management: Slow growing; lopping, pollarding, coppicing.

Remarks: The tree has a very valuable termite-resistant timber and should be well managed to prevent it becoming rare. In Tanzania it was established in plantations in Usa but today the plantation is totally destroyed by game (elephant browsing). Experience has shown that this species is tolerant to shade when young and grows best when planted alongside other trees—*Grevillea robusta* is used as a nurse tree in Tanzania.

Olea capensis subsp. *welwitschii* (*O. welwitschii*) *Oleaceae*



Olea europaea subsp. *africana* (*O. africana*)

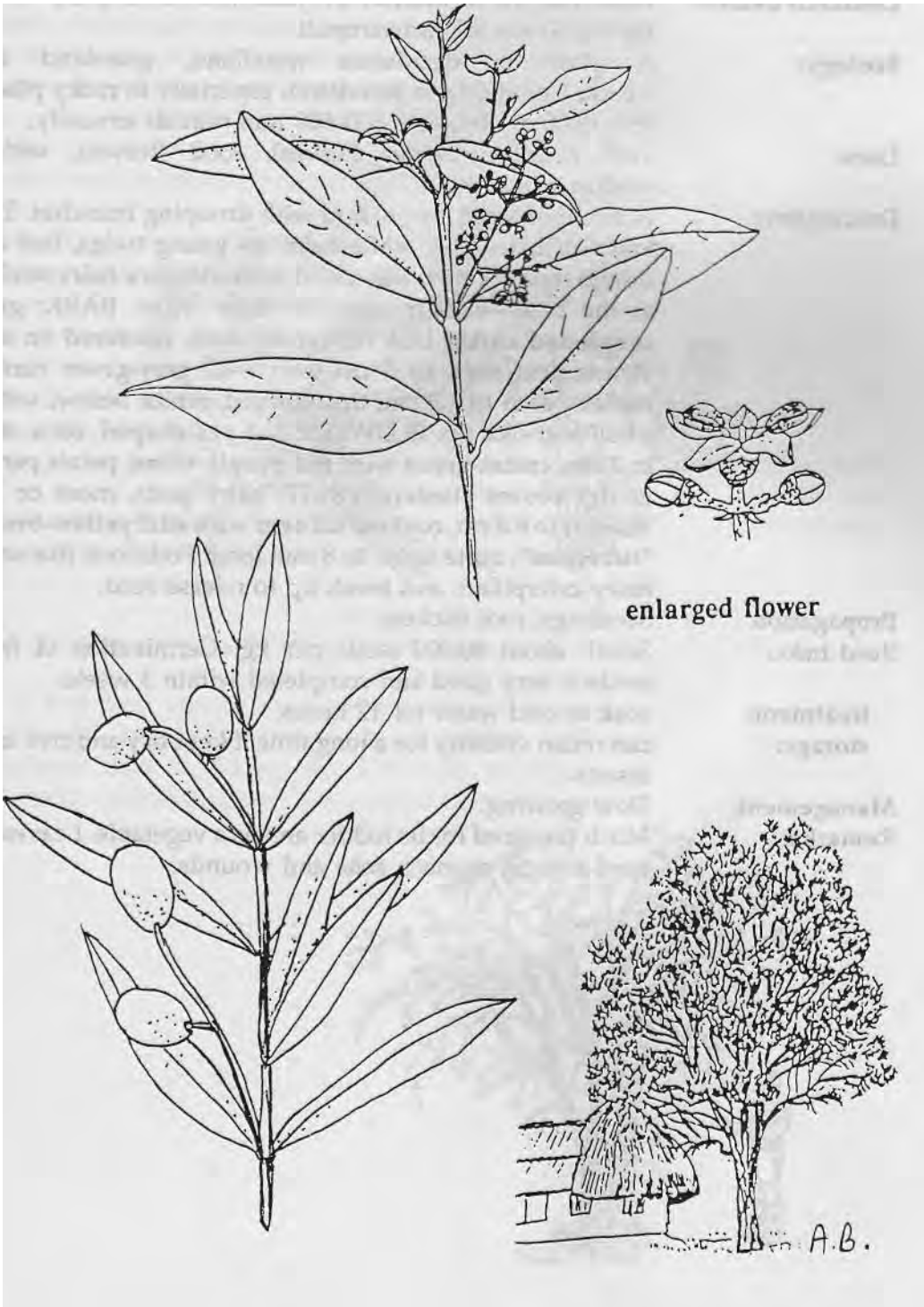
Oleaceae

Indigenous

- Common names: Arusha: ol orien; Chag: mlamuru, msenefu, mtamioi; Eng: brown olive, wild olive; Fiome: sahhati; Hehe: mhagati, muhagati; Iraqw: hlanmo, sahati; Maasai: ol orien; Menz loriene; Nguu: mamala; Pare: muranganji; Samb: mziaghembe, mzilaghembe; Zigua: muhagati.
- Ecology: Widely distributed in dry forest and forest margins in East Africa, 700-3,000 m. Ranging from a stunted shrub to a tall tree, it does well in good forest soil. It is hardy and tolerant to drought once established. In Tanzania it is mainly found in the drier mountain areas of Usa, Kilimanjaro, Pare and Mbulu.
- Uses: Firewood, charcoal, timber (furniture, carving), flooring, panelling, medicine (stems, bark, leaves), bee forage, milk flavouring (smoky wood), toothbrushes (twigs), walking sticks.
- Description: A handsome tree 10-15 m, with a rounded crown and grey-green foliage, trunk often crooked with characteristic pockets. BARK: rough dark brown, white branchlets, dotted with breathing pores. LEAVES: stiff, narrowly oval, sharply pointed in opposite pairs, underside pale to white, the midrib prominent, to 8 cm. FLOWERS: small, white, in branched heads to 5 cm. FRUIT: oval, fleshy to 1 cm, green then purple when ripe, edible but bitter-sweet. The single seed is about 1 cm long.
- Propagation Seed info.: Wildings, seedlings (although difficult to raise). No. of seeds per kg: 13,000-16,000. The tree seeds only periodically and seed has a low germination rate. Ideally 20-60% in 20-45 days.
- treatment: not necessary for fresh seeds. For stored seed, soak in cold water for 48 hours or crack the seed coat taking care not to damage the seed inside.
- storage: the seed can be stored for about 2 months unless specially dried and cooled.
- Management: Slow growing.
- Remarks: The dense, heavy wood produces a fierce heat on burning and burns slowly. Olive poles are very durable in the ground. Unfortunately the fruit does not produce olive oil but farmers should be encouraged to grow this useful tree.

Olea europaea subsp. *africana* (*O. africana*)

Oleaceae



Ormocarpum trachycarpum (O. mimosoides) *Papilionoideae*

Indigenous

Common names: **Hehe:** lungutiwa, mtimbwi; **Nyam:** mkondwampuli; Sang u: kipula; **Suku:** mkondwampuli.

Ecology: A plant of deciduous woodland, grassland and Acacia-Commiphora woodland, especially in rocky places, 950-1,800 m. Requires 600-900 mm rainfall annually.

Uses: Tool handles, fodder (leaves), food (leaves), withes, medicine (leaves).

Description: A shrub or small tree to 6 m with drooping branches. Two kinds of hairs: soft white hairs on young twigs, leaf and flower stalks; sometimes mixed with stiff dark hairs swollen at the base—usually seen on older twigs. **BARK: grey, rough and corky.** **LEAVES:** compound, **clustered on side shoots**, leaf stalk to 5 cm with 9-15 **grey-green** narrow leaflets, each to 1.5 cm, tip rounded, **white below**, with a small hair-like tip. **FLOWERS:** 1-4 **pea-shaped, on a stalk to 3 cm, cream-green with red-purple veins; petals** persist as **dry brown clusters.** **FRUIT:** hairy pods, more or less straight to 6.5 cm, **covered all over with stiff yellow-brown "tubercles"**, quite large, to 8 mm long. Pods look like small hairy caterpillars and break up to release seed.

Propagation Seedlings, root suckers.

Seed info.: Small, about 80,000 seeds per kg. Germination of fresh seeds is very good and completed within 3 weeks.

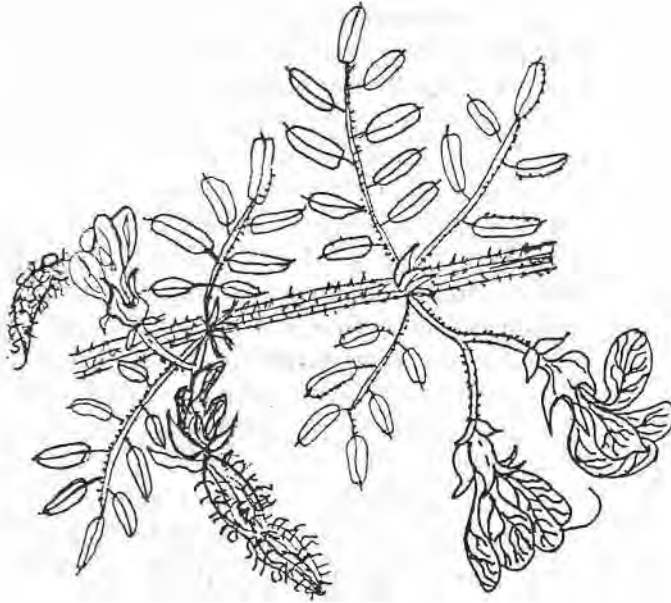
treatment: soak in cold water for 12 hours.

storage: can retain viability for a long time if kept dry and free from insects.

Management: Slow growing.

Remarks: Much favoured for its fodder and as a vegetable. Leaves are used to treat stomach ache and wounds.

Ormocarpum trachycarpum (O. mimosoides) *Papilionoideae*



Osyris lanceolata (*O. compressa*)

Santalaceae

Indigenous

- Common names: Bara: getakhubay; Chag: mberegesa; Eng: African sandalwood; Fipa: mkaisya; Goro: siginyanyi; Hehe: muvambalafidunda, mvavalavidunda; Iraqw: kipaa-atu; Maasai: oloyesyyai; Nyab munyingwampembe, muvabaahi; Pare: mzulu; Samb: mzuru; Swah: msandali.
- Ecology: An indigenous plant in highland forest and bush.
- Uses: Firewood, timber, utensils (pestles), medicine (bark, roots), perfume (wood, roots).
- Description: An evergreen shrub or small tree up to 6 m. BARK: light grey-brown or black. LEAVES: alternate, green with a bluish flush, leathery, tapering to the base, edge tightly rolled under, a fine sharp tip. The short thick stalk runs down to the stem forming a ridge. FLOWERS: small, pale green-yellow in short terminal heads. FRUIT: small, red, turning purple-black, fleshy oval, about 1.5 cm long.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: 10,000-11,000.
- treatment: no pre-treatment is required, but nicking the base of the seed increases germination speed. Germination reaches 60% after 6 weeks.
- storage: the seeds cannot be stored.
- Management: Very slow growing. Requires the shade of nurse trees at the early stage of growth.
- Remarks: An endangered tree having been heavily exploited in the past for extraction of perfume. Farmers should be encouraged to plant this tree species on their farmlands. Bedsteads are made from the fragrant timber. Roots and bark provide a blood tonic.

Osyris lanceolata (O. compressa)

Santalaceae

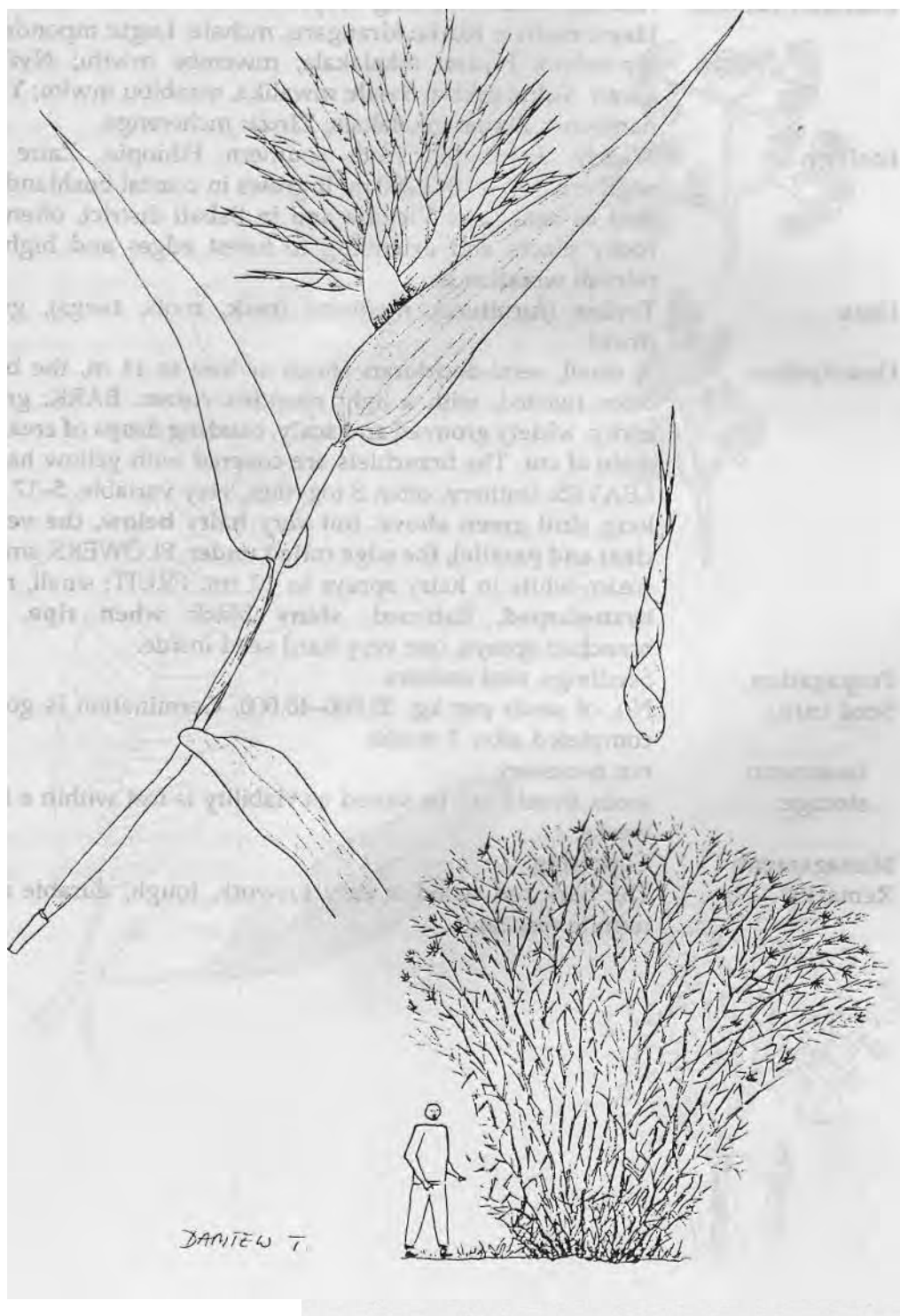


Oxytenanthera abyssinica

Gramineae

Indigenous

- Common names:** Bond: lasi; Eng: lowland bamboo, wild bamboo, wine bamboo; Hehe: kitindi, mulanzi; Kinga: mlanzi; Lugu: mlanzi; Mako: mbunga; Mwera: mpunga, mwanzi; Nyam: mlanzi; Samb: lasi; Swah: mwanzi; Zigua: lazi.
- Ecology:** In continental Africa the lowland bamboo grows in Ethiopia, Uganda, Zimbabwe and Zambia as well as Tanzania. It is the most hardy of three African bamboo species growing on wooded hillsides, riverbanks and damp places, often on very poor soils. In Tanzania it is common in Iringa, Njombe, Lindi, Kisarawe and Mbeya, 500-1,600m.
- Uses:** Poles (building), drink (young shoots tapped), fodder (leaves), soil conservation, basketry (trays, etc.), dry fencing, boundary marker.
- Description:** A tall grass to 7 m or more in dense clumps arching over. Unusual in having solid stems, up to 10 cm in diameter at the base. LEAVES: Blue-green, base rounded, the tip long and spiny, usually 15 x 2.5 cm but up to 30 x 5 cm. Irritating dark brown hairs on the leaf sheath. FLOWERS AND FRUIT: spikelets narrowed, pointed, 2.5 cm in dense rounded clusters 6 cm across. Flowering takes place about every 7 years. The clumps die down but shoot up a year later from the rhizomes.
- Propagation:** Cuttings, rhizomes like sugarcane, suckers.
- Seed info.:** Seed is rare.
- treatment:**
- storage:**
- Management:** A fast-growing bamboo; needs thinning.
- Remarks:** Potential for agroforestry and for production of alcohol /wine. Like most bamboo, each plant flowers only once and then dies. Fences may be damaged by termites and borers but the plant survives fire in its natural habitat



Ozoroa insignis (Heeria reticulata)

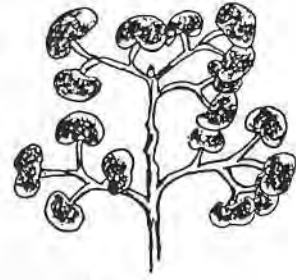
Anacardiaceae

Indigenous

- Common names: Arusha: olkunonoi; Eng: tropical resin tree; **Goro:** burthi; Haya: muhva; Kuria: kirangaru, mchale; **Lugu:** mpondela, mpondelo; Nyam: mkalakala, mwembe mwitu; **Nyiha:** karati; Suku: mkala; Swah: mwalika, mzabibu mwitu; Yao: nambono; Zigua: mkalakala; **Zinza:** mcherenge.
- Ecology: Widely distributed from southern Ethiopia, Zaire to southern Africa, 0-2,200 m. It grows in coastal bushland as well as near Lake Victoria and in Babati district, often in rocky places and extending to forest edges and higher-rainfall woodlands.
- Uses: Timber (furniture), medicine (bark, roots, twigs), gum (fruit).
- Description: A small, semi-deciduous shrub or tree to 14 m, the bole often twisted, with a light rounded crown. BARK: grey, corky, widely grooved and scaly, **exuding drops of creamy resin** if cut. The branchlets are covered with yellow hairs. LEAVES: leathery, often 3 together, very variable, 5-17 cm long, dull green above, **but very hairy below, the veins clear and parallel, the edge rolled under.** FLOWERS: small, cream-white in hairy sprays to 17 cm. FRUIT: small, red, bean-shaped, flattened, shiny **black when ripe**, on branched sprays, one very hard seed inside.
- Propagation Seedlings, root suckers.
- Seed info.: No. of seeds per kg: 35,000-40,000. Germination is good, completed after 3 weeks,
- treatment: not necessary
- storage: seeds should not be stored as viability is lost within a few weeks.
- Management: Coppicing.
- Remarks: The dark red wood is easy to work, tough, durable and termite resistant.

Ozoroa insignis (Heeria reticulata)

Anacardiaceae



Pappea capensis (Pappea ugandensis)

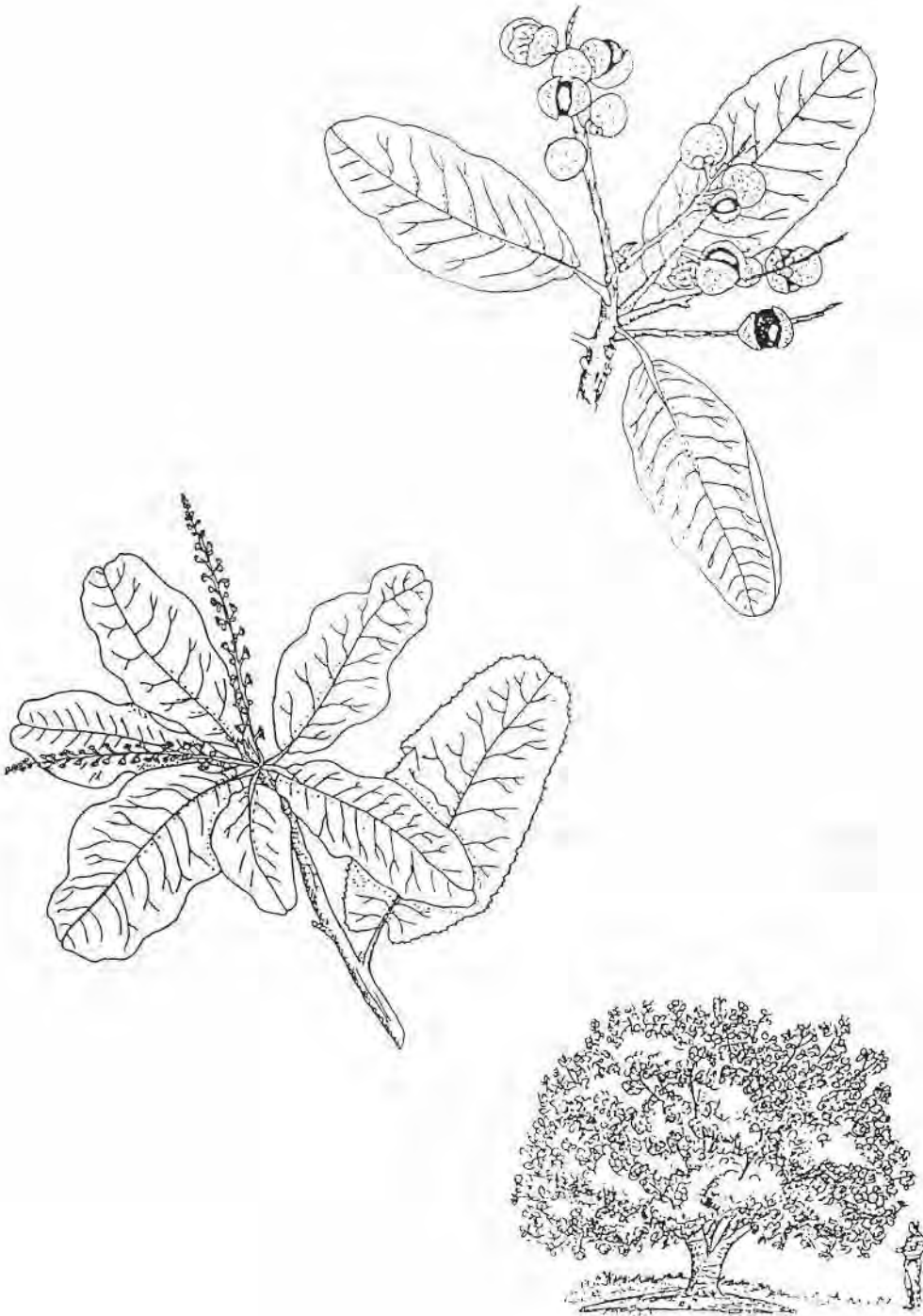
Sapindaceae

Indigenous

- Common names: Arusha: orimigomi; Eng: pappea; **Fipa:** mwunza, mwikalatulo; Gogo: mtori, muanga; **Goro:** getakhubay; Hehe: mhungulu; **Kuria:** momange; **Maasai:** ol dimigomi; Nyat: mjaghamba; Rangi: iyarampimbi, mtula-ikufa; Swah: mubamba-ngoma; **Zigua:** mnenge; **Zinza:** muliwa-mpango.
- Ecology: Widely distributed at medium to high altitudes in drier forest, savannah and open woodland, often among rocks. It extends south to southern Africa.
- Uses: Firewood, timber, posts, food (fruit, leaves), medicine (oil, bark), fodder (fruit), bee forage, shade, ornamental, oil.
- Description: A small, leafy, semi-deciduous tree, usually to 6 m, with a short trunk branching low down to form a spreading rounded crown. BARK: pale to dark grey, smooth, with horizontal markings. LEAVES: distinctive, **oblong** in shape, usually in terminal clusters, dull dark green, stiff and wavy, the edge sometimes **spine-toothed**, base rounded. FLOWERS: green-yellow in spikes to 12 cm, male flowers at the end, female at the base of the spike. FRUIT: round, furry green capsules about 1 cm across, split to reveal a **bright orange-red jelly (the aril)** covering the shiny black seeds. This juicy flesh is edible, slightly acid but pleasantly flavoured.
- Propagation: Seedlings.
- Seed info.: Up to 20% germination in 2-4 weeks with fresh seed,
treatment: no treatment needed,
storage: fresh seed is best.
- Management:
- Remarks: The brown wood is hard and tough with a twisted grain. The oil from the seeds has various medicinal uses, e.g. for ringworm and as a purgative. It can also be used as soap. The leaves are considered good fodder for cattle and game, especially in arid areas.

Pappea capensis (*Pappea ugandensis*)

Sapindaceae



Indigenous

- Common names:** **Bende:** mbula; **Eng:** fever tree; **Fipa:** mwula; **Haya:** munanzi; **Hehe:** msawola, msawula; **Iraqw:** amafa-aa; **Kere:** muhasi; **Mate:** mbula; **Nyak:** mbula; **Nyam:** mbula, mubula, muvula, muwula, mnazi ya porini; **Nyiha:** maula; **Rangi** mafaa, mumora; **Suku:** mnazi; **Zara:** mbula; **Zinza:** munazi.
- Ecology:** A tree occurring north to Kenya and Senegal and south to the Transvaal in all types of woodland and evergreen thicket, 0-1,900 m. In Tanzania it grows on sandy soils in open deciduous woodland near the coast, in Kondoa district and around Lake Victoria.
- Uses:** Firewood, charcoal, timber (building rafters, furniture), poles, food (fruit, seed), medicine (fruit, bark), fodder (leaves, fruit), shade, ornamental, beehives (bark), tannin.
- Description:** A large evergreen tree to 15 m with a tall **straight trunk, erect branches and dense, rounded crown.** **BARK:** rough, dark grey-brown, **young shoots covered with woolly yellow hair**, old bark flaking off in large squares. **The sap** is reddish. **LEAVES:** **oval and alternate**, with clear **parallel veins**, shiny green above but **hairy grey-white below**, to 8 cm long, tip blunt or notched, on a short stalk. **FLOWERS** small, white-pink, in short **flat-topped heads** to 6 cm across. Flower stalks and calyx with yellow-brown woolly hairs. **FRUIT:** oval to 5 cm, with grey scales over a pitted **yellow-red-brown skin.** The fibrous yellow flesh is sweet but sharp and contains a hard stone with one edible seed kernel.
- Propagation:** Seedlings, wildings
- Seed info.:** No. of seeds per kg: 250-350. Germination is poor and very slow—up to 6 months.
- treatment:** not necessary.
- storage:** seed can be stored.
- Management:**
- Remarks:** At certain times of the year the trees give off a very unpleasant smell. The wood is light but borer proof, making very good rafters and fences. In Zambia it is considered an indicator of a high watertable and is often left in fields. The tree is fire resistant. The fruit can be eaten raw or cooked with porridge. The flesh is rich in vitamin C and the seed kernel is rich in oil.



Parkinsonia aculeata

Caesalpinioideae

Tropical America

Common names: Eng: Jerusalem thorn.

Ecology: The natural range for *P. aculeata* is semi-arid areas from the southern United States to Argentina. Cultivated in dry tropical areas of Africa and south Asia, it is almost naturalized from the coastal lowlands up to 1,400 m. It prefers moist sandy loams, but will also thrive in dry sandy and rocky soils as well as alkaline and saline ones. It can grow in dry areas as well* as in wetter parts at higher altitudes, 200-1,000 mm annual rainfall.

Uses: Firewood, charcoal, medicine, fodder (pods, leaves), bee forage, shade, ornamental, mulch, soil conservation, live fence.

Description: A spiny shrub or small tree, usually 5-8 m, light, feathery foliage and a low crown, sometimes deciduous in the dry season. BARK: distinctive yellow to cream-brown, smooth. LEAVES: groups of **thin, winged leaf stalks to 30 cm** with well-spaced tiny **leaflets**. The branchlets have sharp thorns to 1 cm beside the leaves. FLOWERS: very fragrant, **bright yellow with orange stamens on spikes** to 15 cm. FRUIT: bunches of woody pale-brown **Pods, cylindrical, narrow, but constricted between** seeds. Pods contain 6 or more dark brown oval seeds and remain on the tree.

Propagation: Seedlings, direct sowing.

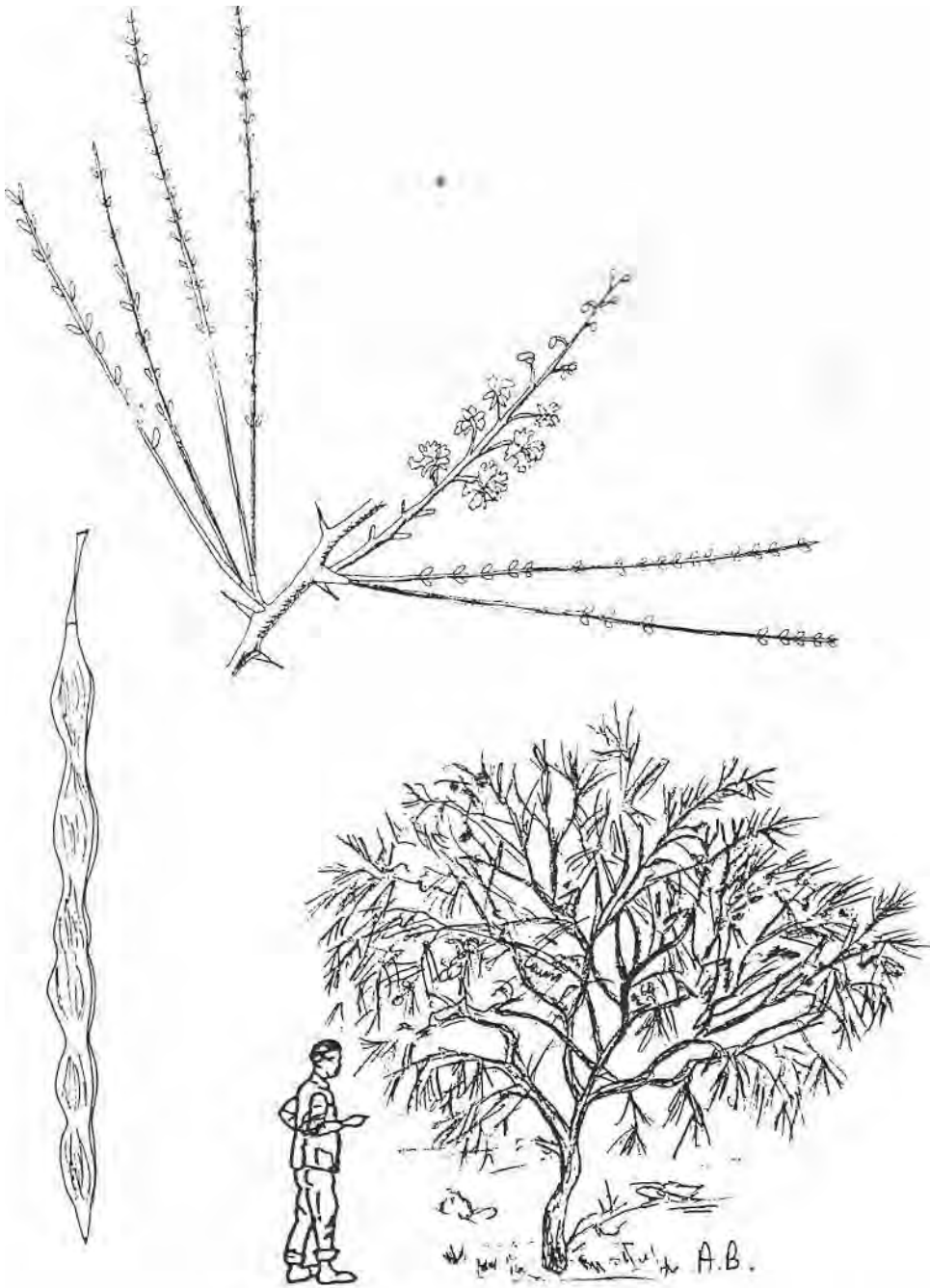
Seed **info.:** No. of seeds per kg: 11,000-15,000. The species is a prolific seeder. Germination 30%-70% or more in 2-10 days.

treatment: soak seed in hot water and allow to cool overnight, or nick seed coat with a sharp knife.

storage: seed stores well for long periods in cool, dry, air-tight containers.

Management: Fast growing; pollarding.

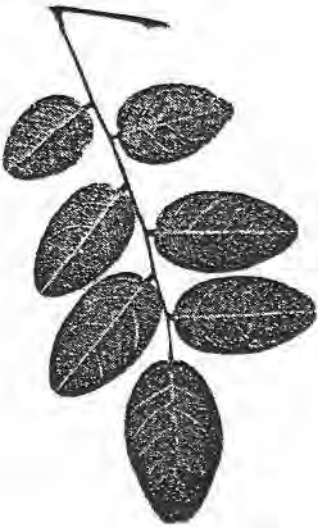
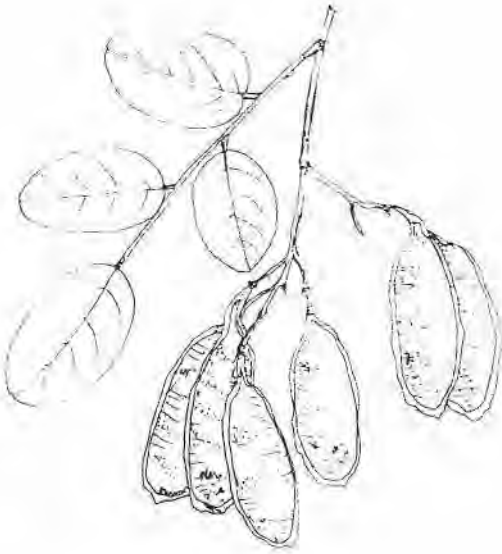
Remarks: Seedlings are susceptible to attack by termites and so young seedlings should be protected. Extensively used in arid and semi-arid Kenya. The tree can become a serious weed due to its prolific seeding, but it is a good species for reclamation of degraded sites.



Pericopsis angolensis (*Afrormosia angolensis*) *Papilionoideae*

- Common names: Eng: East African afrormosia; Haya: umubanga; Lugu: mmanga; Mate: muwanga; Nyam: mbanga, muvanga; Suku: mbanga; Swah: mbanga, muvanga; Zinza: mbanga,
- Ecology: A tree common in *Brachystegia* woodland or wooded grassland, 500-1,650 m. Also found in Zaire, Zambia, Angola, Mozambique, Malawi, South Africa and Zimbabwe. In Tanzania it is common in Mwanza, Tabora, Dodoma, Handeni, Morogoro, Iringa, and Lindi.
- Uses: Firewood, charcoal, timber (construction, carving, quality furniture), flooring, poles, fence posts, fodder, medicirt (leaves), nitrogen fixation.
- Description: A semi-deciduous tree, usually 10 m but up to 20 m, branches spreading to an open crown. BARK: smooth, pale grey-white, darker when older, flaking to show red-brown underbark. LEAVES: compound with 4-10 pairs leaflets plus a central leaflet, each to 6 cm, oval, tip rounded, leathery, blue-green, paler below. FLOWERS: pink-purple in sprays to 15 cm, flower stalks and buds pale brown. hairy. FRUIT: flat pods in heavy clusters, 24 cm long, pale green then yellow-brown with narrow wings on both edges. Inside 1-3 flat orange-brown seeds.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: 3,000-3,500. Germination rate is **very** high and fast.
- treatment: not necessary.
- storage: can keep viability for a long time if kept dry and free from insects.
- Management: Fairly fast growing; coppicing.
- Remarks: The timber is very durable and resistant to termites and borers as well as attractive and taking a high polish. Buried tool handles have been found in Zambia and dated at about 100 years old. Leaves can be applied to wounds, including snake bites.

Pencopsis angolensis (*Afromosia angolensis*) *Papilionoideae*



Persea americana

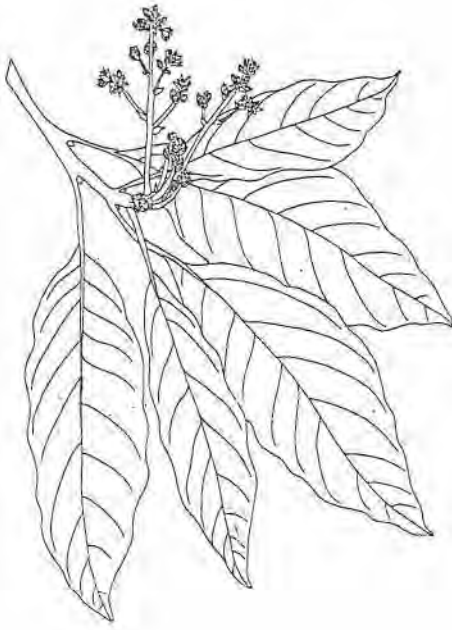
Lauraceae

Tropical America

- Common names: Eng: avocado pear; Swah: mparachichi, mwembe mafuta.
- Ecology: The natural range for avocado is from Mexico south to Venezuela. Best grown in deep fertile sandy loams, but will grow in a wide variety of soils provided they have good drainage. The climatic range is moist plateau, wet lowland and transitional wet montane. In Tanzania it is planted by farmers in the northern areas and along the coast, 0-2,200 m. It is also a horticultural tree in most agricultural centres in the country.
- Uses: Food (fruit), oil (cosmetics), shade.
- Description: A densely leaved evergreen tree to 10 m. BARK: grey-brown. LEAVES: large, alternate, to 20 cm long, glossy dark green above, veins very clear, young leaves pink then bright green. FLOWERS: small and abundant in large terminal heads, pale yellow, only 1 in 5,000 producing fruit. FRUIT: large, round to pear shaped, to 25 cm, hanging heavily on the tree, the central seed surrounded by a thick layer of yellow-green flesh.
- Propagation: Grafting materials (improved varieties), seedlings, wildings, direct seeding.
- Seed info.: No. of seeds per kg: about 15. Germination is good and takes about 6 weeks,
- treatment: not necessary.
- storage: use fresh seed.
- Management: Requires no management once established, can be side pruned to obtain desired shape. Fast growing.
- Remarks: The fruit is very nutritious, rich in fat, protein and vitamins. Bark leaves and seeds are toxic to browsing livestock. Difficult to intercrop due to its dense shade, but beans can be planted with young trees. It also competes for nutrients through its dense shallow root system. Trees growing under good conditions may need stimulation to form flowers and fruit. Cut the roots in a trench around the tree or narrowly ring-bark the trunk. There are some 300 named varieties of avocado and grafting is necessary to maintain quality.

Persea americana

Lauraceae



Phoenix reclinata

Palmae

Indigenous

Common names: **Arusha:** olpiroo; **Bara:** millan; **Eng:** wild date **palm;** **Goro:** intsanti; Haya: makindu; **Iraqw:** thiaanthi; **Suku:** bukindu.

Ecology: A palm usually growing in dense clumps beside swamps and rivers from the coast to 3,000 m. Found throughout tropical Africa, it will grow on open rocky hillsides and cliffs as well as in rainforests in high rainfall areas, but only along water courses in dry country.

Uses: Firewood, timber (local doors, general), food (fruit), ornamental, soil conservation, fibres (leaves, leaf bases), roofing (leaves), basketry, mats (leaves), dye.

Description: The mature palm trunk may reach 10 m, slender and **often bent over ("reclinata")**, about 25 cm in diameter, covered with very rough leaf scars. LEAVES: to 2.7 m long, growing out from a fibrous leaf sheath, the crown of about 25 leaves arching over, leaflets narrow, **folded, bright shiny green, to 30 cm, stiff and pointed.** FLOWERS: male and female on different trees. FRUIT: yellow-brown, **about 2 cm, edible.** Seedlings, suckers.

Propagation:

Seed **info.:** No. of seeds per kg: about 27,000. Germination is very good but takes about 2 months.

treatment:

storage:

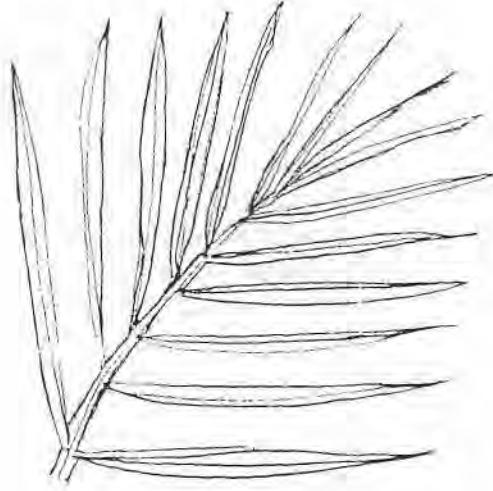
not necessary.

seed stores well if kept dry, cool and insect free.

Management:

Remarks:

Strong fibres from the leaves are used all over Africa **for** making baskets, mats, etc.



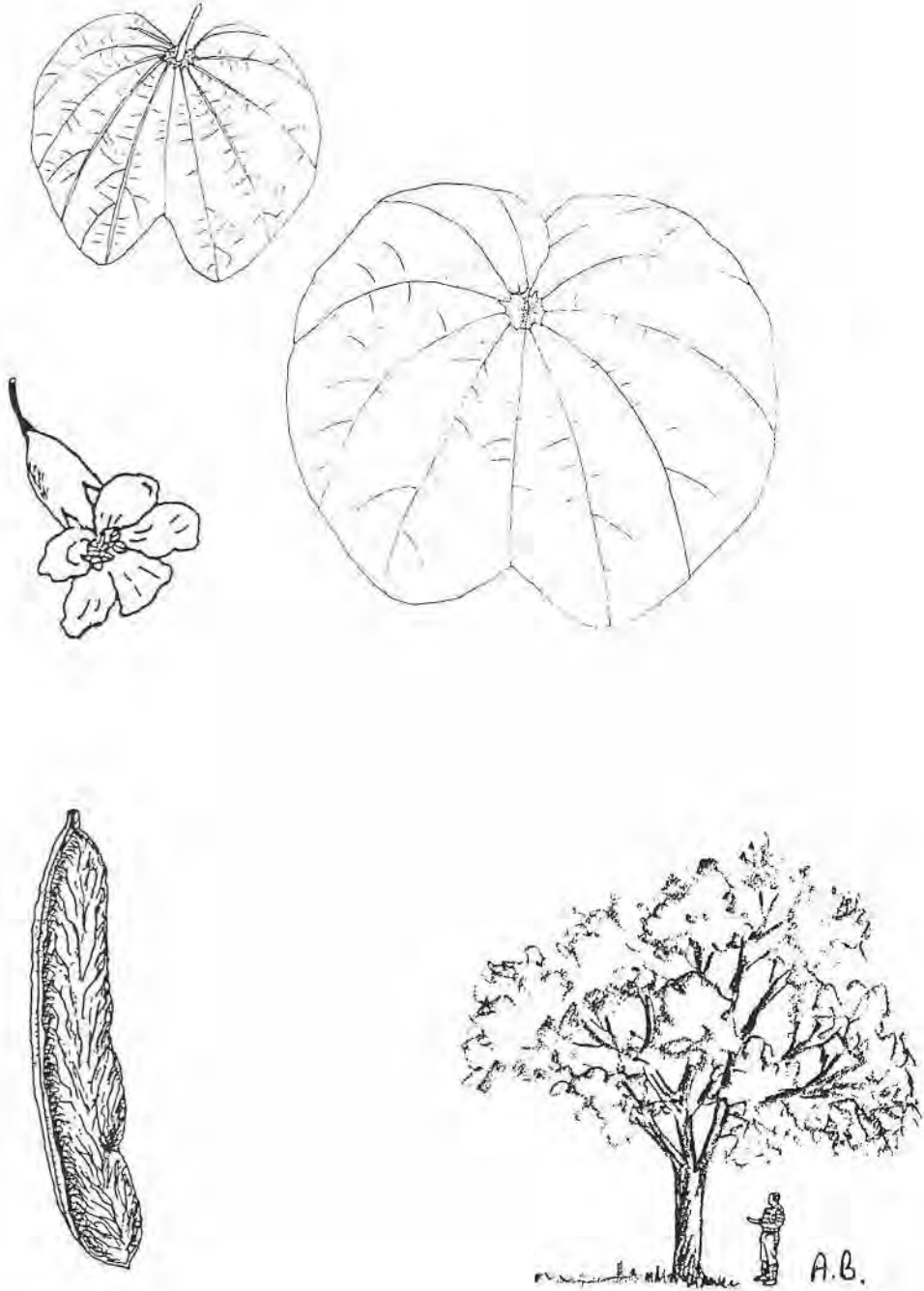
A. Birnie

Piliostigma thonningii (*Bauhinia thonningii*) *Caesalpinioideae*

Indigenous

- Common names:** Bende: mfumbe, mnsakansaka; Eng: camel's foot tree; Fiome: galapi; Fipa: nakifumbe, mfumbe, msindamboga; Goro: galapi; Haya: mtindambogo; Hehe: muhela, mkombalwike; Maasai: ol sagararmi, os sangararam; Mate: chitembe, titimbo; Mwera: mguwauwa; Nyam: mshindambogo, mtindambogo; Nyat: musasu; Samb: mgonambogo, msege, msegesege; Sangu: mkombalwike, muhela; Suku: mtindwa-mbogo; Swah: mkichikichi, mubamba-ngoma; Zigua: msege; Zinza: msindaga.
- Ecology:** A dense semi-deciduous small tree or shrub found all over sub-humid Africa from west to southern Africa in wooded grassland, usually 0-1,850 m, in various soils. In Tanzania it is found at the coast, in the Rift Valley, Sukumaland and in the Lake Victoria zone.
- Uses:** Firewood, charcoal, posts, timber (construction of houses and *boma*), food (pulp from pods, fresh bark, leaves), medicine (leaves, bark, roots, pods), fodder (pods, young leaves), bee forage, shade, ornamental, mulch, soil conservation, dye (bark, pod, seed), tannin, fibres, rope (bark, root fibres).
- Description:** A rounded tree 3-5 m, branches twisted (occasionally climbing). **BARK:** thick, dark and rough, fibrous within, dark red if cut. **LEAVES:** large and bi-lobed, a small bristle in the deep notch, leathery pale green to 12 cm long, lower surface brown, hairy in between many raised veins. **FLOWERS:** white, fragrant, in heads, 10-20 cm, male and female separate. **FRUIT:** very many flat brown and woody pods, 15-20 cm long, decaying on the ground to free many seeds. Pulp surrounding the seed can be eaten.
- Propagation:** Seedlings. Collect pods from the tree as soon as they turn brown. Seeds are soon attacked by insects. Sun dry pods, then cut and break them up in a mortar.
- Seed info.:** No. of seeds per kg: about 7,300. The tree produces many seeds with good germination rate after 60-75 days,
- treatment:** soak in cold water for 24-48 hours. Nick seed coat with a knife for best germination results,
- storage:** several years if kept dry, cool and insect free.
- Management:** Fairly fast growing on good sites; coppicing.
- Remarks:** A good tree for intercropping; often left in shambas and frequently growing with *Annona senegalensis*. Pods and seeds give a blue dye and roasted seeds black dye. Medicinal uses are important to rural people.

Piliostigma thonningii (*Bauhinia thonningii*) *Caesalpinioideae*



Pinus caribaea

Pinaceae

Central America

Common names: **Eng:** Caribbean pine, pitch pine, slash pine; **Swah:** msindano.

Ecology: In its natural range it grows at low elevations **and** has now become an important commercial plantation tree in many tropical lowlands below 1,000 m. There are three geographic varieties. In Tanzania it is grown in the coastal lowland areas and around Lake Victoria at Buhindi and Rubya. The tree does better on free-draining soils and is drought resistant.

Uses: Firewood, timber (heavy and light construction), poles, plywood, pulp (long fibre), fibreboard, resin.

Description: An evergreen tree with a straight bole and regular **spreading crown** up to 30 m high. The bole can reach over 1 m in diameter. **BARK:** thick, brown-grey, rough and flaking, **resinous if cut.** **LEAVES:** needles, usually in **threes**, erect, flexible, dark green up to 21 cm long, usually less **sharp pointed.** **FLOWERS:** male and female flowers produced separately on the same tree. Male flowers on the upper part of branchlets, female on the lower part. **FRUIT:** cones, greyish brown at maturity, **spiny, about 8 cm** long. Seedlings.

Propagation:

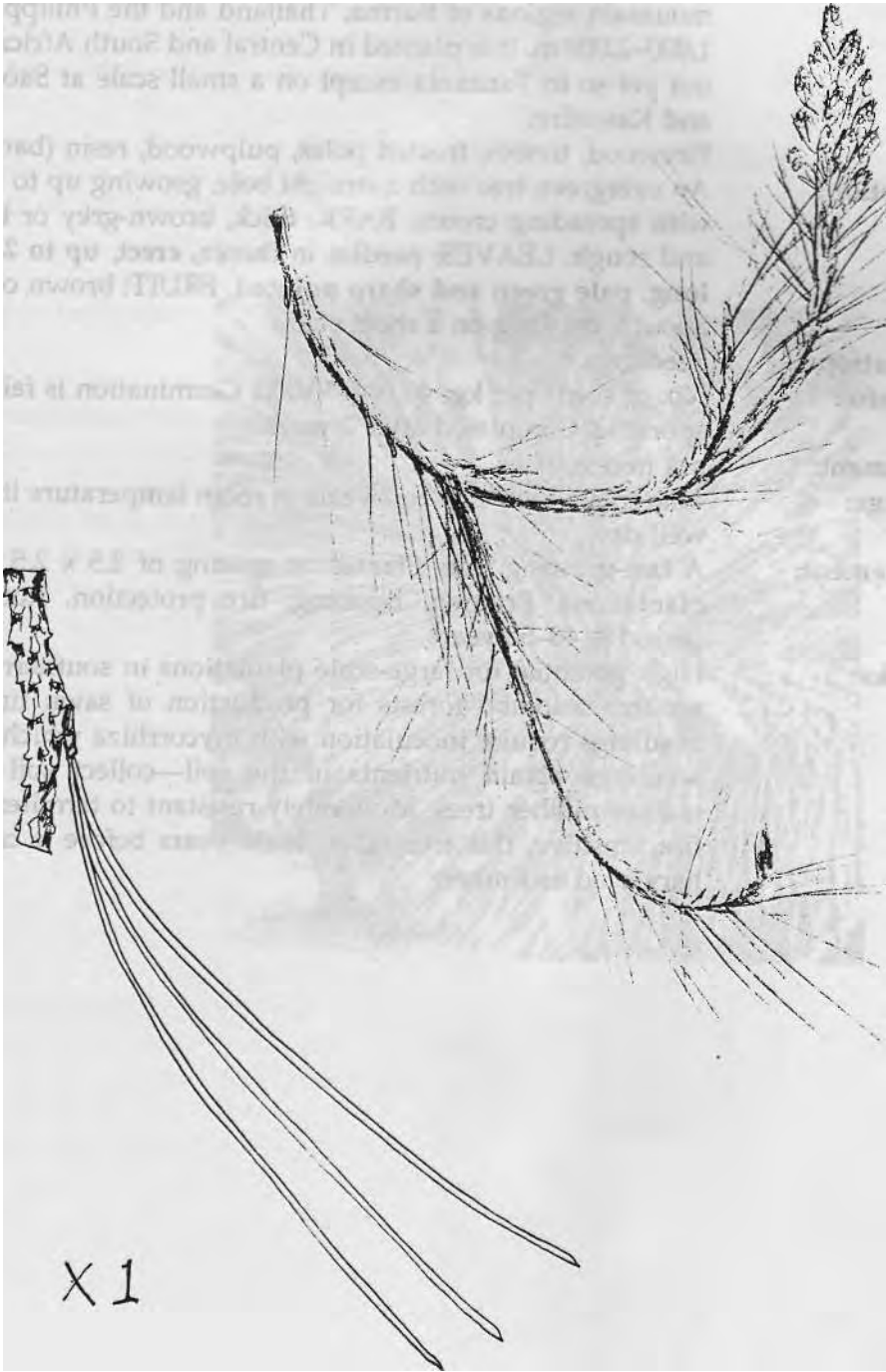
Seed info.: No. of seeds per kg: about 30,000. Germination sporadic, up to 6 weeks. Germination rate 35%.

treatment: not necessary.

storage: can retain viability for a long period at room temperature if kept dry.

Management: Fast growing; pruning, thinning, fire protection. Rotation period 35-45 years.

Remarks: Difficult to get seed as trees in the established plantations and seed stands do not produce cones. The timber is strong, moderately light weight and fairly durable, easy to season, saw and preserve. Mycorrhiza are necessary for sapling growth so add soil from next to established trees. Both thinnings and pruned branches provide valuable fuel. In some countries the tree is used as pulp for the paper industry.



Pinus kesiya (*P. insularis*)

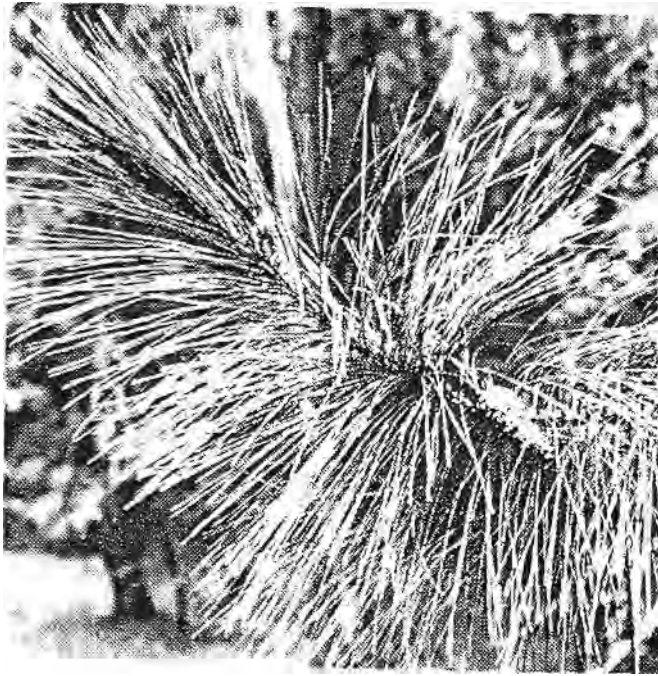
Pinaceae

South-East Asia

- Common names:** Eng: kesiya pine; **Swah:** msindano.
- Ecology:** In the natural range it is common in mist belts in high mountain regions of Burma, Thailand and the Philippines, 1,000-2,000 m. It is planted in Central and South Africa but not yet so in Tanzania except on a small scale at Sao Hill and Kawetire.
- Uses:** Firewood, timber, treated poles, pulp wood, resin (bark).
- Description:** An evergreen tree with a straight bole, growing up to 30 m with spreading crown. **BARK:** thick, brown-grey or black and rough. **LEAVES:** needles in **threes, erect, up to 25 cm long, pale green and sharp pointed.** **FRUIT:** brown cones, about 7 cm long on a short stalk.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds per kg: 40,000-50,000. Germination is fair but sporadic. Completed after 2 weeks.
- treatment:** not necessary.
- storage:** can remain viable up to 2 years at room temperature if kept well dry.
- Management:** A fast-growing tree. Planted at spacing of 2.5 x 2.5 m in plantations. Pruning, thinning, fire protection. Rotation period is 40-50 years.
- Remarks:** High potential for large-scale plantations in southern and western miombo forests for production of sawn timber. Seedlings require inoculation with mycorrhiza which help seedlings obtain nutrients in the soil—collect soil near mature mother trees. Moderately resistant to termites, but fire sensitive, this tree takes 25-30 years before it can be harvested as timber.

Pinus kesiya (P. insularis)

Pinaceae



Pinus oocarpa

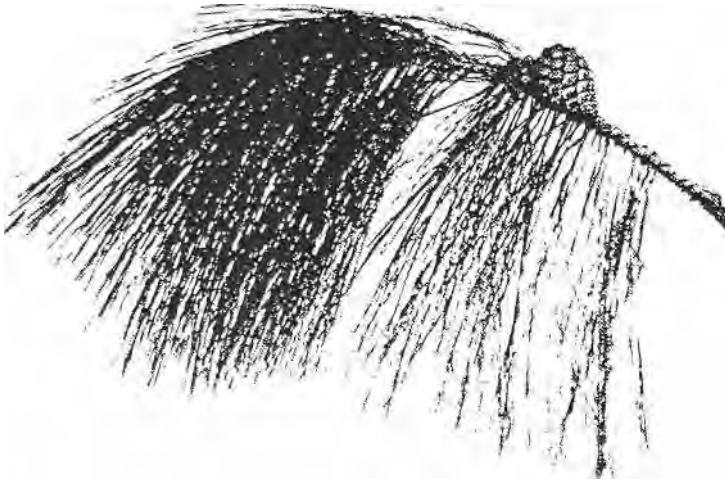
Pinaceae

Central America

- Common names: Eng: pine; Swah: msindano.
- Ecology: This tree is widely grown in Central and South Africa, 1,000-2,400 m, but is not commonly planted in Tanzania except on a small scale at Sao Hill. It grows on light, medium and heavy neutral or slightly acid soils and tolerates shallow soils:
- Uses: Timber, ornamental.
- Description: An evergreen conifer with a light crown, up to 25 m high. BARK: Grey-^eddish-brown. LEAVES: needles in threes, fours or fives, drooping, 15-25 cm long.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: about 36,000. Germination is good, completed after 2 weeks.
- treatment: not necessary.
- storage: can retain viability up to 2 years at room temperature if kept dry.
- Management: Fairly fast growing; pruning and thinning.
- Remarks: Potential for planting in woodlots and in plantations. Can withstand severe fire. Like other pines it requires mycorrhiza.

Pinus oocarpa

Pinaceae



Pinus patula

Pinaceae

Mexico

Common names: **Eng:** Mexican weeping pine, patula pine, spreading-leaved pine, Tecote pine; Swah: msindano.

Ecology: Probably the most widely planted pine tree in tropical Africa. It is tolerant of most soils but does best in acidic soils. While growing best with over 1,000 mm rainfall and at temperatures of 12-20°C, it can grow in more adverse conditions at altitudes of 1,650-3,000 m. In Tanzania it has been grown on large-scale commercial plantations around Kilimanjaro, Usambara, Iringa and Mbeya.

Uses: Firewood, timber (boxes, general purpose), posts (treated with wood preservative), pulpwood, shade, ornamental.

Description: An evergreen tree to 35 m with light green "weeping" foliage and a long straight trunk, branches more or less horizontal turning up at the tips. **BARK:** grey to dark brown, fairly smooth, papery red-brown on young branches. **LEAVES:** long slender needles, **soft but hard** tipped, 15-23 **cm** long, **in bundles of three**. **CONES:** female: small hard red spheres, mature in two years to shiny **brown** cones, base **oblique, to 10 cm long in clusters of 2-5** without stalks. Male: on the same tree, **short terminal catkins**, yellow-brown, producing clouds of dust-like pollen. Seeds develop below the cone scales and are released over a long period.

Propagation: Seedlings. Collect seeds by shaking cones in a basket, rub off wings with wet hands and sieve out debris. Dry in the sun.

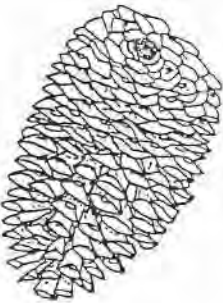
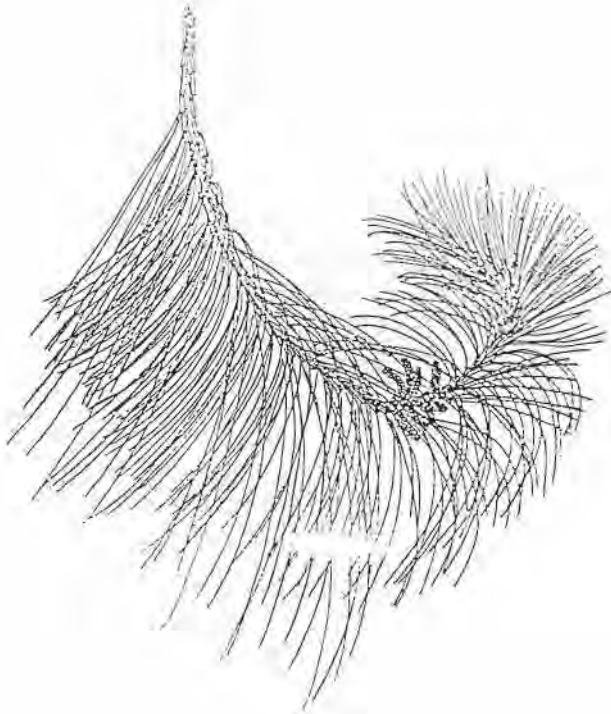
Seed info.: No. of seeds per kg: 110,000-170,000. Seeds germinate in 35-60 days and germination rate is 75-85%.

treatment: not necessary.

storage: seed can be stored for about 6 months at room temperature in air-tight containers, but for several years if cooled.

Management: Fast growing; pruning, thinning for trees being grown for sawn timber. Rotation period for timber is 30-40 years.

Remarks: It represents about 30% of all plantation trees in Tanzania. It should not be grown near crops due to the shallow root system. The timber is easily worked, fairly light and soft, and pale brown in colour.

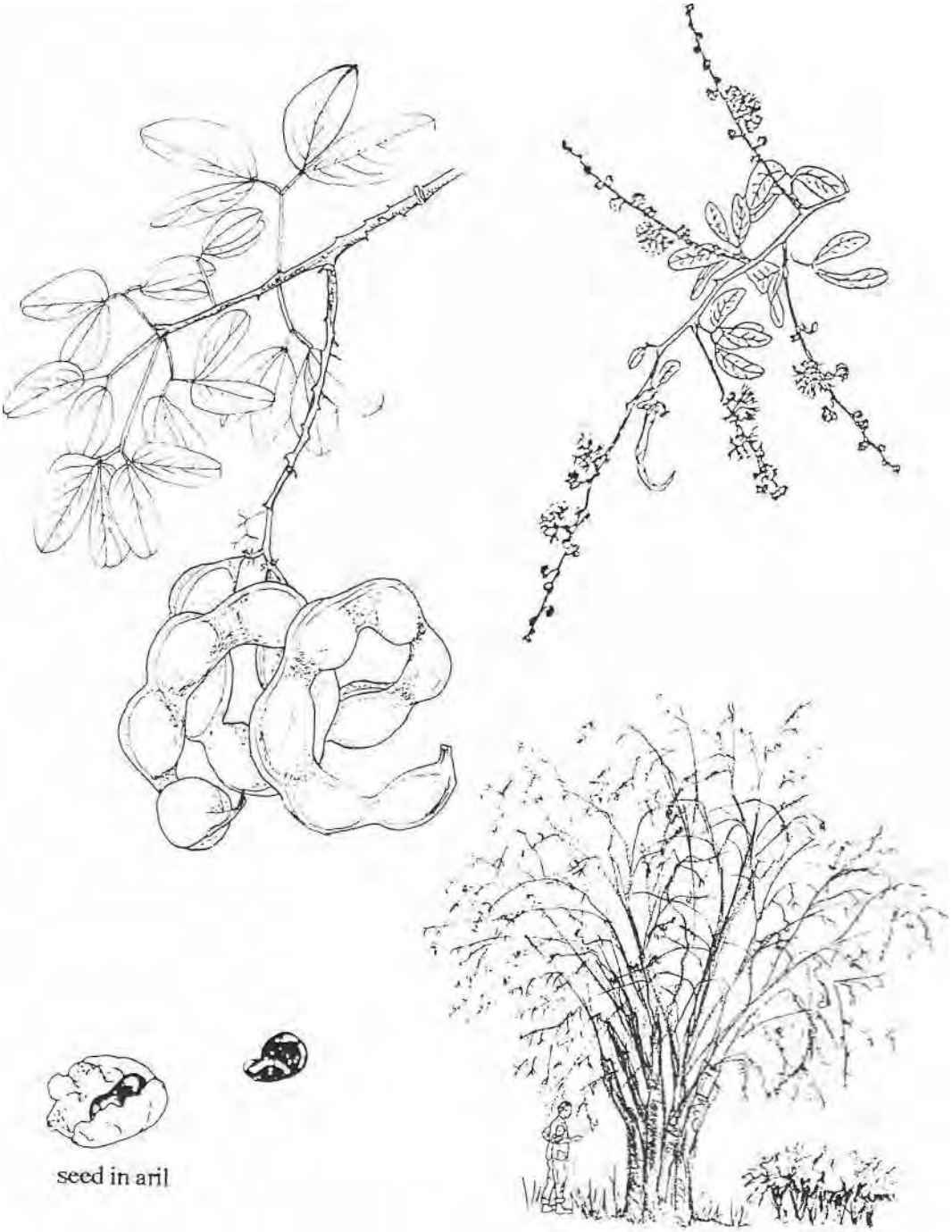


Pithecellobium duke

Mimosoideae

Central and South America

- Common names: Eng: Madras thorn, Manila tamarind; Swah: mkwaju wa kihindi, maramata.
- Ecology: The natural range for *P. duke* is Mexico, Central America, and northern South America. It is tolerant of most soils including very poor sands and wet salty soils. It tolerates arid and semi-arid conditions. In Tanzania *P. dulce* has been extensively planted for shade and as a hedge plant, mainly along the coast, 0-1,600 m.
- Uses: Firewood, timber (general construction), poles, food and drink (fruit pulp), fodder (leaves, pods, seeds), bee forage, soil conservation, shade, ornamental, windbreak, tannin, gum (bark), oil (seeds), soap (oil), live fence.
- Description: A thin shapeless shrub or tree 4–15 m, armed with short spines at the base of each leaf pair. BARK: pale and smooth with horizontal marks, bole short, young branches thorny, drooping. LEAVES: thin stalks bear two pairs of leaflet; each to 5 cm, asymmetric oval, the tip rounded or notched. FLOWERS: small, cream-yellow on a short stalk, bunches of green-white stamens, 1 cm across. FRUIT: heavy pods, about 12 cm, spirally twisted, constricted between seeds. red when mature, splitting to release glossy black seeds almost covered with the fleshy red and white edible aril. A sweet pulp surrounds the seeds.
- Propagation: Seedlings, direct sowing, cuttings.
- Seed info.: No. of seeds per kg: 7,000-26,000. Germination is very good and fast, 95% after 2 weeks.
- treatment: none, or soak in cold water for 6 hours.
- storage: can be stored up to one year if kept dry and free from insects.
- Management: Fast growing; coppicing, trimming (for live fence).
- Remarks: The species has the potential of becoming a weed if not well managed. It is popular as a spiny hedge but often confused with *Acacia Senegal*. It is extremely drought resistant and fast growing, coppicing well and can withstand heavy browsing or cutting for fodder.



Podocarpus falcatus (P. gracilior)

Podocarpaceae

Indigenous

- Common names: **Arusha:** olpiripiri, olviriviri; **Chag:** mvavavi; Eng: East African yellow wood, podo; **Iraqw.** dukmo, nokim; Meru: owiriwiri; **Rangi:** mpoda, mponde; **Samb:** mse mawe.
- Ecology: Podocarp trees are mainly found in the southern hemisphere. They are conifers, more closely related to Juniperus than to pines. The fruits, technically cones, look more like large berries on a fat stalk (*podocarpus* = footed stalk). They are also known as yellow-woods. *P. falcatus* is a large tree of upland rainforest in a restricted range, 1,500-2,400 m. In Tanzania it occurs on Mt. Kilimanjaro, the Usambaras and at Mbulu.
- Uses: Firewood, timber (furniture, boxes, plywood, panels), poles, medicine (bark), shade, ornamental.
- Description: An evergreen tree with a straight bole, to 25 m or more. **BARK:** grey to **dark brown, cracking and scaling** into irregular rectangles. **LEAVES:** narrow, **shiny dark green, 2-5 cm**, gradually tapering. Young leaves are larger and **brighter giving a green flush**. **CONES:** 1-3 male catkins, **yellow-brown about 2 cm**, female cones hard, **ovoid to 2 cm**, very slow to develop, **green with dull purple bloom**, outer shell thin but inner flesh eaten by monkeys and birds.
- Propagation: Seedlings, wildings.
- Seed info.: No. of seeds per kg 500-1,100. Ideally seeds germinate in 50-90 days at an average rate of 30%. Purple-brown fruits can be shaken down. Remove the pulp by soaking **in water** then rub or float out debris.
- treatment: crack the hard seed coat before sowing and remove the outer seed coat—not necessary when stored for a long time.
- storage: seed can be stored for up to two years.
- Management: Slow growing, hardy once established.
- Remarks: The species is now rare due to over-exploitation. The light wood is of high quality and can be used for furniture and panelling. But it needs preservatives and careful seasoning to prevent warping.

Podocarpus falcatus (P. gracilior)

Podocarpaceae

Podocarpus latifolius (P. milanjanus)

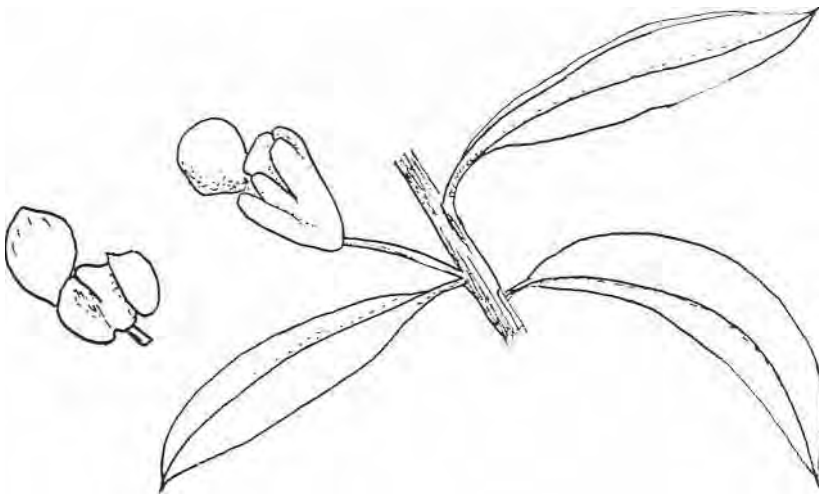
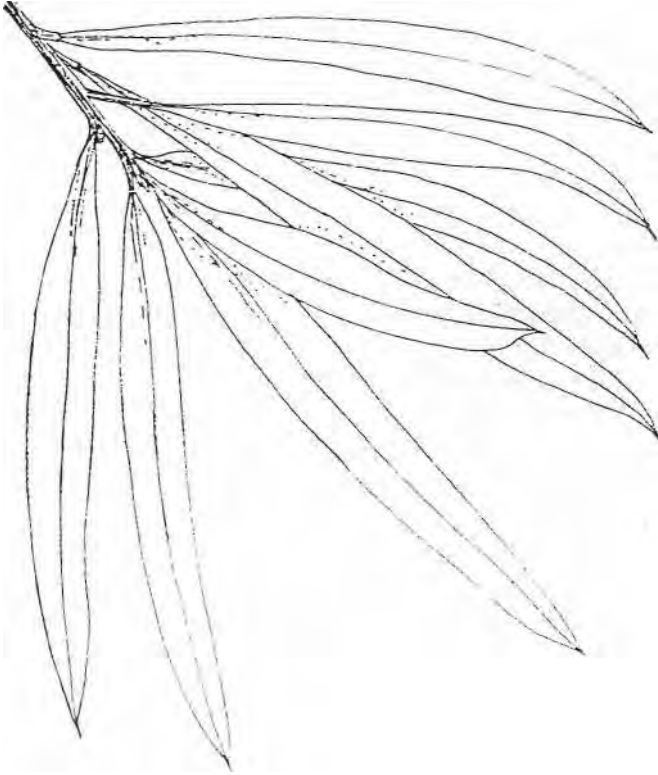
Podocarpaceae

Indigenous

- Common names: Bara: laganehel; Chag: msoso, mtongoso, mtokosi, mtosi tawaso; Eng: podo; Fipa: mfulanyelele; Hehe muvembanyigo; Iraqw: dukmo, nuki; Kinga: mkensi; Lugu muanziri; Meru: mseso; Nyak: nyalulasi; Nyiha: siegi Rangi: mwarinyani; Samb: mse, mse-mawe, msena-mawe msekichanga.
- Ecology: The natural range for *Podocarpus latifolius* is from Kenya through Central Africa to South Africa. In Tanzania it occurs mainly in the wetter montane forests of Usambara Kilimanjaro, Pare, Mbulu and Southern Highlands (Iring) and Mbeya). It requires deep, fertile and well-drained soil and the climatic range is wet montane, 900-3,200 m.
- Uses: Firewood, timber (furniture, boxes), poles, plywood, medicine (roots), shade, ornamental.
- Description: A forest tree, to 35 m, evergreen, conical when young, the trunk large and buttressed in old trees. BARK: red-brown to grey-brown, narrowly grooved, peeling in long fibrous strips. LEAVES: spirally arranged at the tips of branches very shiny, curved, tough, to 15 cm, with a pointed tip larger and paler when young. CONES: male trees have small catkins, pinkish, to 5 cm; female trees produce soft fleshy "fruits" about 1 cm ovoid, green-purple with a grey bloom. The stalk below the foot is characteristic swollen, soft and red, 1-2 cm, soon falling. Woody seeds smaller than those of *P. falcatus*.
- Propagation: Seedlings, wildings.
- Seed info.: No. of seeds per kg: 2,000-2,300. Ideally seeds germinate in 30-40 days with a germination rate of 60-80%.
- treatment: remove the red swollen receptacle, then spread out the fruit. in the shade. Sow seed within 4 days to avoid loss of viability as seeds are very sensitive to drying out. Crack the woody seed shell to speed up germination.
- storage: seed can be stored for up to a year but only at very low temperatures mixed with damp sawdust in open containers
- Management: Slow-growing.
- Remarks: The tree is regarded as too slow growing for large-scale planting. The pale straight-grained timber is easy to work and polish and resistant to insect attack if treated.

Podocarpus latifolius (P. milanjanus)

Podocarpaceae



Podocarpus usambarensis

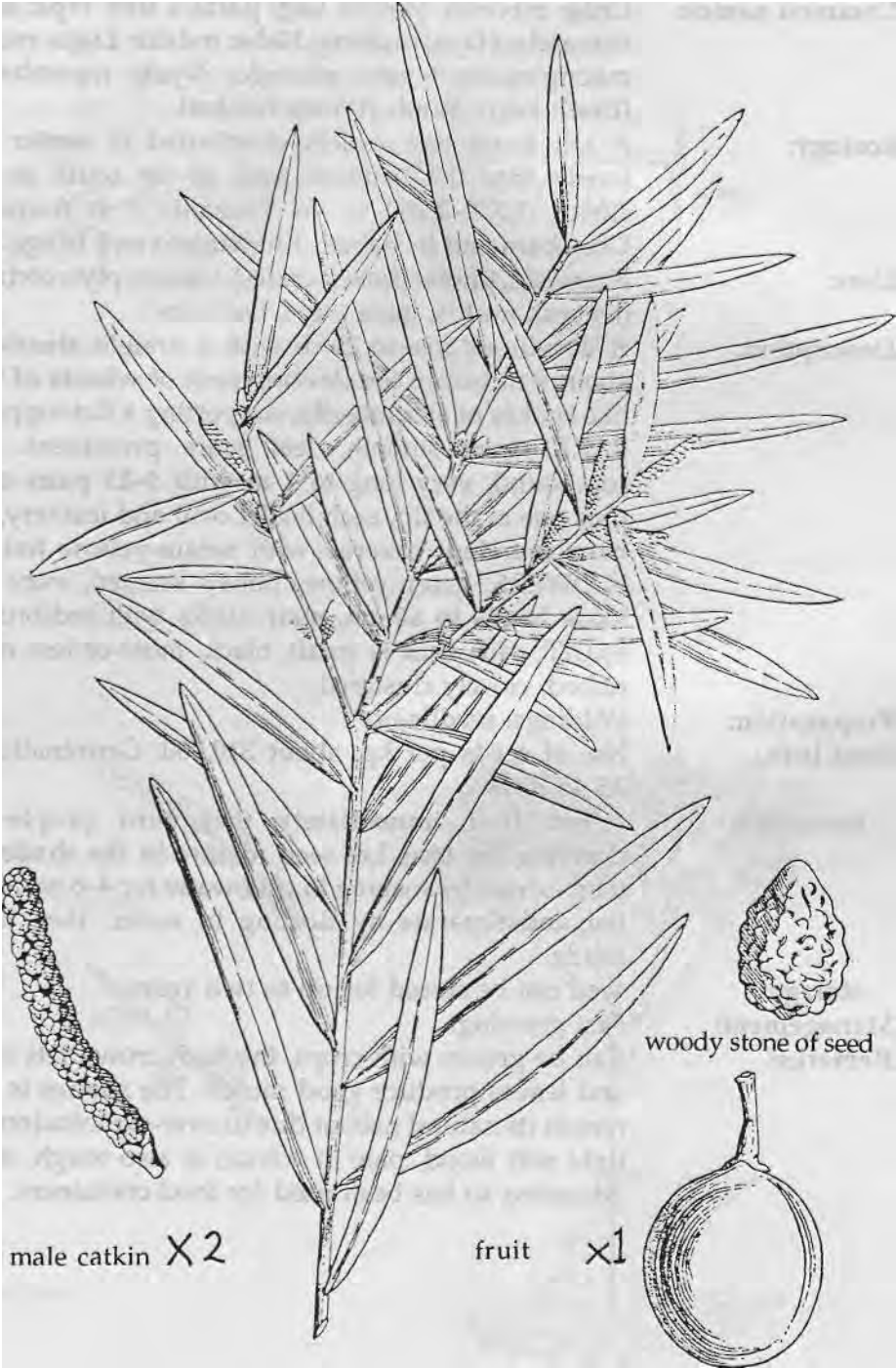
Podocarpaceae

Indigenous

- Common names:** Bara: laganehel; Chag: msosi, mtokosi; Eng: podo; Haya: msisimu, mziziru; Hehe: muovembanyigo; Iraqw: noki; Lugu: muanziri; Maasai: ol wiriwiri; Nguu: kisasasala; pare: mshunga; Samb: mse, msemawe; Swah: mpodo.
- Ecology:** A tree growing in highland rain forests, 950-2,700 m. In Tanzania it is found in Kilimanjaro, Pare, Usambara, Iringa, Mbulu, Njombe and Uluguru.
- Uses:** Firewood, timber, poles, tool handles, utensils (spoons, combs, mortars), ornamental.
- Description:** A large, evergreen, much-branched tree up to 60 m high with compact crown. **BARK:** pale grey to pale brown smooth when young, becoming rough and flaking with age. **LEAVES:** small, narrow, shiny green, to 5 cm long. Adult leaves parallel sided, but narrowed abruptly to the tip. **CONES:** spherical, up to 3 cm across, green at first turning purple-green after ripening, with thin pulp surrounding one seed.
- Propagation:** Seedlings, wildings.
- Seed info.:** No. of seeds per kg: 200-210. Germination is fair but slow even after complete removal of the seed coat, reaching 60% after 9 weeks.
- treatment:** not necessary, but cracking the woody shell-like covering may hasten germination.
- storage:** can retain viability for 2 years at room temperature.
- Management:** A slow-growing species. It needs nurse trees in the first 15 years of establishment. Rotation period 50-75 years.
- Remarks:** There are two varieties in Tanzania: *P. usambarensis war usambarensis* found in highland areas, and var. *dawei* found in ground-water forests in Minziro Forest Reserve in Bukoba and extending to Masaka in Uganda. *War usambarensis* has a thicker seed shell.

Podocarpus usambarensis

Podocarpaceae



male catkin X2

fruit x1

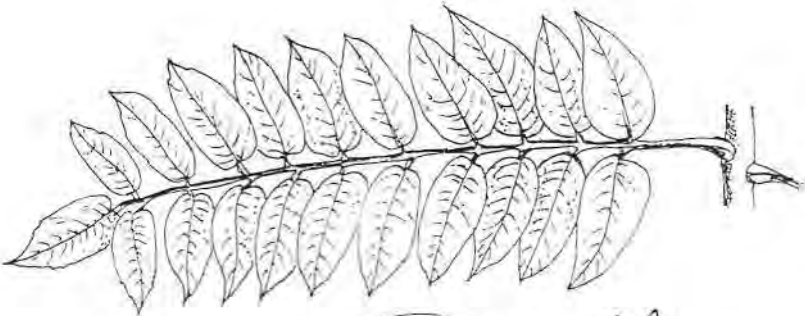
woody stone of seed

Polyscias fulva (P. kikuyuensis)

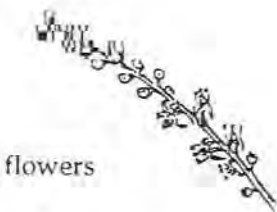
Araliaceae

Indigenous

- Common names: Chag: mborori, yaroro; Eng: parasol tree; Fipa: mnyumaji, namatata; Haya: mufaria; Hehe: mdeke; Lugu: malamadza mkong'onelo; Nguu: mkongo; Nyak: mpembati; Samb (East): kogo; Samb (West): fumbati.
- Ecology: A tall forest tree widely distributed in wetter highland forests into the bamboo zone as far south as southern Africa, 1,750-2,750 m. In Tanzania it is found in East Usambara and in Babati, Kilimanjaro and Iringa.
- Uses: Firewood, timber (boxes, crates), veneer, plywood, medicine (leaves), mulch, mole traps, beehives.
- Description: A deciduous tree to 25 m with a straight slender bole to about 9 m before the development of whorls of branches; like spokes of an umbrella, supporting a flat-topped crown. BARK: grey smooth, leaf scars prominent. LEAVES: compound, very long to 1 m with 9-13 pairs of leaflets plus one at the tip, each leaflet oval and leathery, 9-20 cm, base rounded, covered with cream-yellow hairs below. FLOWERS: green-yellow, honey scented, very small in loose heads to 60 cm, main stalks with red-brown hairs. FRUIT: each fruit is small, black, more-or-less oval, often ribbed, closely clustered.
- Propagation: Wildings, seedlings.
- Seed info.: No. of seeds per kg: about 310,000. Germination 75% in 35-45 days.
- treatment: collect fruit immediately they turn purple-black by climbing the tree. Let seed mature in the shade 1-2 days then extract by soaking in cold water for 4-6 hours, squeeze out and separate by floating in water, then dry in the shade.
- storage: seed can be stored for up to two years.
- Management: Fast growing.
- Remarks: Can be grown with crops, the high crown lets in sunlight and leaves produce good mulch. The species is becoming rare in its natural habitat due to over-exploitation. The very light soft wood, pale in colour, is also tough, strong and odourless so has been used for food containers.



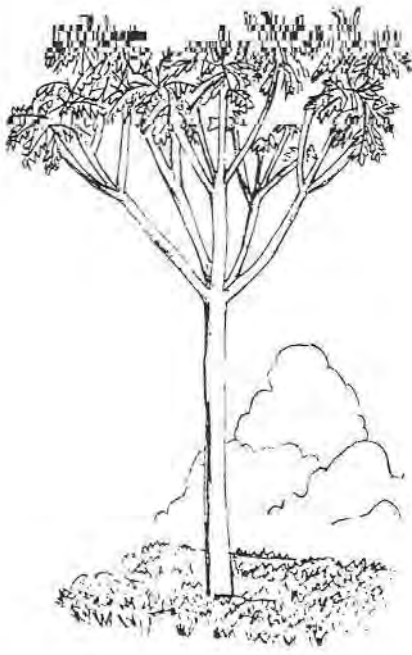
A.B.



flowers



fruit



DARTER ?

Prosopis chilensis

Mimosoideae

Argentina, Chile, Mexico, Texas

- Common names: Eng: mesquite.
- Ecology: A small tree native to North and South America from Argentina and Chile to Mexico and Texas, 0-3,000 m. It grows in a wide range of soils, including gravelly or rocky sands. Its climatic range is dry plateau. It tolerates some waterlogging but is sensitive to weed competition.
- Uses: Firewood, charcoal, timber, poles, posts, food (fruit), fodder (leaves and pods), bee forage, shade, ornamental, nitrogen fixation, soil conservation, soil improvement, tannin, gum. live fence.
- Description: A fairly small tree or shrub, 8-15 m, light, drooping foliage. BARK: grey, cracked. LEAVES: alternate, compound, about 1 cm, oblong, tip pointed. FLOWERS: greenish-yellow spikes. FRUIT: about 10 cm long pods, yellow when ripe. becoming black, numerous, up to 25 seeds within a sweet pulp.
- Propagation: Seedlings, direct sowing.
- Seed info.: No. of seeds per kg: 32,000. Germination 30-90% in **10-30** days. Seeds can be extracted by exposing pods to termites. Sun dry pods, cut in pieces, then soak for 24 hours, crush and extract seed, dry in the sun.
- treatment: nick the seed or soak in cold water for 24 hours.
- storage: seed stores well both in pods and when extracted as it is not attacked by insects.
- Management: Fairly fast growing; coppicing.
- Remarks: The tree can become a weed in wetter areas. Pods contains much sugar and are excellent animal feed, sometimes ground to a powder concentrate.

Prosopis chilensis

Mimosoideae



Prosopis juliflora

Mimosoidecu

Central America, Mexico

Common names:	Eng: algarroba, mesquite.
Ecology:	A thorny shrub or tree cultivated all over the tropics Grows well in arid areas producing deep roots and tolerating extreme heat in sandy, rocky or poor and saline soils, 0-1,500 m. Soils must be well drained.
Uses:	Firewood, charcoal, timber, poles, posts, carvings, food (leaves, pods), fodder (leaves, pods), bee forage, medicine, nitrogen fixation, soil conservation, windbreak, live fence.
Description:	Often a shrub but can become a shapely tree to 15 m, the bole short, young branches green. BARK: thick, rough green-grey, scaly with age, some with pairs of thorns to 5 cm. LEAVES: compound, stalks to 6 cm, with 2-3 pairs of pinnae and 8-15 pairs of leaflets; leaflets oblong narrow, 1^5 cm long, no terminal leaflet. FLOWERS: gold-yellow, densely crowded in spikes 5-10 cm, fragrant. FRUIT: yellow pod, 10-20 cm, Hard seeds difficult to extract from pod.
Propagation:	Seedlings, direct sowing.
Seed info.:	No. of seeds per kg: 30,000-35,000. Germination rate 40%-80%. Seeds can be extracted by exposing pods to termites, or cut dry pods into pieces, soak overnight, extract mechanically, dry in the sun, pound in a mortar then winnow to separate the chaff.
treatment:	nick seed coat with a knife to improve germination.
storage:	the seeds store well both in pods and when extracted as they are not attacked by insects.
Management:	Fairly fast growing; lopping, pollarding and coppicing.
Remarks:	The tree may become a weed on wetter sites. It sets seed after 3-4 years. The sweet pod contains both glucose and protein, making valuable fodder. The dense hard wood burns with great heat.

Prosopis juliflora

Mimosoideae



Prunus africana (Pygeum africanum)

Rosaceae

Indigenous

Common names: Arusha: ol gujuk, olkonjuku; Chag: mkonde-konde, msendo, mudy, muuri; Eng: red stinkwood; Fipa: mfila; Fiome: gwaami; Hehe: mwiluti; Iraqw: gwaami, gwami; Kinga: mpembati; Maasai: olkonjuku; Meru: kondekonde; Nguu: mdundulu; Nyiha: ligambo; Rangi: wami; Samb: mkomahoya; Zinza: mufubia.

Ecology: A useful timber tree widespread from West to southern Africa, usually in high rainfall areas, 1,500-2,300 m. In forests the high foliage is open, the branches often pendulous, but in grassland the tree is more rounded and compact. It is a common tree on mountains.

Uses: Firewood, charcoal, timber (construction), poles, utensils (mortars), medicine (leaves, bark), bee forage, shade, ornamental, mulch, windbreak.

Description: An evergreen tree to 25 m. BARK: rough, dark, scaling irregularly, branches corky, branchlets dotted **with** breathing pores. LEAVES: glossy dark green above, oval to 10 cm, margin with shallow rounded teeth, leaf stalk typically pink, to 2 cm. Crushed leaves have a bitter almond smell. FLOWERS: very small, fragrant, green-white in short sprays, on stalks to 8 cm. Flowering is uneven during the year. FRUIT: rounded, about 1 cm, dark red. often bi-lobed, containing one or two seeds surrounded by pulp.

Propagation: Seedlings, wildings.

Seed info.: No. of seeds per kg: 3,600-5,000. Ideally 60-80% germination in 35-50 days. Collect only dark brown ripe fruits from the crown of the tree or the ground. Remove the pulp by soaking for 24 hours, then wash over a wire mesh. Spread in a thin layer in an airy shaded place to dry—but for 4 hours only.

treatment: not necessary, but remove pulp from the seed.

storage: seed does not store; fresh seed should be used. Moist leaves around the seed minimize moisture loss during temporary storage and transport.

Management: Fairly slow growing.

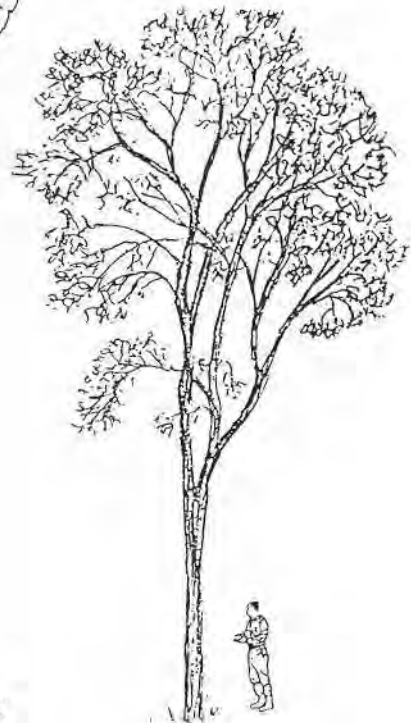
Remarks: Wildings are commonly used for large-scale planting. The fruit are eaten by monkeys and birds so seed is spread by this means. The heartwood darkens to a dense red. It is hard and medium weight, not durable in the ground, but a useful timber for furniture, poles, etc.

Prunus africana (*Pygeum africanum*)

Rosaceae



one flower enlarged



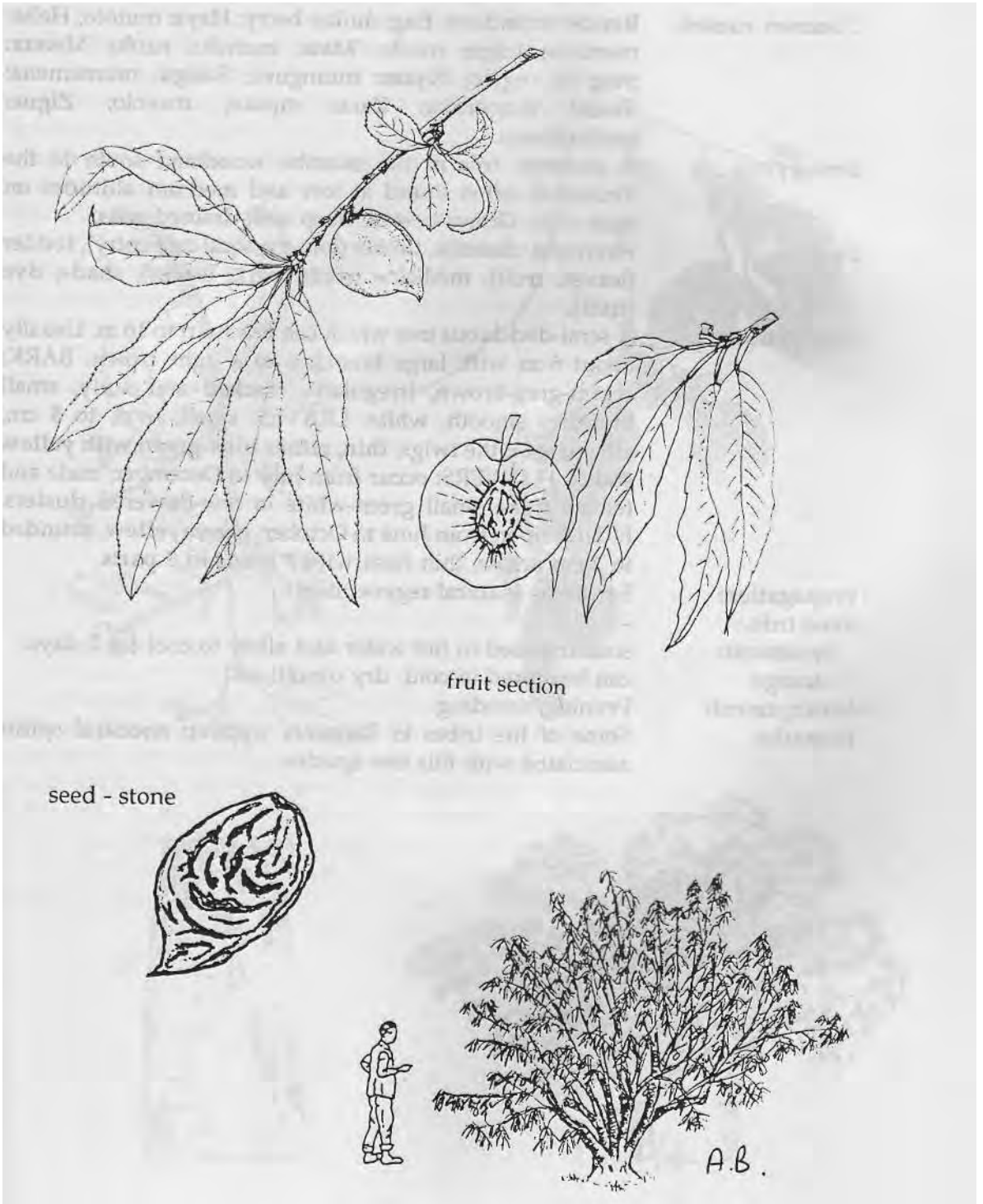
A. Birnie

Prunus persica

Rosaceae

China, South-West Asia

- Common names: Eng: peach; **Samb:** mfyoksi.
- Ecology: A small fruit tree of temperate climates, so in Tanzania it is grown in homesteads of the highland areas like the Uluguru Mountains, 1,000-2,000 m. It will also grow in quite dry soils.
- Uses: Firewood, food (fruit), ornamental, boundary marking.
- Description: A shrub or small tree up to 8 m with well-branched crown, normally pruned in cultivation. **BARK:** grey and smooth, young twigs angular and red. **LEAVES:** narrow **oval**, alternate, 6-15 cm long, smooth and with **finely toothed** margins, paler below with raised midrib, shortly stalked. **FLOWERS:** usually solitary, **5 pink petals** surround central stamens; abundantly produced when the tree is leafless. **FRUIT:** round and fleshy, yellowish when ripe, to 7 cm across, the skin covered with **short hairs** which rub off. Inside a hard **pitted stone** contains a single seed.
- Propagation: Seedlings, cuttings, grafting, wildings.
- Seed info.: No. of seeds per kg: 200-250. Germination is good but takes up to 6 weeks.
- treatment: not necessary, but soaking in cold water for 12 hours enhances germination.
- storage: can retain viability up to a year at room temperature.
- Management: A fast-growing tree; grown in fruit gardens and around *home compounds and on farmlands*. Pollarding to encourage branching. Shoots of one year bear fruit the following year, so pruning has to be done accordingly.
- Remarks: The tree can produce large quantities of small rather hard fruit which are eaten raw or cooked. A fungus, "peach curl", affects the leaves.



Pseudolachnostylis maprouneifolia

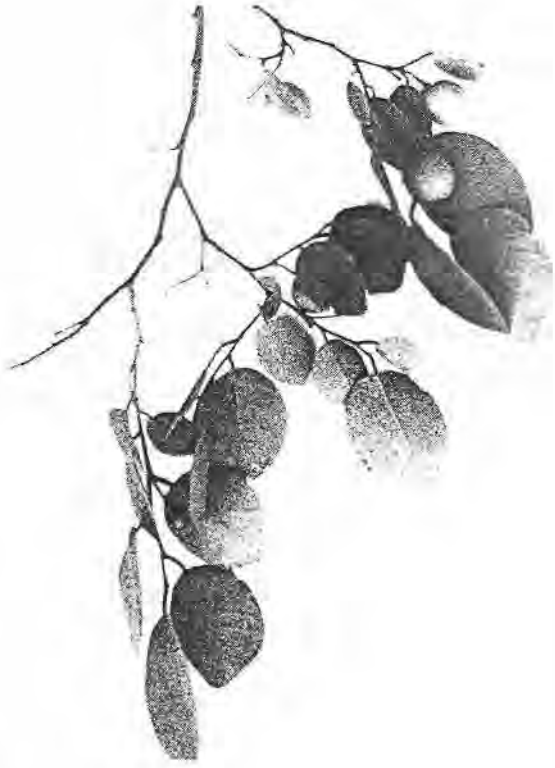
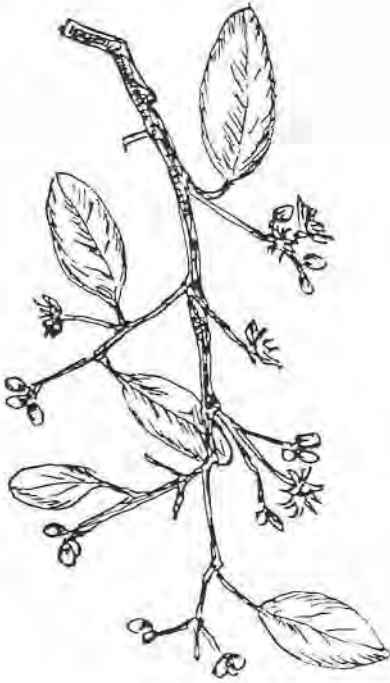
Euphorbiaceae

Indigenous

- Common names: **Bende:** mtunduru; Eng: duiker berry; **Haya:** mutoto; **Hehe:** memena; **Lugu:** msolo; **Mate:** muholo, nzolo; Mwera: mng'olo, ngolo; Nyam: mtunguru; **Sangu:** mumemena; Swah: muguruka; **Zara:** mpulu, msyolo; Zigua: mselenkanga.
- Ecology: A common tree in the miombo woodland south to the Transvaal, often found at low and medium altitudes on light soils. Grows best on deep well-drained soils.
- Uses: Firewood, charcoal, timber (joinery, local carpentry), fodder (leaves, fruit), medicine (roots, bark, leaves), shade, dye (fruit).
- Description: A semi-deciduous tree which can reach up to 16 m. Usually about 6 m with large branches to a light crown. **BARK:** cream-grey-brown, irregularly cracked and scaly, **small** branches smooth, white. **LEAVES:** small, oval, to 8 cm, **alternate** on the twigs, **thin, rather blue-green with yellow stalks.** **FLOWERS:** occur from July to December, male and female trees; small green-white in few-flowered clusters. **FRUIT:** ripen from June to October, **green-yellow, rounded to 2 cm** across, thin flesh with **3 seeds in 3 parts.**
- Propagation:** Seedlings (natural regeneration).
- Seed info.:
treatment: soak the seed in hot water and allow to cool for 2 days.
storage: can be stored in cold, dry conditions.
- Management: Pruning, weeding.
- Remarks: Some of the tribes in Tanzania worship ancestral spirits associated with this tree species.

Pseudolachnostylis maprouneifolia

Euphorbiaceae



Psidium guajava

Myrtaceae

South and Central America

- Common names: Eng: guava; **Swah:** mpera.
- Ecology: Originates from South America, probably Brazil. Now grown throughout the tropics, including tropical and sub-tropical America, the warmer sub-tropics elsewhere and throughout Africa south of the Sahara. In Tanzania it is grown mainly along the coast at present, but village conditions over much of the interior are equally suitable. It grows at most altitudes in a variety of soils and is drought hardy but cannot tolerate waterlogging, 0-2,000.
- Uses: Firewood, tool handles, posts, food (fruit, jam, jelly, juice), medicine (bark, leaves, roots), shade, soil conservation, live fence.
- Description: A small evergreen tree to 8 m, branching irregularly. BARK: smooth light brown, young shoots **4-sided**. LEAVES: **opposite, oval, to 15 cm**, side veins clear and parallel, **hairy below**. FLOWERS: white, 1-3 together, many stamens, each about 2 cm across. FRUIT: yellowish, rounded and heavy to 6 cm, the calyx lobes persistent. Flesh gritty, sweet, pink, white or yellow, hard angular seeds within. Bats distribute seed.
- Propagation: Seedlings, wildings, root suckers, direct sowing.
- Seed info.: No. of seeds per kg: about 500,000.
- treatment: not necessary,
- storage: seed can be stored.
- Management: Fast growing; pollarding, lopping, pruning, coppicing.
- Remarks: The tree may become a weed on good sites, very often colonizing unused sites. It is best planted away from crops due to root competition. Trees begin to bear fruit after 2 years and continue fruiting up to 30 years. Improved varieties (fruit size and quality) exist. The fruit are rich in vitamin C. The wood is termite resistant. Commercial cultivation is carried out in India where seedless varieties have been developed.

Psidium guajava

Myrtaceae



Ptaeroxylon obliquum

Ptaeroxylaceae

Indigenous

- Common names: Eng: sneezewood; **Samb:** mwandala.
- Ecology: Found in a variety of habitats in South Africa, low-altitude woodland to evergreen montane forest, often with Juniperus. A tree of evergreen forests in the West Usambara Mountains.
- Uses: Firewood, timber, medicine (sawdust).
- Description: A shrub or tree 5-16 m high. BARK: pale grey or white, smooth when young, rough and dark with age, becoming longitudinally fissured and flaking. LEAVES: compound, opposite with a slightly winged **leaf stalk** with 3-7 pairs of leaflets. Leaflets unequal sided, dark green, about 2.5 cm long, tip rounded or notched, on a stalk to 2.5 cm. FLOWERS: male and female flowers produced on different trees with young leaves. Flowers **white or pale** yellow, sweet scented, beside leaves; petals yellow, anthers orange-yellow. FRUIT: a capsule, about 2.0 x 1.5 cm, grey-brown, splitting into two to release a pair of winged seeds, persistent on tree.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: about 30,000. Seeds winged. Germination is good and fast,
- treatment: not necessary.
- storage: can retain viability for only a few months at room temperature.
- Management: Fairly fast growing; coppicing.
- Remarks: Smoke from the burning wood is used as a traditional pesticide for stored grains in West Usambara and as a medicine for headache. The sawdust is pungent and irritating but sometimes used as a snuff to cure headaches.

Ptaeroxylon obliquum

Ptaeroxylaceae



Pterocarpus angolensis

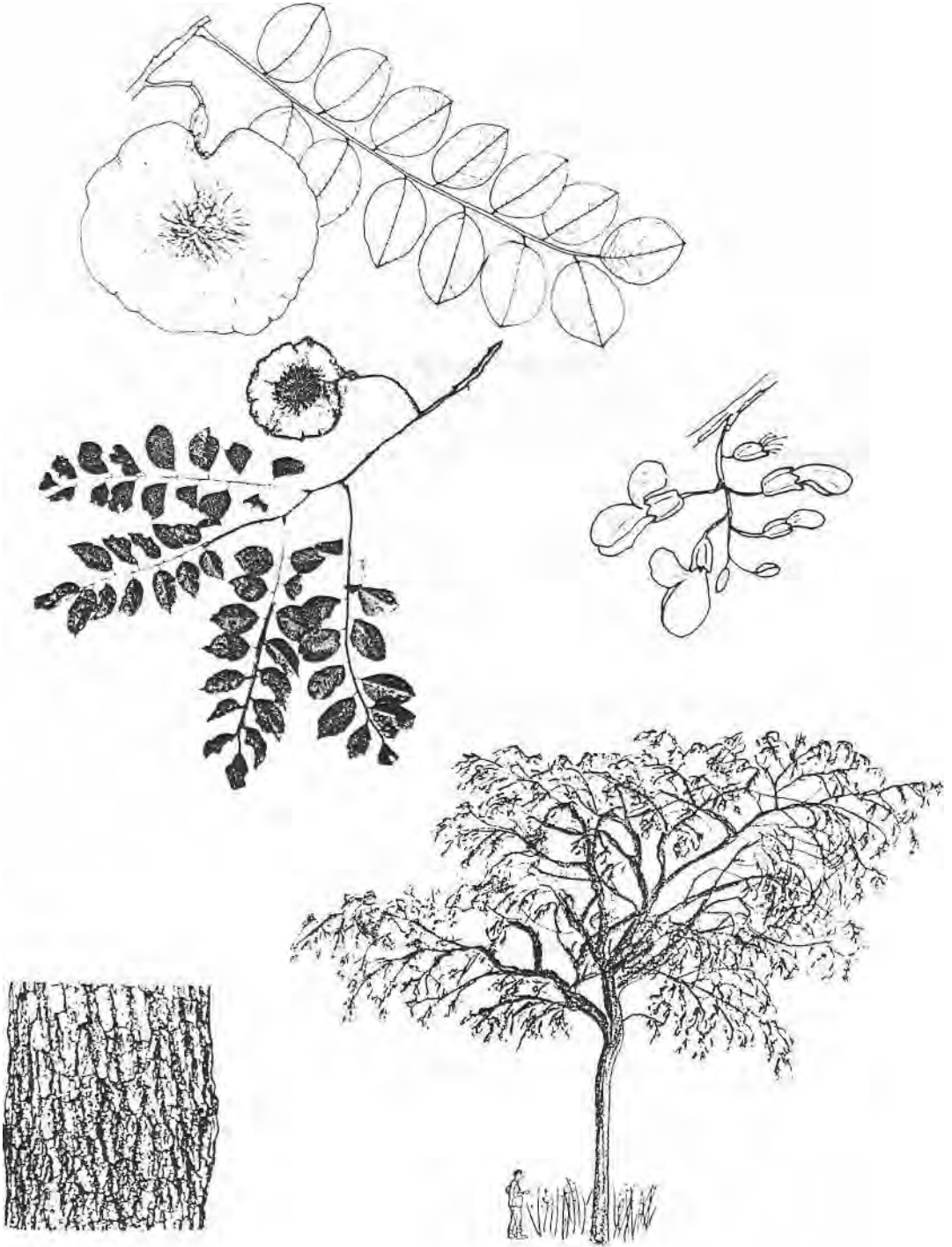
Papilionoideae

Indigenous

- Common names:** Eng: African teak, bloodwood; Fipa: asananga; Gogo: mpagata; Ha: mninga; Lugu: mhagata, mlambadanda; Mwera: mtumbati, mtumbati jangwa; Nyam: mninga; Subi: mninga; Swah: mninga; Zara: mninga, mtumbati; Zigua: muhagata.
- Ecology:** One of the most useful and valuable of African timber trees, widespread in woodland and wooded grassland throughout central and southern Africa. In Tanzania it is widespread in Kilwa, Lindi, Morogoro and Tabora, preferring well-drained soils.
- Uses:** Firewood, charcoal, timber (construction, quality furniture), tool handles, carving, poles, medicine (bark, roots, flowers, sap, seed), fodder (shoots, leaves), bee forage, ornamental, nitrogen fixation, soil conservation, boats and canoes.
- Description:** A medium-sized to large deciduous tree, up to 20 m with a straight bole and an open crown. **BARK:** dark grey to brown, rough and longitudinally fissured. **LEAVES:** the tree remains bare for many months. Leaves compound 5-9 pairs of leaflets plus a central leaflet, thin and oval to 7 cm, the short stalks hairy, base rounded, tip pointed. **FLOWERS:** orange-yellow, pea-shaped, in large, branched sprays, 10-20 cm long, before the new leaves. **FRUIT:** very distinctive, round pod, densely covered with stiff brown hairs. The pod contains 1 seed and has a papery wavy wing, up to 3 cm wide. It does not split open.
- Propagation:** Seedlings, truncheons (large woody cuttings).
- Seed info.:** No. of seeds per kg: 3,400-5,000. Germination is usually 30-70%.
- treatment:** not necessary.
- storage:** seed can be stored.
- Management:** Pruning, coppicing.
- Remarks:** This is one of the most well known woods in southern tropical Africa. It is very fire resistant. The durable heartwood is a beautiful golden red-brown, easily worked and takes a high polish. The sapwood is susceptible to insect damage. As a nitrogen-fixing tree the leaves have been found to contain 50% more nitrogen than those of *Julbernardia globiflora*, which has no nodules, growing alongside.

Pterocarpus angolensis

Papilionoideae



Rauvolfia caffra

Apocynaceae

Indigenous

Common names: **Bende:** mhetwefwe; **Chag:** msesewe; **Eng:** quinine tree; **Gogo:** mkongo; Hehe: muveriveri; **Lugu:** mlolo; **Maasai:** olchapukalyan, oljabokaryan; **Meru:** msesewe, oltawakalyan; Nguu: mlengwelengwe; **Nyak:** mpugupugu; **Rangi:** msumai; **Samb:** ng'weeti; **Swan:** mkufi, mwembemwitu.

Ecology: Widely distributed in riverine *Brachystegia* woodland, lowland forests, dry and wet montane forests of the highlands of eastern and southern Africa, 500-2,100 m. It is a characteristic feature of areas where there is ground water.

Uses: Firewood, timber, utensils (grain mortars), beehives, flavouring (bark, for beer), medicine (bark, roots), bee forage, shade (in coffee), ornamental.

Description: A much-branched evergreen tree up to 35 m high with a straight bole reaching 1.5 m diameter and with a leafy, spreading crown. **It resembles mango**, but is more oval and less dense, branches often whorled. **BARK:** light brown or greyish-white with irregular fissures. **LEAVES:** thinly leathery, arranged in **whorls of 3-5 towards the ends of branchlets, shiny, dark green** above, 6-32 cm long and 1.5-7.5 cm wide, tip drawn out. If removed, thin white **latex** drips out. **FLOWERS:** small, **white, tubular, sweet scented**, in large **dense clusters, to 20 cm across**. **FRUIT:** rounded and smooth, about 1.3 **cm** across, green at first changing to **blackish-purple** and wrinkled when ripe, 1-2-seeded.

Propagation: Easily grown from seedlings, wildings.

Seed info.: No. of seeds per kg: 4,500-5,000. Germination is fast and good, up to 80% after two weeks.

treatment: not necessary.

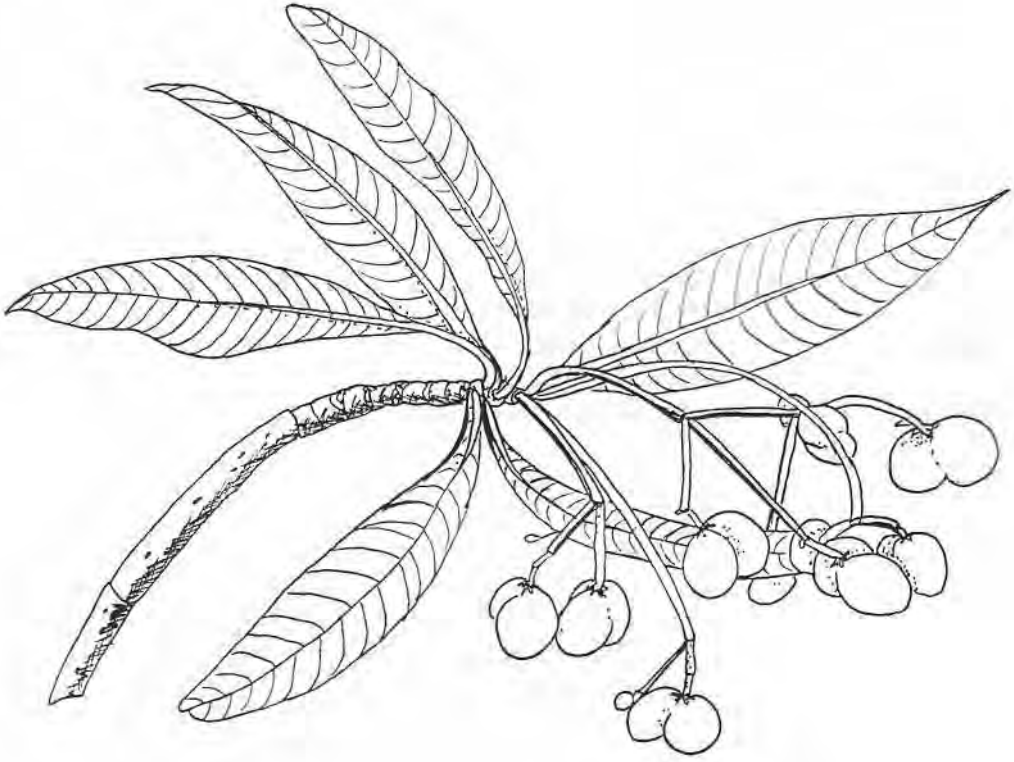
storage: can retain viability only for a short period (1 month) at room temperature.

Management: Pollarding. It transplants well and is quite fast growing.

Remarks: It is already used in the highlands in coffee/banana fields. The wood is pale and light and very suitable for carving utensils and curios. A well-known medicinal tree: bark and roots contain the alkaloid reserpine which is used in the treatment of hypertension.

Rauvolfia caffra

Apocynaceae

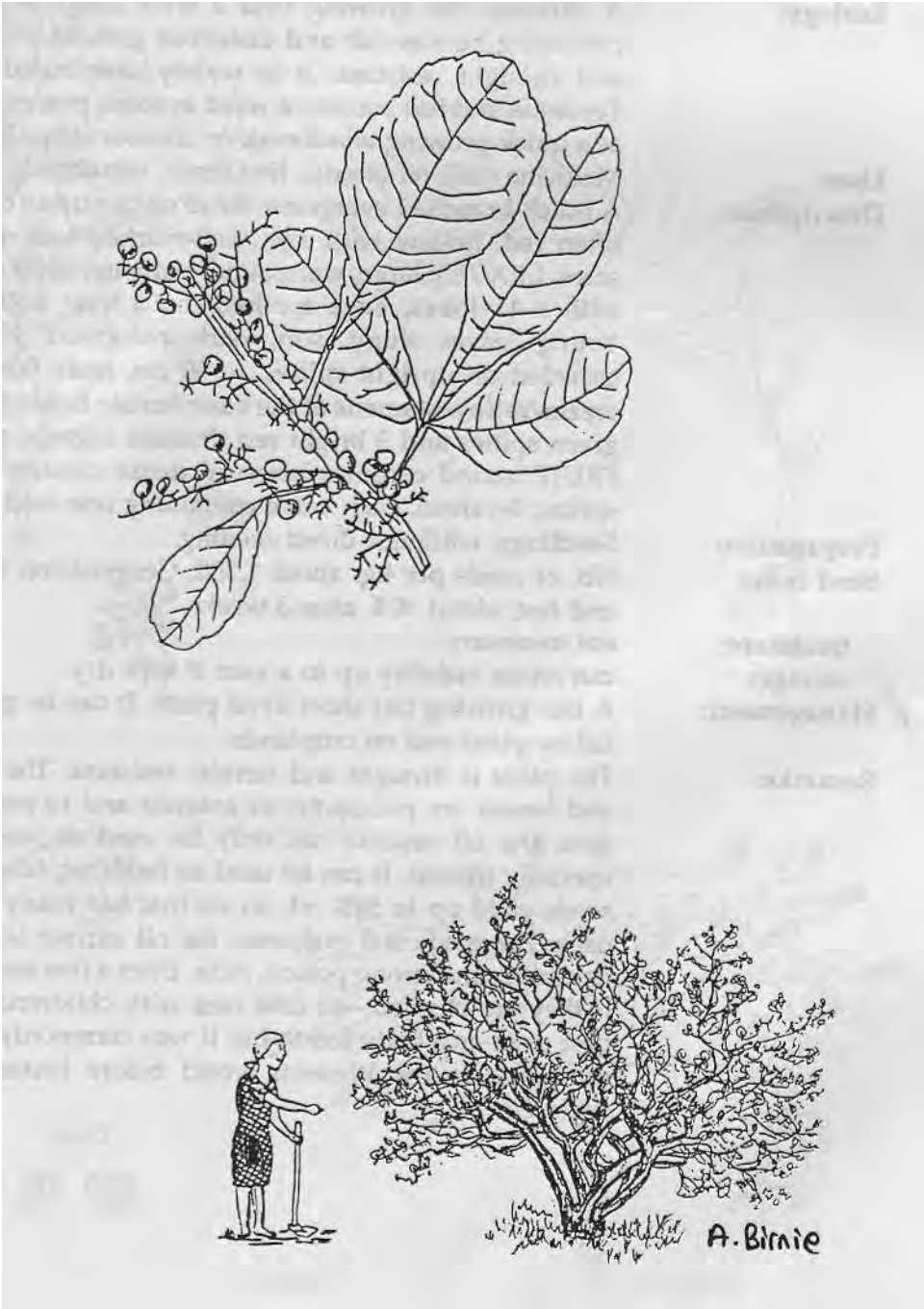


Rhus natalensis

Anacardiaceae

Indigenous

- Common names: Arusha: ormisigiyoi; Fipa: msangula; **Haya:** omusheshe, msagara; Hehe: mtunumbi; **Iraqw:** datei, mstunga, sirongi; **Kere:** musheshe; **Kuria:** msangura; **Maasai:** ol mesigie; Rangi: msakasaka; Samb: mhunguru, mhunguru-mhomba; Suku: mhunguru; Swah: mkumba; **Zinza:** msense.
- Ecology: A bush or tree widespread in Africa, usually in wooded savannah, on forest edges and beside rivers but also on coastal dunes in southern Africa, 0-3,000 m. Found in Tanzania in all but the driest parts. *Rhus* spp. are quick growing and drought resistant.
- Uses: Firewood, charcoal, timber, farm tools, food (fruit), medicine (bark, leaves), toothbrushes (stems).
- Description: A many-branched **shrub, tending to scramble**, or a rounded tree to 8 m. BARK: grey-brown, branchlets **pale and dotted with breathing pores**, branches angular. LEAVES: **three leaflets, the central largest to 9 cm**, usually dark green, rather **leathery**, hairless, sometimes **toothed**, very variable, on a stalk 2-4 cm. FLOWERS: green-yellow in loose heads to 15 cm. FRUIT: about 5 mm, oblong to kidney shaped, **smooth red with thin flesh**, edible, later dry and papery, falling easily.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 26,000-30,000. Germination is fast and good.
- treatment: not necessary
- storage: can retain viability for only a short period (3 months) **at room temperature.**
- Management: Slow growing; coppicing.
- Remarks:



Indigenous

Common names: Eng: castor-oil plant; Gogo: mnyemba; Hehe: mnyemba; Kinga: imivono; Lugu: mnyemba; Nyam: mhale; Pare: mbono; Samb: mzono; Swah: mbarika, mbono, nyonyo.

Ecology: A shrubby tree growing over a wide range of altitudes preferring humus-rich and disturbed ground. It is termite and drought resistant. It is widely distributed all over Tanzania and has become a weed in some places. It is used as a quick-growing windbreak on contour strips in Arusha.

Uses: Medicine (oil), oil (seeds), live fence, windbreak.

Description: A much-branched evergreen shrub or tree up to 6 m, stems often red, hollow with age, well-marked leaf nodes and scars. LEAVES: large, compound, palmate, to 50 cm across with 5-11 lobes, edge toothed, on a long hollow stalk. Young leaves shiny, soft, dark red-green. FLOWERS: crowded on upright spikes, to 60 cm, male flowers with cream-yellow stamens at the base; female flowers with soft green spines and 3 bright red divided stigmas at the top. FRUIT: round capsules borne in dense clusters with soft spikes; 3-valved, each valve containing one seed.

Propagation: Seedlings, wildings, direct seeding.

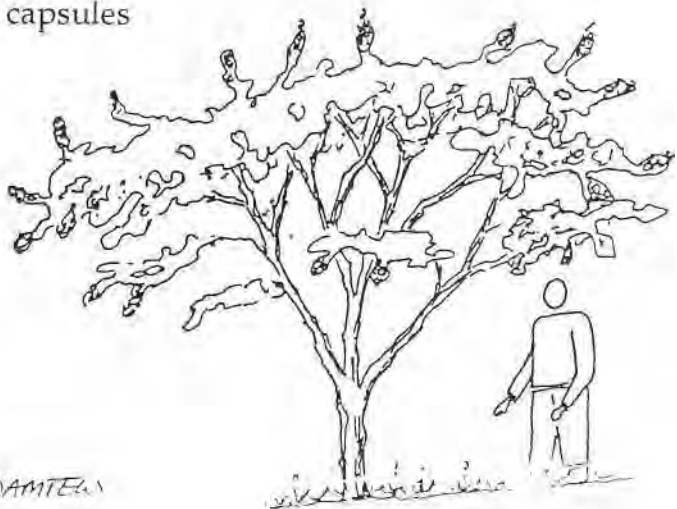
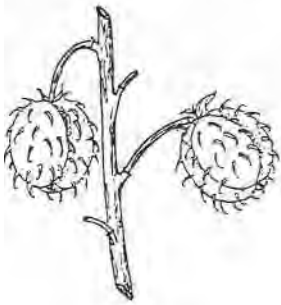
Seed info.: No. of seeds per kg: about 1,300. Germination very good and fast, about 90% after 3 weeks,

treatment: not necessary.

storage: can retain viability up to a year if kept dry.

Management: A fast-growing but short-lived plant. It can be grown as a fallow plant and on croplands.

Remarks: The plant is drought and termite resistant. The seed coat and leaves are poisonous to animals and to poultry, and even the oil residue can only be used as stock feed if specially treated. It can be used as fertilizer, however. The seeds yield up to 50% oil, an oil that has many industrial uses. For medicinal purposes the oil extract is heated to neutralize the strong poison, ricin. Even a few seeds can kill if they are chewed—so take care with children. The oil is best used as a body lotion but it was commonly used as a purgative in the Western world before better products replaced it.

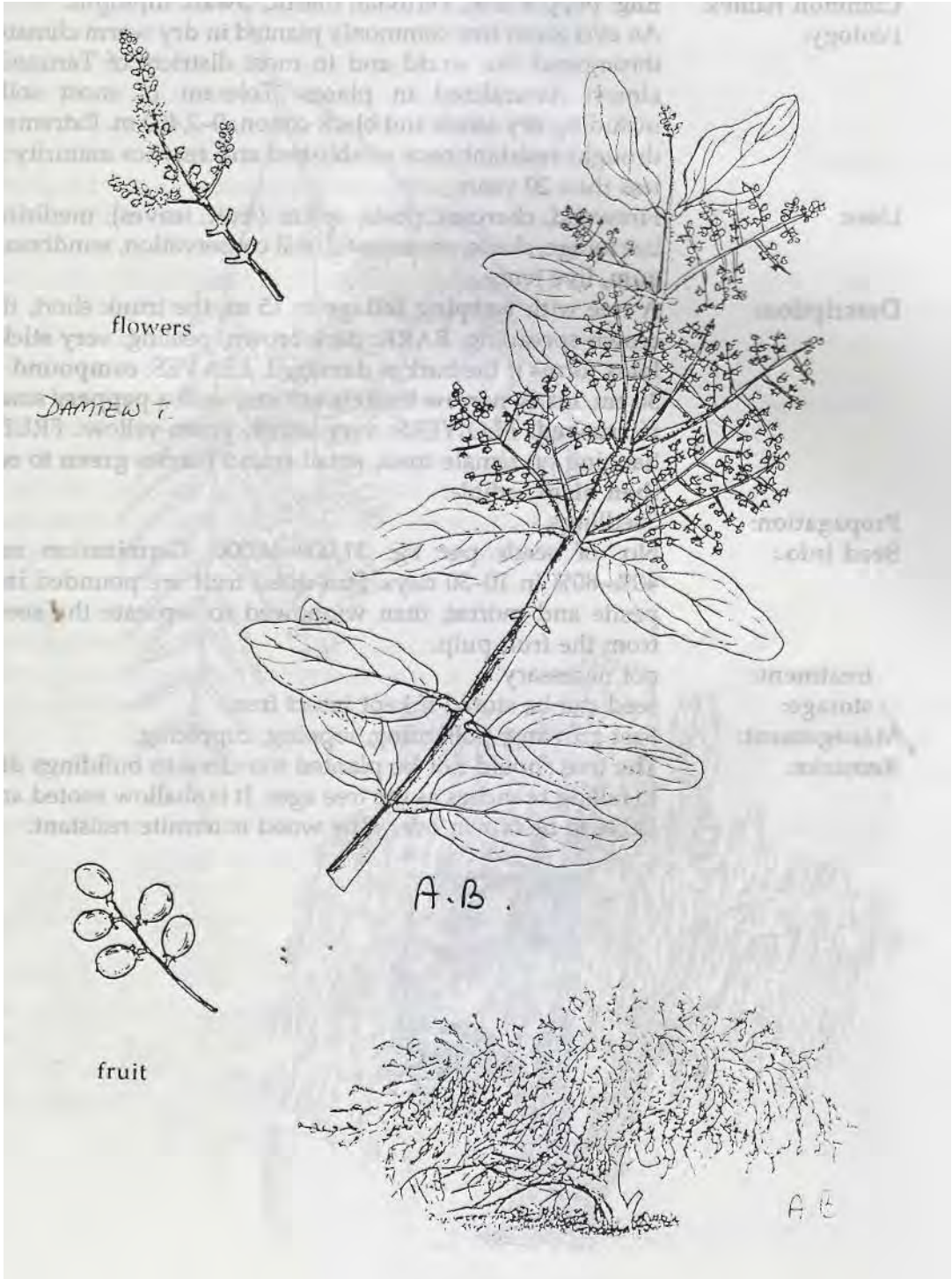


Salvadora persica

Salvadoraceae

Indigenous

- Common names:** Eng: toothbrush tree; Cogo: mkunghuni; Goro: msaki; Hehe: mswake; Iraqw: mswaki; Maasai: olremit; Mbug: modee; Mwera: chigombo; Samb: mswaki; Sangu: mswake; Suku: mswake, muche; Swah: mswaki; Zigua: mswaki.
- Ecology:** Widespread all over arid Africa and in the driest parts of India. It grows in all districts of Tanzania in thorn shrub, on desert floodplains and grassy savannah and on alkaline soils, 0-1,350 m. It is very drought resistant and is an important indicator of saline soils even though it prefers the sandy-clay soils of water courses.
- Uses:** Firewood, food (fruit), medicine (roots), fodder (fruit, leaves), soil conservation, shade, toothbrushes.
- Description:** An evergreen trailing shrub or small tree, 3-7 m. Young flexible branches pendulous, older wood twisted. **BARK:** cracked and brown. **LEAVES:** yellow-green, dull, rather fleshy but hard with rough gland dots and raised veins, oblong to rounded to 5 cm. **FLOWERS:** in loose heads, to 10 cm, small, white. **FRUIT:** white, then pink to purple, 1 cm across, one seeded, juicy and strongly flavoured.
- Propagation:** Seedlings; sow seed in pots.
- Seed info.:** No. of seeds per kg: 31,000-37,000.
- treatment:** not necessary.
- storage:** seed can be stored for about one month.
- Management:** Slow growing.
- Remarks:** A very important fodder species for dry areas when nothing else is available as shoots can be browsed all year by cattle, sheep, goats and camels—but milk may be flavoured. The bark contains an antibiotic which keeps the mouth clean and helps to prevent tooth decay. A rough salt can be produced from the ash of the wood and leaves.

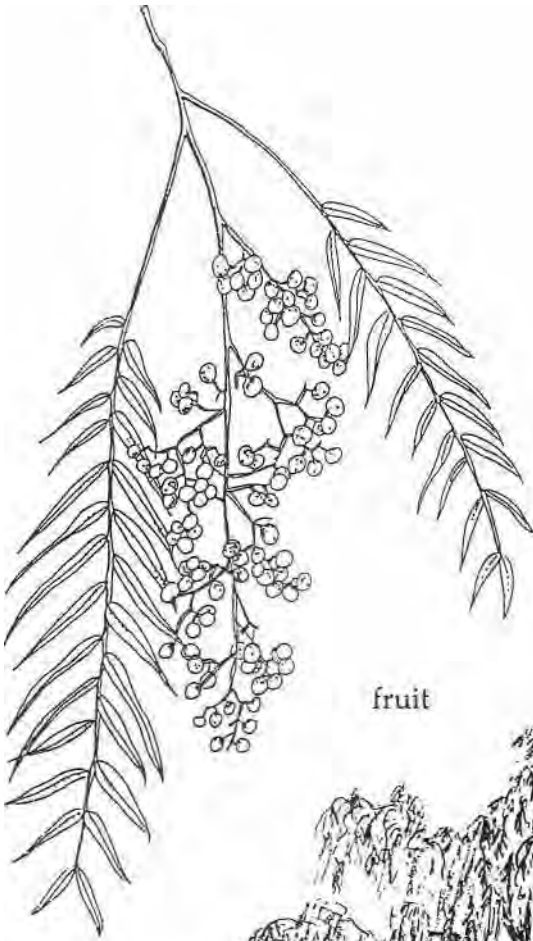


Schinus molle

Anacardiaceae

Peru, Andes

- Common names: Eng: pepper tree, Peruvian mastic; Swah: mpilipili.
- Ecology: An evergreen tree commonly planted in dry warm climates throughout the world and in most districts of Tanzania, almost naturalized in places. Tolerant of most soils, including dry sands and black cotton, 0-2,400 m. Extremely drought resistant once established and reaches maturity in less than 20 years.
- Uses: Firewood, charcoal, posts, spices (fruit, leaves), medicine, bee forage, shade, ornamental, soil conservation, windbreak, gum, live fence.
- Description: A tree with weeping foliage to 15 m, the trunk short, the crown spreading. BARK: dark brown, peeling, very sticky latex forms if the bark is damaged. LEAVES: compound to 30 cm, many narrow leaflets to 7 cm, with a peppery smell if crushed. FLOWERS: very small, green-yellow. FRUIT: hanging on female trees, small round berries green to red then black, edible.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 31,000-44,000. Germination rate 40%-80% in 10-30 days. Sun-dried fruit are pounded in a pestle and mortar, then winnowed to separate the seeds from the fruit pulp.
- treatment: not necessary.
- storage: seed can be stored if kept insect free.
- Management: Fast growing; pollarding, lopping, coppicing.
- Remarks: The tree should not be planted too close to buildings due to falling branches as the tree ages. It is shallow rooted and liable to be blown over. The wood is termite resistant.



fruit



Sclerocarya birrea subsp. caffra (S. caffra)

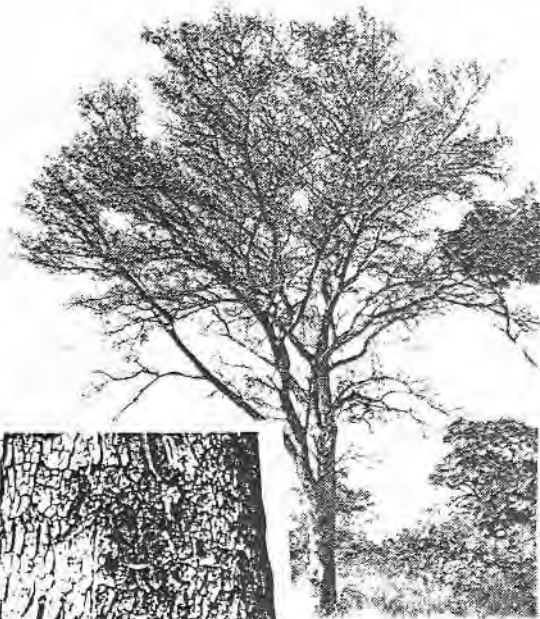
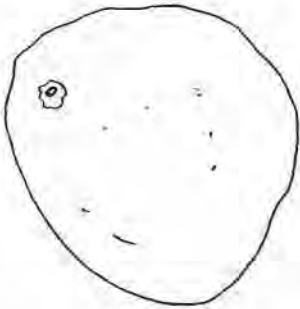
Anacardiaceae

Indigenous

- Common names:** Arusha: olmang'oi; **Gogo:** mbwejele; **Goro:** gulgurchandi; **Iraqw:** gulgurchandi; **Kuria:** omongwe; **Mate:** mbwegele, mtondoko; **Mbug:** monyangu; **Nguu:** mng'ong'o; Nyam mng'ongo; **Nyat:** muhuri; **Pare:** mng'ong'o; **Suku:** ng'ongo; **Swah:** mng'ongo, mng'ong'o; **Zara:** mng'ongo.
- Ecology:** An African fruit tree occurring from Ethiopia south to Natal at medium to low altitudes scattered in mixed deciduous woodland, wooded grassland, 100-1,600 m. In Tanzania it is widely distributed all over the country.
- Uses:** Firewood, timber (general purpose), utensils (stools, grain mortars, beehives), carving, food (fruit), drink (fruit), bee forage, fodder (leaves, fruit), medicine (bark, roots, leaves), oil (seeds).
- Description:** A deciduous tree 10-18 m with a thick bole and large branches to a light, rounded crown. **BARK:** grey then **black and thick with irregular cracks and raised scales; inner bark pink-red.** **LEAVES:** compound, crowded at tips of branches, **3-18 pairs leaflets plus a central leaflet, each stalked, oval to 10 cm, tip pointed.** **FLOWERS:** male and female flowers on the same or different trees: pale green male flowers in spikes, hang down and attract insects **female flowers solitary, green-pink.** **FRUIT:** **rounded and fleshy to 3.5 cm across, skin cream, spotted,** peeling away from the **sweet flesh** which tastes a bit like mango; 2-3 large seeds inside, oily and edible.
- Propagation:** Seedlings, cuttings, truncheons (large woody cuttings, 2 x 10 cm).
- Seed info.:** No. of seeds per kg: 400-450. Germination is 40% after 6 weeks.
- treatment:** soak in cold water for 24 hours.
- storage:** can retain viability for up to 3 months at room temperature.
- Management:** Coppicing. Young trees coppice easily.
- Remarks:** There are three subspecies in Tanzania which differ in leaflet number and shape, length of flower spike and distribution: subsp. *birrea*, subsp. *multifoliolata*, and subsp. *caffra*. Young trees are susceptible to fire damage. The fruit are rich in vitamin C and are well liked by children. The fruit are also eaten by a variety of game.

Sclerocarya birrea subsp. *caffra* (*S. caffra*)

Anacardiaceae



Securidaca longipedunculata

Polygalaceae

Indigenous

- Common names: Eng: violet tree; Fiome: furudau; Fipa: mluka, muuruka; Mate: mguluka; Mwera: chiguruka; Nyam: mteyo, mteyu; Nyih: kitwantumbi; Suku: mengo-mengo; Zinza: nengo-nengo.
- Ecology: Widespread in tropical Africa from Kenya to South Africa. In Tanzania it occurs in miombo woodland, bushland and on forest edges from sea level to about 1,600 m. It is most common in coastal forests.
- Uses: Firewood, poles, medicine (all parts), fodder (leaves), *bee* forage, ornamental, fibre (inner bark), oil (flowers, seed), soap (roots).
- Description: A semi-deciduous shrub or small tree 2-6 m, with slender branches to an open crown, sometimes with drooping branchlets. BARK: young twigs yellow-green, becoming stringy and pale; rough grey mature bark flakes to show yellow below. Deep fissures when old. LEAVES: alternate, thin and narrow, tip rounded, to 5 cm long, hairy when young, becoming smooth, blue-green, sometimes clustered on spine-tipped branchlets. FLOWERS: small, about 1 cm long, pink or purple, sweet scented in showy sprays with new leaves. FRUIT: rounded and winged, to 4 cm long, purple-green when young, pale yellow-brown when mature, hanging in bunches.
- Propagation: Seedlings, direct sowing.
- Seed info.: No. of seeds per kg: 36,000-36,500. Seeds germinate with difficulty if not pre-treated. Germination of treated seed good and fairly fast.
- treatment: soak in cold water for 24 hours.
- storage: can retain viability for a long period at room temperature if kept dry.
- Management: Fairly fast growing.
- Remarks: A beautiful flowering tree with potential as an ornamental in parks and gardens. The wood is pale yellow and has been used for bows. The fibres have been used for fish nets, bead strings and thread to sew barkcloth. The roots contain methyl salicylate and a saponin making them highly poisonous. An antidote for snakebite and a cough mixture are prepared from leaves, an abortifacient from powdered bark and a root infusion relieves toothache. But great care must be taken when using these medicinal substances.

Securidaca longipedunculata

Polygalaceae



Senna siamea (Cassia siamea)

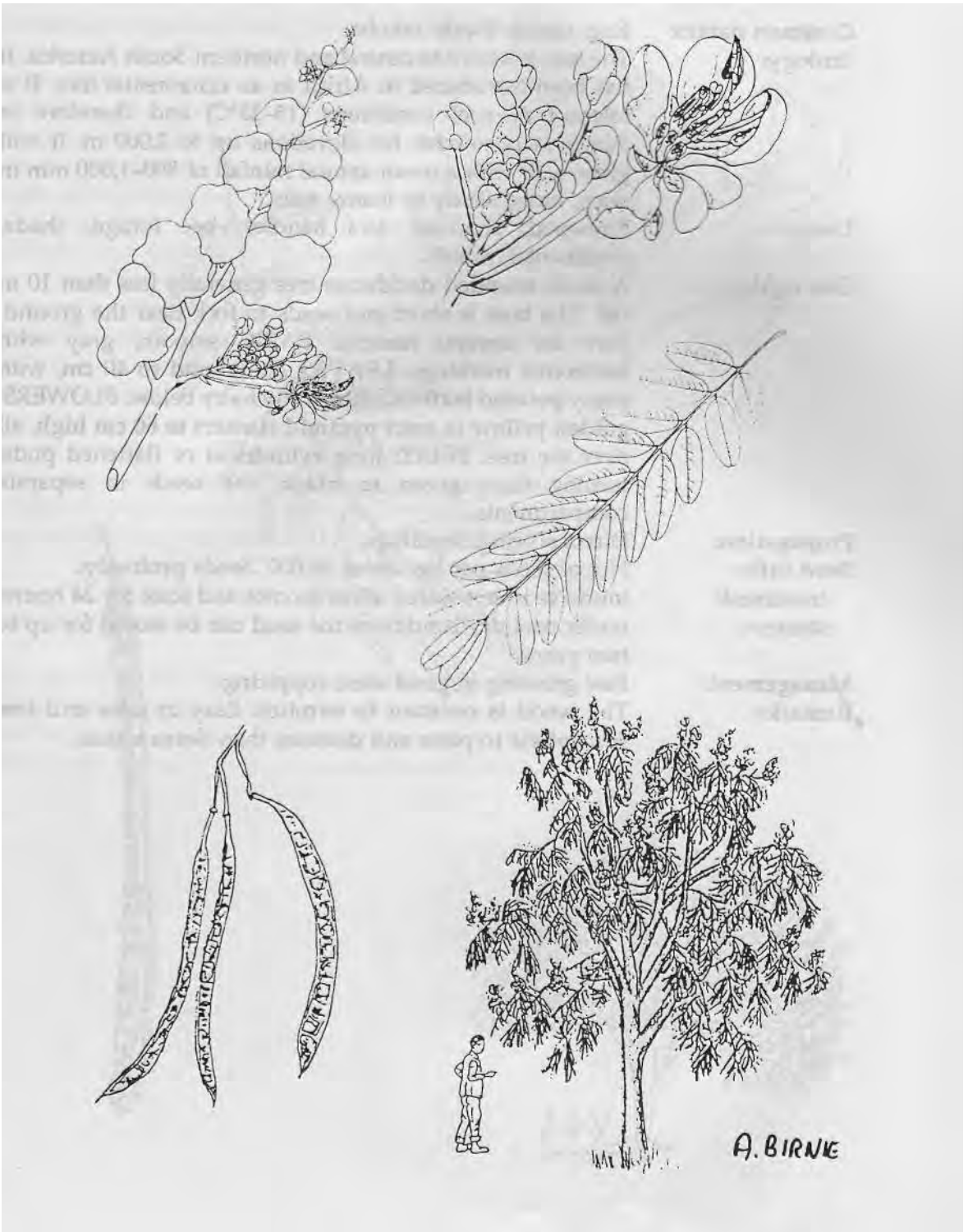
Caesalpinioideae

South-East Asia

- Common names: Eng: iron wood, yellow cassia; **Suku:** nsongoma; **Swah:** mjohoro.
- Ecology: A small tree cultivated all over the tropics from sub-humid to semi-arid and even arid zones, 0-1,600 m. It prefers a high watertable but will tolerate extended drought and a variety of soils. In Tanzania *Cassia siamea* is widely grown in drier areas below 1,000 m. The most suitable soils are deep, fairly fertile, well drained and neutral or alkaline.
- Uses: Firewood, charcoal, poles, timber (furniture), medicine, fodder (leaves), bee forage, ornamental, mulch, soil conservation, windbreak.
- Description: An evergreen tree to 20 m, often shrub like. **BARK:** smooth, pale grey-brown. **LEAVES:** compound, **stalk to 30 cm**, grooved, leaflets oblong, 4–16 pairs, round at base and tip which may be notched, dark, shiny, green above. **FLOWERS:** pale yellow in dense heads, each flower about 3 cm across. **FRUIT:** pods, in dense clusters, flat yellow-brown and smooth, slightly curved, indented across, about 20 seeds within.
- Propagation: Direct sowing, seedlings, wildings.
- Seed info.: No. of seeds per kg: 39,000. A prolific seeder.
- treatment: fresh seeds require no pre-treatment; nick or soak stored seeds up to 48 hours in cold water or pour on boiling water and leave to soak for 24 hours.
- storage: seed can be stored up to one year but germination rate drops with time.
- Management: Fast growing; lopping, coppicing.
- Remarks: The most widely planted fuel tree in the lowlands of Tanzania, with dense wood, but it gives a smoky fire. The species is not browsed so it is easily established. Should not be mixed with crops as it competes. Susceptible to mildew attacks on the leaves. In Tanzania *Senna siamea* is recommended as a woodlot tree where conditions are favourable.

Senna siamea (Cassia siamea)

Caesalpinioideae



Senna spectabilis (*Cassia spectabilis*)

Caesalpinioideae

Tropical America

Common names: Eng: cassia; **Swah:** mhoba.

Ecology: The tree is native to central and northern South America. It has been introduced in Africa as an ornamental tree. It is tolerant of cool conditions (15-25°C) and therefore in Tanzania is suitable for elevations up to 2,000 m. It will grow well with a mean annual rainfall of 800-1,000 mm in deep, moist sandy or loamy soils.

Uses: Firewood, charcoal, tool handles, bee forage, shade, ornamental, mulch.

Description: A small rounded deciduous tree generally less than 10 m tall. The bole is short and tends to fork near the ground. Bare for several months. **BARK:** smooth, grey with horizontal markings. **LEAVES:** compound to 40 cm, with many **pointed leaflets**, often softly hairy below. **FLOWERS:** **golden yellow** in **erect pyramid clusters to 60 cm high**, all over the tree. **FRUIT:** **long cylindrical** or flattened pods, turning from **green to black**, the seeds in separate compartments.

Propagation: Direct sowing, seedlings.

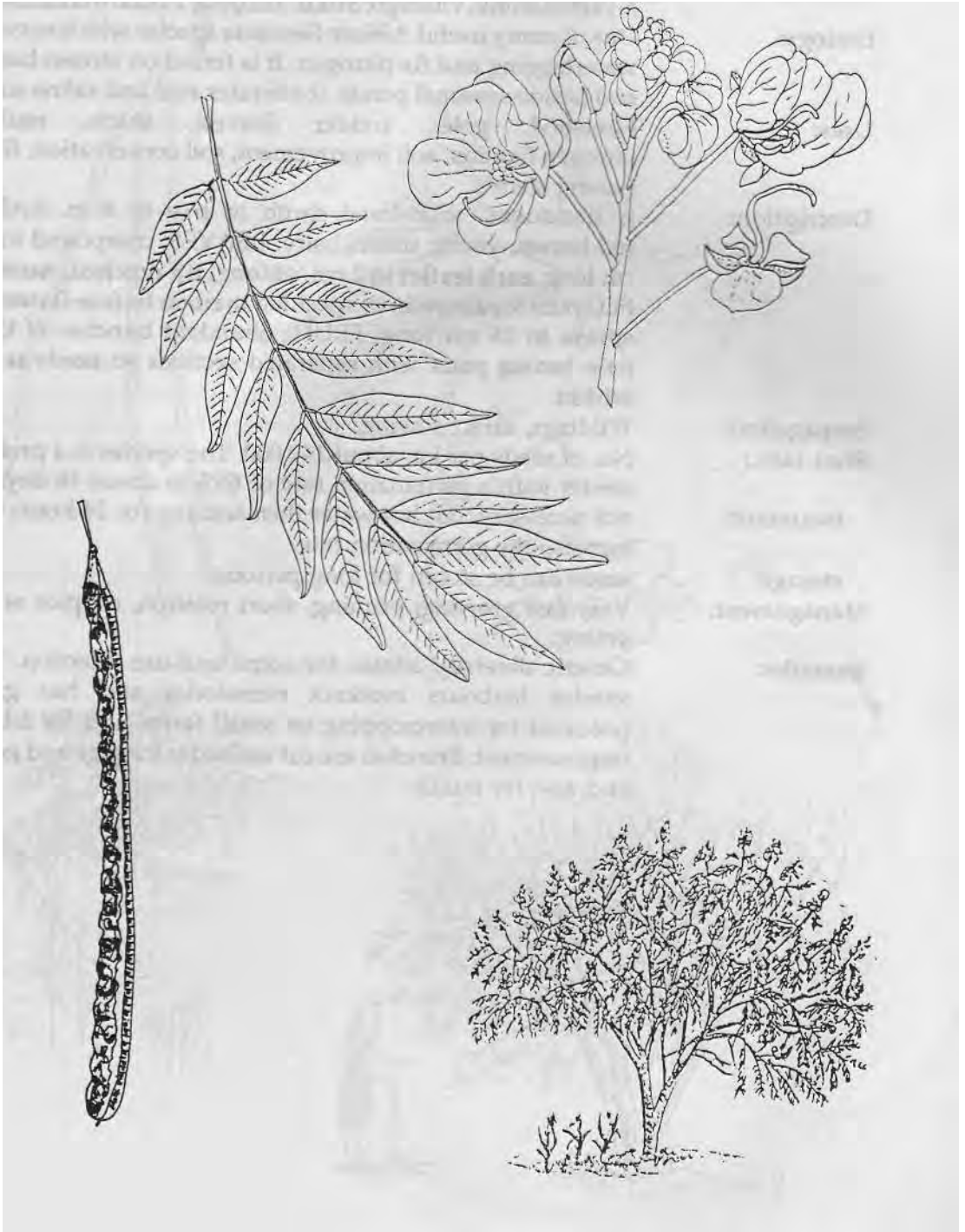
Seed **info.:** No. of seeds per kg: about 39,000. Seeds profusely.
treatment: immerse in hot water, allow to cool and soak for 24 hours.
storage: under cool dry conditions the seed can be stored for up to two years.

Management: Fast growing in good sites; coppicing.

Remarks: The wood is resistant to termites. Easy to raise and less susceptible to pests and diseases than *Senna siamea*.

Senna spectabilis (*Cassia spectabilis*)

Caesalpinioideae



Indigenous

- Common names: Eng: river bean, sesbania; **Haya:** mbondo; **Kere:** muzuzume; Nyam: luminu, vulengo; **Suku:** zuzuma; **Zinza:** muzuzumo.
- Ecology: One of many useful African Sesbania species which survive waterlogging and fix nitrogen. It is found on stream banks and beside seasonal ponds. It tolerates acid and saline soils.
- Uses: Firewood, poles, fodder (leaves), shade, mulch, nitrogen fixation, soil improvement, soil conservation, fibre (young stems).
- Description: A deciduous, short-lived shrub or tree to 8 m. BARK: red-brown, young shoots hairy. LEAVES: compound to 12 cm long, **each leaflet to 2 cm, oblong, tip notched, narrow.** FLOWERS: **pale yellow, speckled maroon in few-flowered sprays to 15 cm long.** FRUIT: abundant bunches of **thin pale brown pods** with separated sections so **seeds rattle within.**
- Propagation: Wildings, direct sowing.
- Seed info.: No. of seeds per kg: about 110,000. The species is a prolific seeder with a germination rate of 65% in about 16 days.
- treatment: not necessary, but hot water then soaking for 24 hours can increase the germination rate.
- storage: seeds can be stored for long periods.
- Management: Very fast growing; pruning, short rotation, coppice when young.
- Remarks: Genetic diversity allows for some end-use selection. The species harbours rootknot nematodes and has great potential for intercropping on small farms and for fallow improvement. Branches are cut as fodder for pigs and goats and also for mulch.

Sesbania sesban (*S. aegyptiaca*)

Papilionoideae



Spathodea campanulata (S. nilotica)

Bignoniaceae

Indigenous

Common names: **Eng:** African tulip tree, flame of the forest, Nandi flame; **Subi:** mugurube; **Swah:** kifabakazi.

Ecology: A decorative tree common at forest edges and in riverine forests in East, Central and West Africa. In Tanzania it is confined to the north-western districts of Buha, Kigoma, Biharamulo and Ngara. It does best in deep moist fertile soils in areas below 1,800 m. It is drought resistant once established.

Uses: Firewood, charcoal, carving, medicine (bark), bee forage, shade, ornamental, mulch, windbreak.

Description: A deciduous tree, crown rounded, usually 10-15 m, bare for many months. **BARK:** pale grey-brown, smooth, rough with age. **LEAVES:** compound, to 40 cm long, 6 pairs leaflets plus a central leaflet, each wavy, tip pointed. **Yellow-brown hairs** on shoots, buds, branchlets and underside of leaves. **FLOWERS:** bright **orange-red clusters** stand out all over the tree, a yellow edge on the frilly petals. Furry buds contain watery liquid. **FRUIT:** large **woody capsules to 25 cm** split on the ground, releasing many flat, **winged seeds**.

Propagation: Seedlings, wildings, root suckers.

Seed **info.:** No. of seeds per kg: 160,000-200,000 with wings attached. Good seed germination rate.

treatment: not necessary.

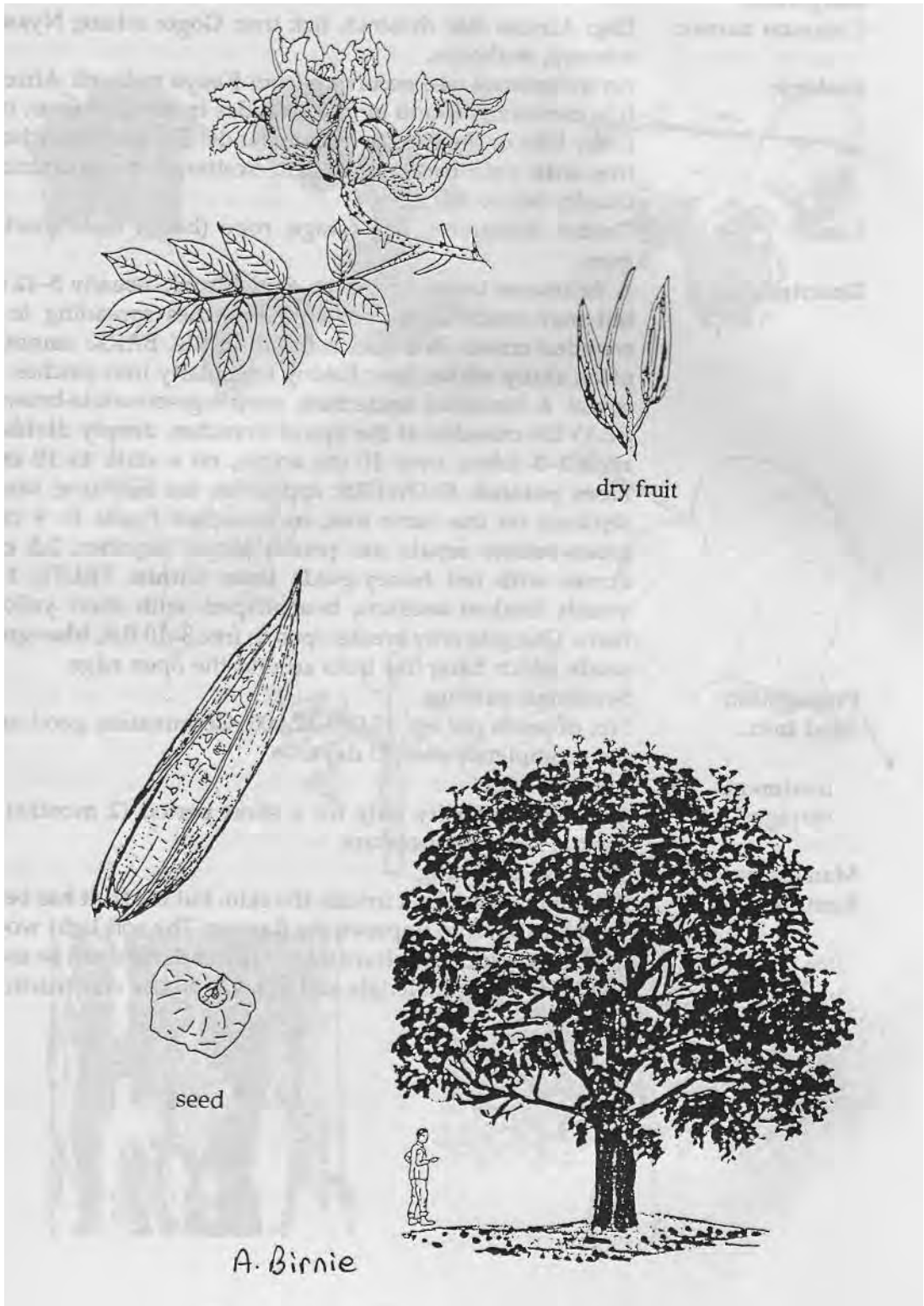
storage: seed does not store well so should be sown fresh.

Management: Fast growing.

Remarks: One of the most beautiful of the indigenous trees with its large red flowers. It has been widely planted through: Tanzania. Flowers are produced 3-4 years after planting. The tree is not browsed by stock.

Spathodea campanulata (*S. nilotica*)

Btgnoniaceae



Sterculia africana

Sterculiaceae

Indigenous

Common names: Eng: African star chestnut, tick tree; Gogo: mluze; Nyam: mhozya, muhozya.

Ecology: An indigenous tree occurring from Kenya to South Africa. It is commonly found at low altitudes in hot dry areas, on rocky hills or the fringes of woodlands. The bare-branched tree with pale bark stands out. Scattered in occurrence, usually below 600 m.

Uses: Timber (furniture), bee forage, rope (bark), mats (bark), gum.

Description: A deciduous tree with a thick, fluted trunk, usually 5-12 m but may reach 25 m, the erect branches spreading to a rounded crown. Branches soft and brittle. BARK: smooth, often shiny white, later flaking irregularly into patches to reveal a beautiful underbark purple-green-white-brown. LEAVES: crowded at the tips of branches, deeply divided with 3-5 lobes, over 10 cm across, on a stalk to 10 cm, lobes pointed. FLOWERS: appear on the bare tree, sexes separate on the same tree, in branched heads to 9 cm, green-yellow sepals (no petals) joined together, 2.5 cm across with red honey-guide lines within. FRUIT: 1-5 woody beaked sections, boat-shaped, with short yellow hairs. One side only breaks open to free 3-10 flat, blue-grey seeds which hang like ticks around the open edge.

Propagation: Seedlings, cuttings.

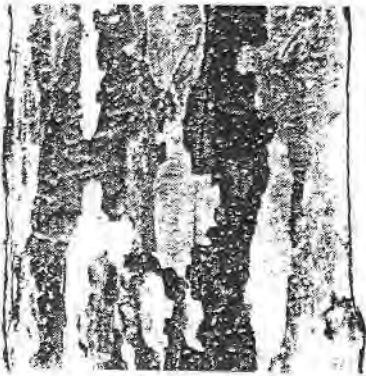
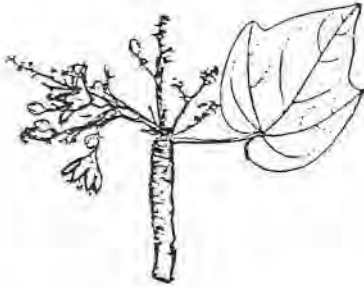
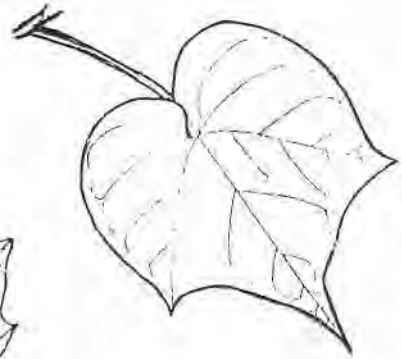
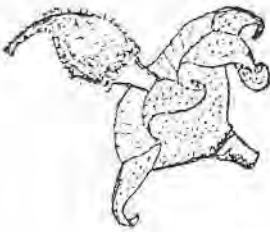
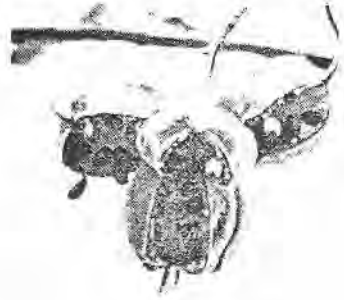
Seed info.: No. of seeds per kg: 15,000-17,000. Germination good and fast, completed after 20 days.

treatment: not necessary.

storage: can retain viability only for a short period (2 months) if kept at room temperature.

Management: Pruning, coppicing.

Remarks: The hairs on the fruit irritate the skin, but the fruit has been added to snuff to improve the flavour. The soft light wood only makes local furniture items. The bark rope can be used to tie thatching materials and poles in house construction.

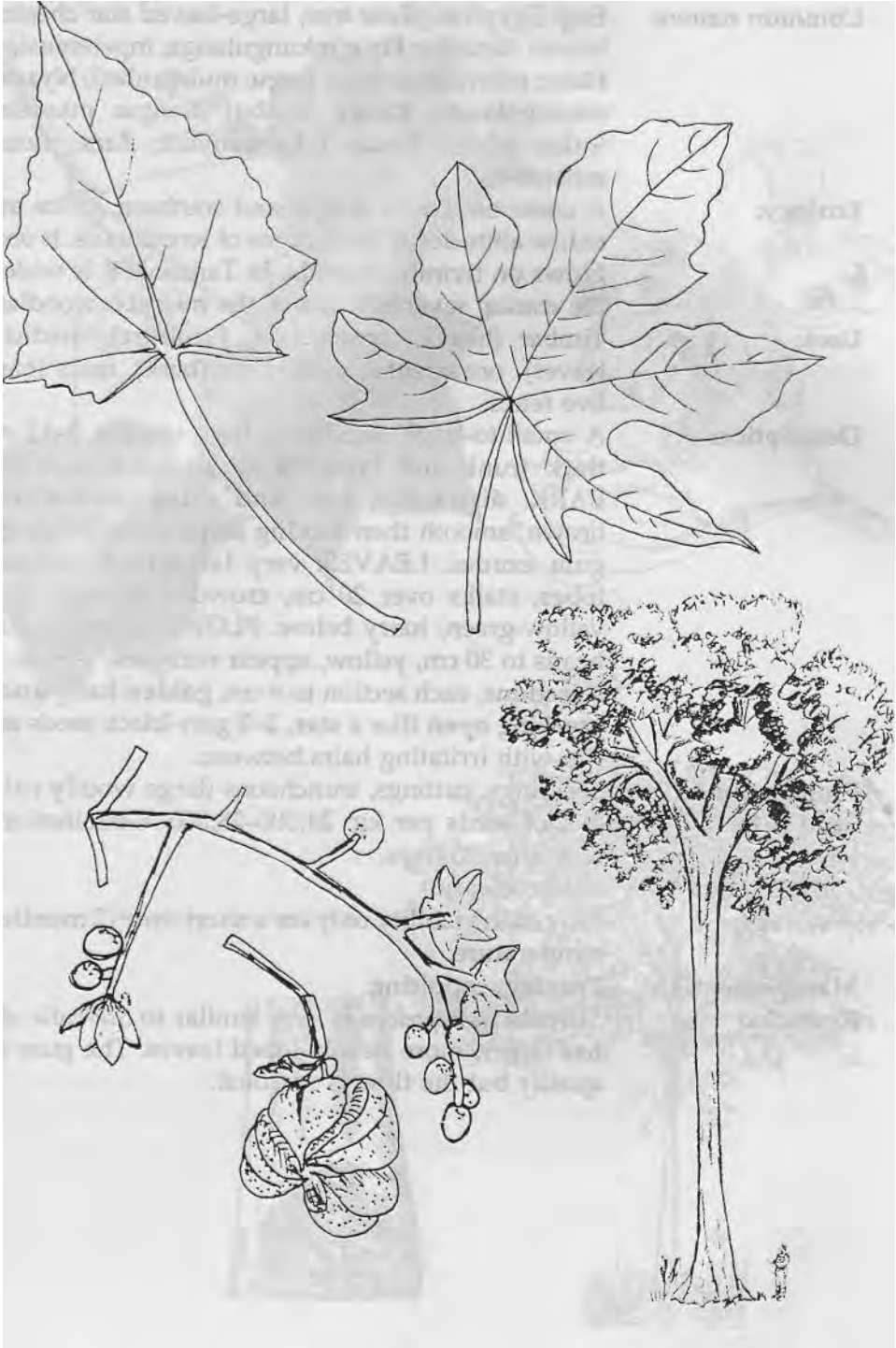


Sterculia appendiculata

Sterculiaceae

Indigenous

- Common names: Eng: tall sterculia; **Lugu:** mgude; **Nguu:** mfune, mgude; **Pare:** mfune; **Samb:** mfune; **Swah:** mfune; **Zigua:** mfune, mgude.
- Ecology: A tree of coastal and riverine forests, coastal bushland and woodland at low altitudes from Kenya to South Africa. In Tanzania it is quite common, especially along the coast 0-600 m.
- Uses: Timber (plywood), food (seeds), shade, ornamental.
- Description: A **tall, straight** deciduous tree **up to 40 m high with a dense rounded crown**. Trees have a clear bole 15-20 m and often emerge above the surrounding woodland. BARK: pale yellow, smooth, conspicuous and powdery. Branchlets have dense rust-yellow hairs. LEAVES: at the end of branches, **large, 14-30 cm across, the leaf blade divided into 3-7 lobes. Young leaves usually densely woolly with rusty hairs**, lost at maturity. Leaf stalks **over 6 cm, hairy at first**. FLOWERS: **green-yellow-brown to 2.8 cm** across in hairy few-flowered **sprays to 12 cm**, before leaves. FRUIT: **made up of 2-3 sections each to 9 cm covered with soft brown hairs** on the outside. When opened **seeds line the edges, each 2 cm long, brown with a soft yellow aril at the base**.
- Propagation: Seedlings.
- Seed **info.:** No. of seeds per kg: 12,000-15,000. Germination is good, up to 60% completed within 20 days.
- treatment:** not necessary.
- storage: can retain viability only for a short period (2 months) **at room temperature**.
- Management:** A fast-growing tree; needs fire protection.
- Remarks: Timber is soft and perishable. It has potential for planting in lowland areas. Bark and leaves are used for **medicinal** purposes by the Digo in Kenya.



Sterculia quinqueloba

Sterculiaceae

Indigenous

- Common names: Eng: Egyptian plane tree, large-leaved star chestnut, large-leaved sterculia; Fipa: mkungulanga, mpelemusi, msaguye; Hehe: mkwelangedege; Lugu: muhe-mbeti; Nyam: mguwa, mkungulanga; Rangi: ibuibui; Sangu: mkwelangedege; Suku: mhoja; Swah: mkweranyani; Zara: moza; Zigua: mhembeti.-
- Ecology: A common tree of central and southern Africa at medium to low altitudes in most types of woodlands. It occasionally grows on termite mounds. In Tanzania it is widespread in the coastal savannah and in the miombo woodlands.
- Uses: Timber (heavy construction, furniture), medicine (bark, leaves), ornamental, gum, rope (bark), mats (bark fibres), live fence.
- Description: A small-to-large deciduous tree, usually 5-12 m, with a thick trunk and branches to an open rounded crown. BARK: distinctive, pale and shiny, yellow-cream-pink-brown, smooth then flaking in patches. When cut, a **pale** gum exudes. LEAVES: very large to 40 cm across, 3-5 lobes, stalks over 20 cm, crowded at ends of branches, yellow-green, hairy below. FLOWERS: very small, in **big** heads to 30 cm, yellow, appear with new leaves. FRUIT: in 5 sections, each section to 6 cm, golden hairy and pointed, breaking open like a star, 2-3 grey-black seeds around the rim with irritating hairs between.
- Propagation: Seedlings, cuttings, truncheons (large woody cuttings).
- Seed info.: No. of seeds per kg: 24,000-28,000. Germination is up to 65% after 20 days,
- treatment: not necessary.
- storage: can retain viability only for a short time (2 months) at room temperature.
- Management: Pruning, coppicing.
- Remarks: *Sterculia quinqueloba* is very similar to *Sterculia africana* but has larger, more deeply lobed leaves. The gum is of good quality but the flow is seasonal.



Indigenous

Common names: **Bond:** mkande; **Haya:** munyereza nguge; **Hehe:** mkelenafifi; **Lugu:** hambalimwa; **Nyam:** mogavagoli, mogavami; Samb: mkande; **Swah:** mtafuna panya; **Zara:** muwenya mbewa; Zinza: mkukurama.

Ecology: An attractive flowering tree distributed from Ethiopia to South Africa from low to high altitudes. Widespread in Tanzania in fairly dry areas of deciduous forest, woodland or bush, on rocky outcrops, termite mounds and margins of evergreen forest, 1,000-2,400 m.

Uses: Firewood, poles, tool handles, utensils (wooden spoons), bee forage, medicine (bark, fruit), ornamental.

Description: A small deciduous tree 5-13 m high, the trunk bent to spiral, rarely straight, crown rounded. **BARK:** grey, smooth at first, then rough and **flaking in rounded patches exposing a paler underbark** when old (like a gum tree). **LEAVES:** compound, opposite with **4 pairs of leaflets** and one terminal leaflet each one to 8 cm. Young leaves sometimes toothed and hairy. **FLOWERS:** showy pink with red streaks on the lower lobes, **tubular**, up to 3 cm long, with 5-petal lobes, fragrant, in large drooping heads, **pink-purple on the bare tree**. **FRUIT:** very **long thin cylindrical capsules**, twisted, red-brown to 45 x 1 cm, splitting to release many **winged seeds**. Capsules remain many months on the tree.

Propagation: Seedlings, root suckers.

Seed info.: Seeds flat and winged, about 35,000 per kg. Germination is good and completed after two weeks.

treatment: not necessary.

storage: can retain viability for only a short period (3 months) at room temperature.

Management: A fairly fast-growing tree.

Remarks: A species with potential for growing as an amenity tree in parks and gardens. (In West Africa the tree is rarely felled as it is believed to have supernatural properties. The **bark** is carried to protect against witchcraft. Chewed bark stains the lips red-brown.)



Strychnos cocculoides

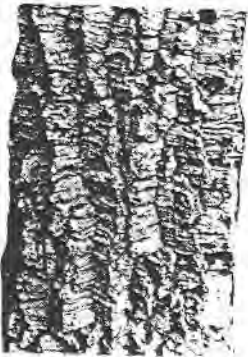
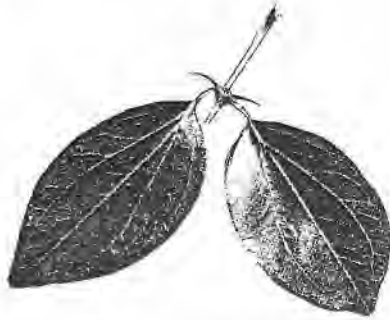
Loganiaceae

Indigenous

- Common names: Eng: corky bark, monkey orange; Hehe: mnywewa; **Mate:** mdonga, mtongawali; Nyam: mtonga, mumilwa; **Swah:** mtonga.
- Ecology: A spiny shrub found throughout the drier parts of central and southern Africa. It grows naturally in Brachystegia and deciduous woodlands, especially on rocky hills. In Tanzania it is found in Tabora, Dodoma, Iringa, Mbeya and Lindi, 0-2,000 m.
- Uses: Firewood, building poles, tool handles, food (fruit), medicine (bark, leaves, roots, fruit).
- Description: A semi-deciduous shrub or small tree 3-8 m high, branches spreading to a rounded crown. **BARK:** thick, ridged and corky, brown in colour. Branchlets hairy, purple with strong paired spines, curved, **1 cm or more**. **LEAVES:** oval to circular, to 5 cm long, shiny above, dull below, 5 veins from the base. **FLOWERS:** small green-white in dense heads, about 3 cm in diameter. **FRUIT:** round, hard, woody, about 7 cm in diameter, dark green speckled with white when young, becoming yellow when ripe, containing a juicy pulp and many seeds. Fruit may take a year to mature.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: about 1,800. Germination is poor.
- treatment: Soaking in cold water for 12 hours may hasten germination.
- storage: seeds are short live—at most 2 months at room temperature.
- Management: Slow growing; coppicing.
- Remarks: The fruits are eaten by children and adults and therefore the trees are left when land is cleared for agriculture. The wood is white and tough, rather soft and pliable.

Strychnos cocculoides

Loganiaceae



Strychnos innocua

Loganiaceae

Indigenous

Common names: **Bende:** bunkundu; **Bond:** mkwakwa; **Eng:** dull-leaved strychnos; **Gogo:** munhulwa; **Goro:** furudou; **Mwera:** mgulungulu; **Nyam:** mkulwa, mpundu, mumundu; **Nyat:** mkulungundu; **Rangi:** mukomu; **Samb:** mtanga; **Swah:** mkwakwa; **Zigua:** mtonga.

Ecology: A tree growing in lowlands from Kenya to Malawi and South Africa. Found in coastal woodland, *Brachystegia* woodland, and bushlands up to 1,400 m. In Tanzania it occurs in Tabora, Dodoma, Singida, Kondoia and on Zanzibar.

Uses: Firewood, tools, poles, food (fruit).

Description: A shrub or small tree, usually 3-6 m, **without** spines, branches often twisted, branchlets hanging down. **BARK:** pale grey, smooth, branchlets powdery grey-green to yellow-brown. **LEAVES:** in opposite pairs, widely spaced, tough, **dull blue-green** with 3-5 main veins and **clear net veining, both sides similar, wider at rounded tip, 4-10 cm.** **FLOWERS:** small, green-cream, **2-4 in stalked clusters beside leaves, calyx shorter than petals.** **FRUIT:** round with a **thick woody shell, 5-7 cm** across, blue-green, turning **yellow-orange**, containing many seeds in pulp.

Propagation: Seedlings, root suckers.

Seed info.: No. of seeds per kg: about 1,800. Germination is poor.

treatment: soaking in cold water for 12 hours may improve germination.

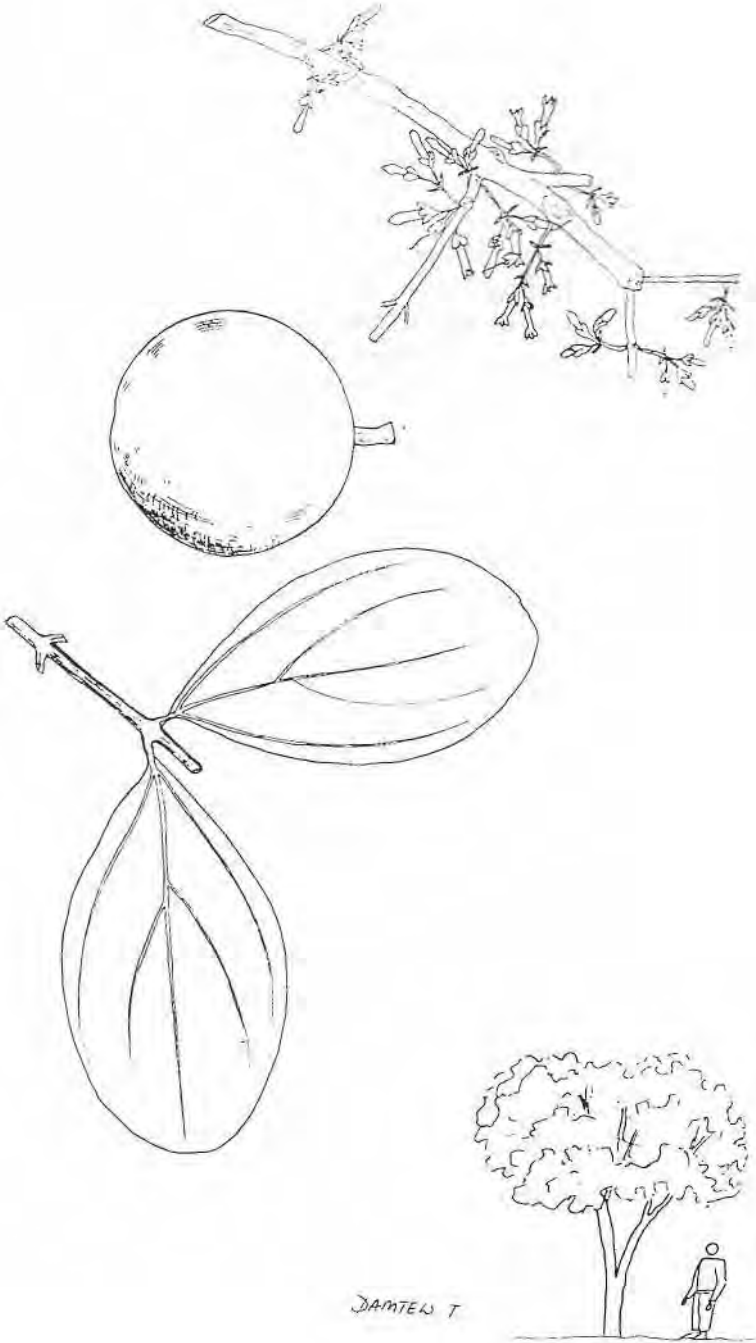
storage: can retain viability for only a short period (2 months).

Management: Pruning, coppicing.

Remarks: The tree is often left in farmlands because of its edible fruit. Even the fresh wood burns so it is useful as firewood.

Strychnos innocua

Loganiaceae



Strychnos spinosa

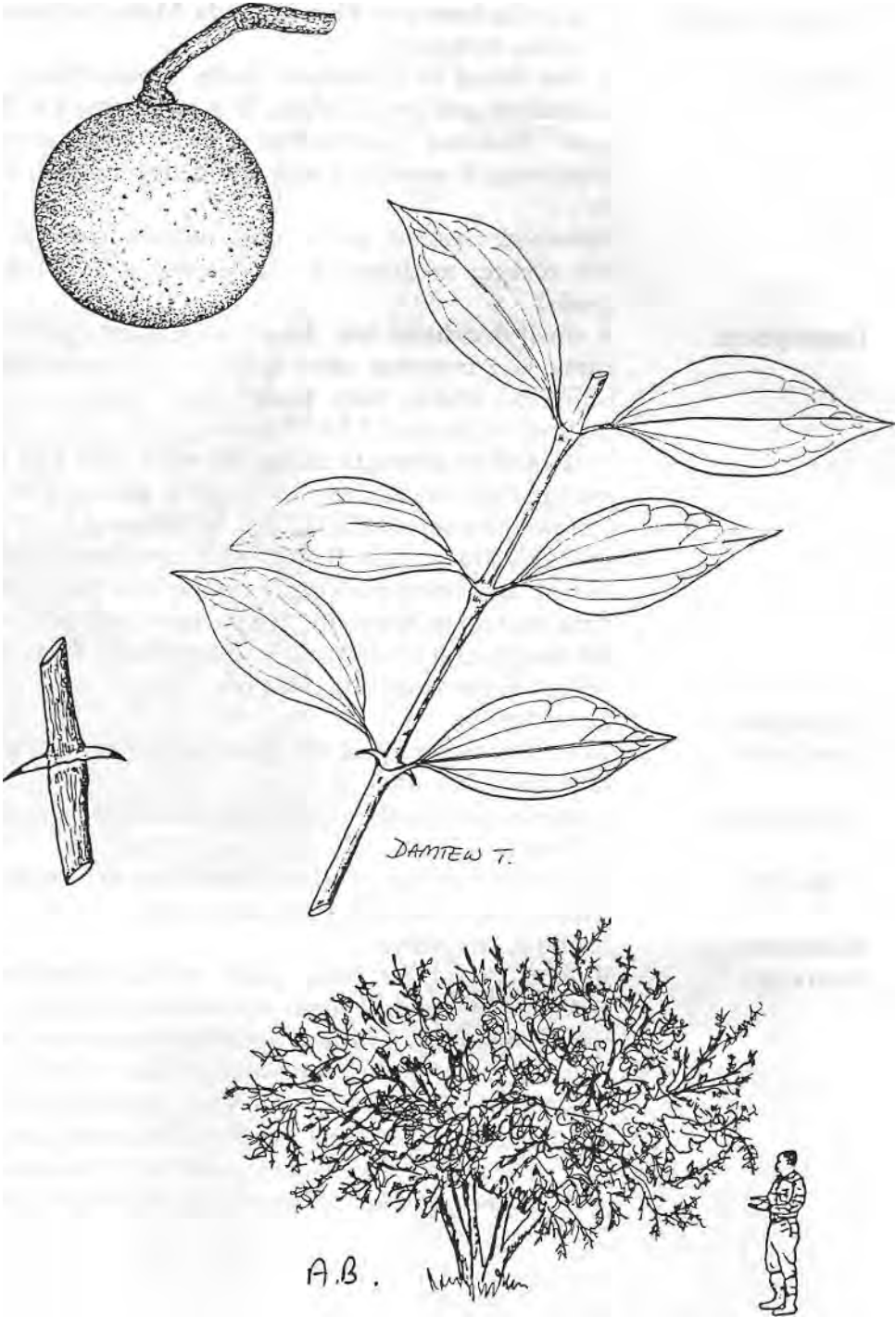
Loganiaceae

Indigenous

- Common names: Eng: elephant orange, spiny monkey ball; Fipa: mtonga; Fiome: amafughun; Hehe: mtangadas; Mate: mdonga, mungulungu; Nyam: mwage; Pare: mshegheshe; Sangu: mtangadas; Swah: mpapa, mtonga; Zara: mtonga; Zigua: mkwakwa.
- Ecology: A semi-evergreen shrub found all over tropical Africa. It grows in a wide variety of dry woodland and savannah, frequently on sandy soils of river banks up to 1,500 m.
- Uses: Firewood, charcoal, timber (furniture, boxes), food (fruit), fodder, medicine (fruit, leaves, bark, roots).
- Description: A thorny shrub or small tree usually 4–5 m but up to 9 m tall, with a spreading rounded crown. The spines are short, paired and curved or straight. BARK: grey, rough. LEAVES: like all *Strychnos*, three veins from the base, leathery, glossy green above, wedge-shaped to the base, to 10 cm long. FLOWERS: small, cream-green, in dense bunches at the end of branches. FRUIT: rounded and large to 12 cm across, green at first then light brown and woody, containing many flat seeds within juicy rather acid pulp.
- Propagation: Seedlings, root suckers.
- Seed info.: No. of seeds per kg: about 1,800. Seed has a hard coat.
- treatment: soak in cold water for 12 hours.
- storage: seed can be stored.
- Management: Root suckers can be encouraged by exposing roots. Coppicing.
- Remarks: Although the ripe fruit pulp is edible, seeds are toxic. Wood is pale, straight grained and planes well. However, like most *Strychnos* it is not easy to cultivate.

Strychnos spinosa

Loganiaceae



Swartzia madagascariensis

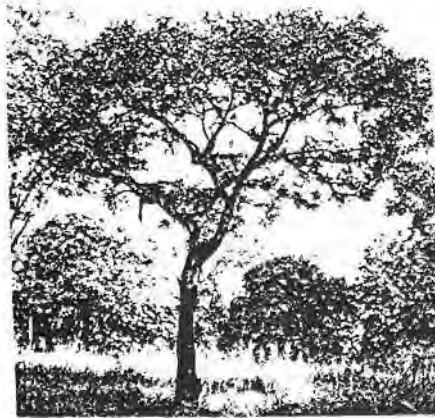
Caesalpinioideae

Indigenous

- Common names: Eng: snake bean tree; Fipa: kikonda; **Mate:** chingenge; Nyam: kasanda, nyegenye.
- Ecology: A tree found in Cameroon, Zaire, Mozambique, Malawi, Zimbabwe and South Africa. It is widespread in Tanzania from Mwanza southwards to Ruvuma growing in Brachystegia woodland and wooded grassland, 450-1,280 m.
- Uses: Firewood, charcoal, poles, posts, utensils (pestles), carving, bee forage, medicine (bark, leaves, roots), fish poison (pods).
- Description: A small deciduous tree 3-4 m, sometimes up to 15 m, the trunk and branches often twisted, the crown dense and rounded. **BARK:** very rough and thick, longitudinally fissured or cracked. **LEAVES:** compound, grey-green, with **7-11 leaflets alternate along the stalk plus one** leaflet at the tip, each one leathery to 7 cm, tip rounded pr notched, yellow hairs below. **FLOWERS:** in sprays of 2-10, **fragrant, orange-yellow**, each flower with **one large erect petal**. **FRUIT:** the heavy pods hang on the bare tree, **cylindrical, dark brown, to 30 cm**, the "snake bean" straight or curved. On the ground 10-15 seeds will be set free from the sticky yellow tissue when the pods rot.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 2,500. Germination is good and fairly fast: up to 70% after 20 days.
- treatment: immerse in hot water (75-80°C), allow to cool, and soak for 24 hours.
- storage: can retain viability for a long period (up to 2 years) at room temperature if kept dry and insect free.
- Management: Pruning, coppicing.
- Remarks: It is favoured for fence posts as the wood is termite resistant. The pods contain saponin and if fed to cows will flavour the milk. Crushed pods have been used in storage bins to protect grain from weevils. The wood is even and close grained and the red-brown heartwood may turn purple-black so it is highly favoured by wood carvers when *Dalbergia melanoxylon* is not available. Medicine against malaria and venereal disease is made from the roots.

Swartzia madagascariensis

Caesalpinioideae

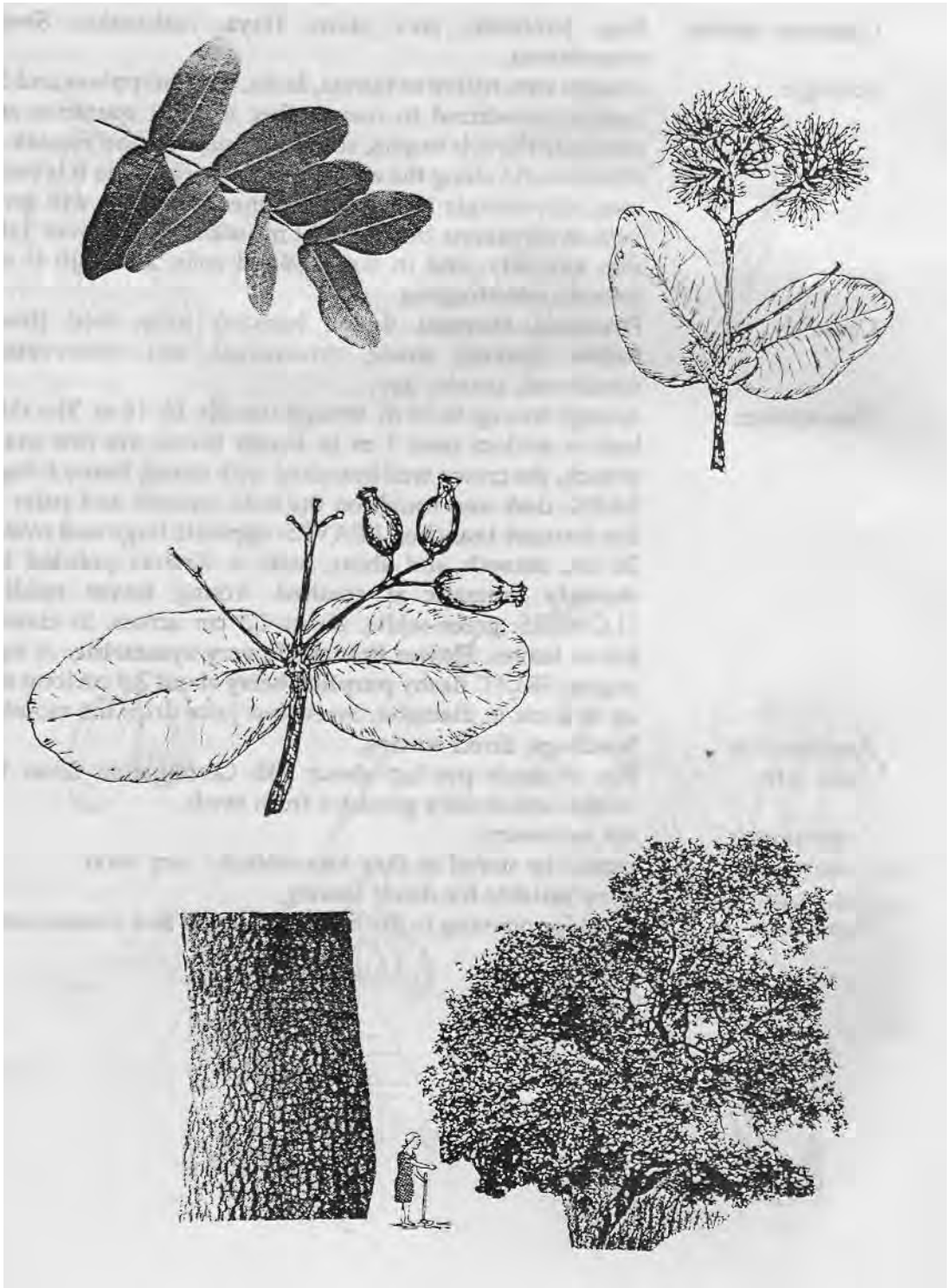


Syzygium cordatum

Myrtaceae

Indigenous

- Common names:** Eng: water-berry tree; Fipa: msu; Gogo: muhulo, muhuu; Ha: msivia; Haya: mugege; Hehe: muvengi; Iraqw. orokutuno; **Kinga:** imivengi; **Nyak:** mpegele; Mate: mnyonyo, orokutuno; **Nguu:** msungunde; **Pare:** mlama; **Samb:** mshiwi; Zara: mtalala mweupe, mzati; **Zinza:** mzeze.
- Ecology:** A tree found beside fresh water in East and Central Africa and south to Natal. Occurs at medium to higher altitudes, always near water, along water courses, in riverine thickets and forests.
- Uses:** Timber (construction, furniture), food (fruit), drink (fermented fruit), bee forage, medicine (leaves, bark, roots). dye (bark).
- Description:** A medium-sized evergreen tree 8-15 m high, sometimes a flowering shrub, the crown compact and rounded from a short thick trunk, sometimes buttressed. **BARK:** dark brown, rough and fissured, breaking into small squares; **branchlets square**, edges winged. **LEAVES:** very many near the ends or branches, **clasping the stem** in opposite pairs, the **next leaf pair at right angles, leathery**, blue-green. **oblong to circular to 8 cm, leaf base heart shaped {cordatum}**. **FLOWERS:** dense, branched **clusters to 10 cm across, pink-white with conspicuous stamens**, abundant nectar. **FRUIT:** fleshy **oval to 15 cm long, purple** when ripe, edible but acid, 1 seed.
- Propagation:** Seedlings, wildings.
- Seed info.:** No. of seeds per kg: 400-450. Germination is very good and uniform, 90% after 25 days.
- treatment:** not necessary.
- storage:** can retain viability only for a day. The seed should not be dried in the sun.
- Management:** Fairly fast growing.
- Remarks:** The wood is medium hard and heavy and works well but should be water seasoned.

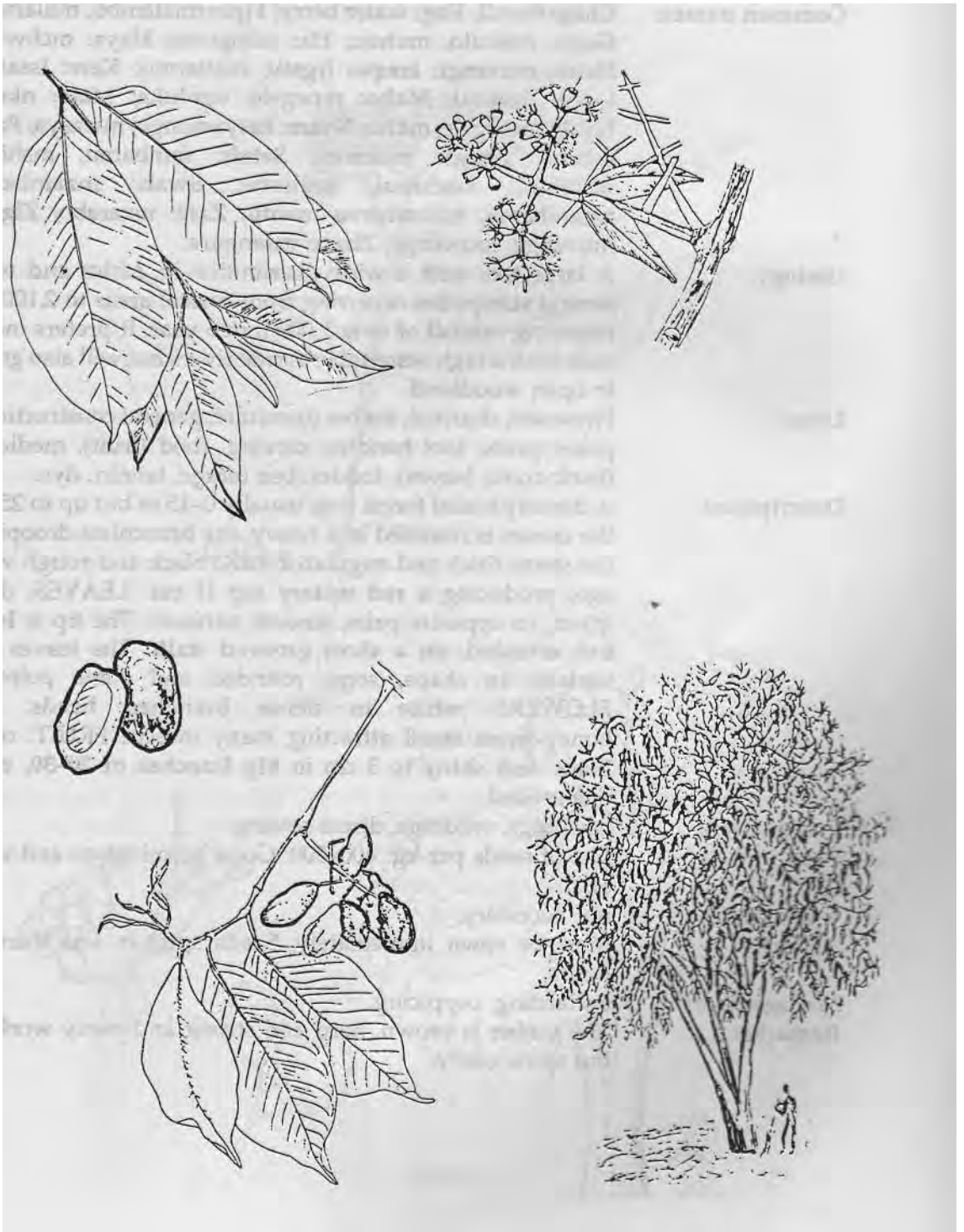


Syzygium cuminii (S. jambolanum)

Myrtaceae

Asia

- Common names: Eng: jambolan, Java plum; Haya: lushanaku; Swah: mzambarau.
- Ecology: A large tree, native to Burma, India, the Philippines and Sri Lanka, introduced to many other tropical countries and even into the sub-tropics, southern Australia and Florida. In Africa found along the east coast but in Tanzania it is being used increasingly inland as an amenity tree. It will grow best at elevations below 1,000 m, with rainfall over 1,000 mm annually, and in well-drained soils, although it can tolerate waterlogging.
- Uses: Firewood, charcoal, timber (canoes), tools, food (fruit), fodder (leaves), shade, ornamental, soil conservation, windbreak, tannin, dye.
- Description: A large tree up to 30 m, though usually 15-18 m. The thick bole is seldom over 1 m in length below the first major branch, the crown well branched with dense, heavy foliage. BARK: dark and rough on the bole, smooth and paler on the younger branches. LEAVES: opposite large and oval to 20 cm, smooth and shiny, with a distinct pointed tip, strongly aromatic if crushed. Young leaves reddish. FLOWERS: green-white, about 1.5 cm across, in clusters below leaves. Flower branchlets very symmetric, at right angles. FRUIT: fleshy purplish berry about 2.5 cm long and up to 2 cm in diameter. Sweet but juice dries the mouth.
- Propagation: Seedlings, direct sowing.
- Seed info.: No. of seeds per kg: about 500. Germination takes 1-2 weeks, and is very good for fresh seeds.
- treatment: not necessary.
- storage: cannot be stored as they lose viability very soon.
- Management: Very suitable for direct sowing.
- Remarks: Ideal for planting in the interior lowland and coastal zones.

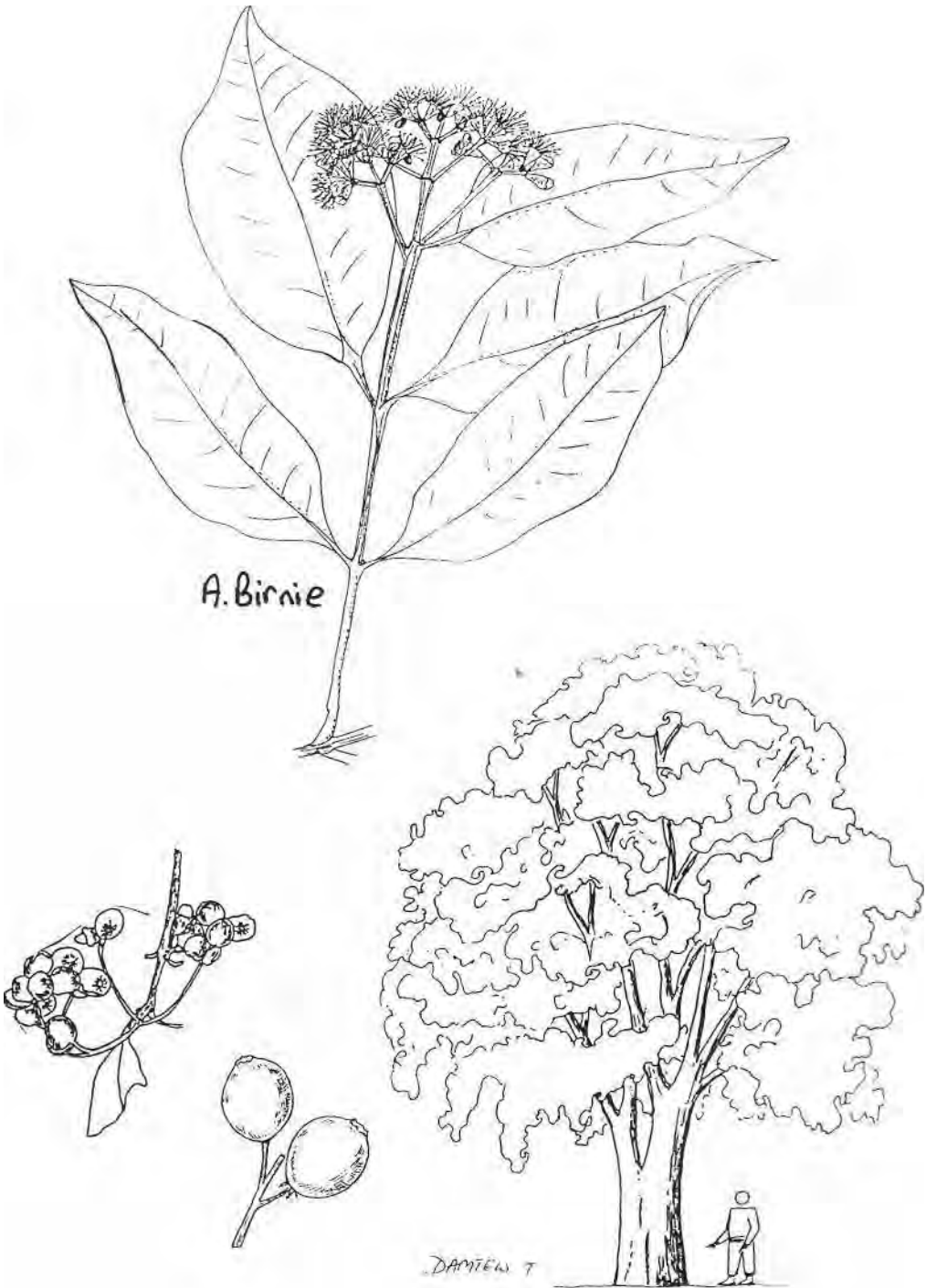


Syzygium guineense

Myrtaceoi

Indigenous

- Common names: Chag: masdi; Eng: water berry; Fipa: mlalambo, mulambo; Gogo: muhulo, muhuu; Ha: mbogonte; Haya: mchwezi; Hehe: muvengi; Iraqw: irgatu, matlarmo; Kere: issassa; Lugu: msalazi; Mako: mpegele, nguluka; Mate: nkolo; Nyak: msengele, muhu; Nyam: kasyamongo, mwasya; Pare: mlama; Rangi: mkamati; Samb: sambarau, mshiw, mshihwi, mschihui, muhuba; Swah: mzambarai, mzambarau, mzambarau mwitu; Zara: mzarabo; Zigua: muvenge, muwenge; Zinza: msangura.
- Ecology: A large tree with a wide distribution in Africa and with several subspecies occurring from coastal areas to 2,100 m requiring rainfall of over 1,000 mm a year. It prefers moist soils with a high watertable beside rivers but will also **grow** in open woodland.
- Uses: Firewood, charcoal, timber (furniture, general construction), poles, posts, tool handles, carving, food (fruit), medicine (bark, roots, leaves), fodder, bee forage, tannin, dye.
- Description: A densely leafed forest tree, usually 0-15 m but up to 25 m, the crown is rounded and heavy, the branchlets drooping; the stems thick and angular. **BARK:** black and rough with age, producing a red watery sap if cut. **LEAVES:** **dark** green, in opposite pairs, smooth surfaces. The tip is **long** but rounded, on a short grooved stalk. The leaves *are* variable in shape, some rounded and some pointed, **FLOWERS:** white in dense branched heads, the honey-sweet smell attracting many insects. **FRUIT:** oval, black and shiny to 3 cm in big bunches of 20-30, **each** one-seeded.
- Propagation: Seedlings, wildings, direct sowing.
- Seed info.: No. of seeds per kg: 400-500. Good germination and very fast.
- treatment: not necessary.
- storage: must be sown immediately. Seeds spoil in less than 24 hours.
- Management: Pollarding, coppicing.
- Remarks: The timber is brown, hard and strong and easily worked, but splits easily.



Syzygium owariense

Myrtaceae

Indigenous

Common names: Bende: kajibajiba, kasiamongo; Eng: water berry; Fipa: yunga; Mate: mhungu; Nyam: kasyamongo, mtumbu; Swah: mzambarau ziwa; Zinza: mgege.

Ecology: A tree of swamp forests, stream banks, riverine thicket and woodland, and along small streams in higher-altitude areas, 1,200-2,000 m, in Malawi, Zambia and Uganda and into West Africa; also found in Mozambique. In Tanzania it is found in the Ufipa highlands, Iringa, Mbeya and Mufindi.

Uses: Firewood, food (fruit), bee forage.

Description: An evergreen multi-stemmed shrub or small tree up to 8 m, erect branches to a bushy rounded crown. BARK: grey, thick, smooth at first becoming dark grey, rough and flaking with age. LEAVES: opposite, blue-green, thick, leathery, smooth and shiny, about 10 cm long, leaf tip long pointed but blunt, pink-yellow midrib, clear below, leaf stalk pink-red, aromatic when crushed. FLOWERS: creamy white or pink with numerous stamens, sweet scented, in heads to 15 cm across, on angular square stalks. FRUIT: oblong and fleshy, about 1.5 cm long and 1 cm thick, green at first, purple, then black when ripe, containing 1 seed.

Propagation: Seedlings, suckers, direct sowing.

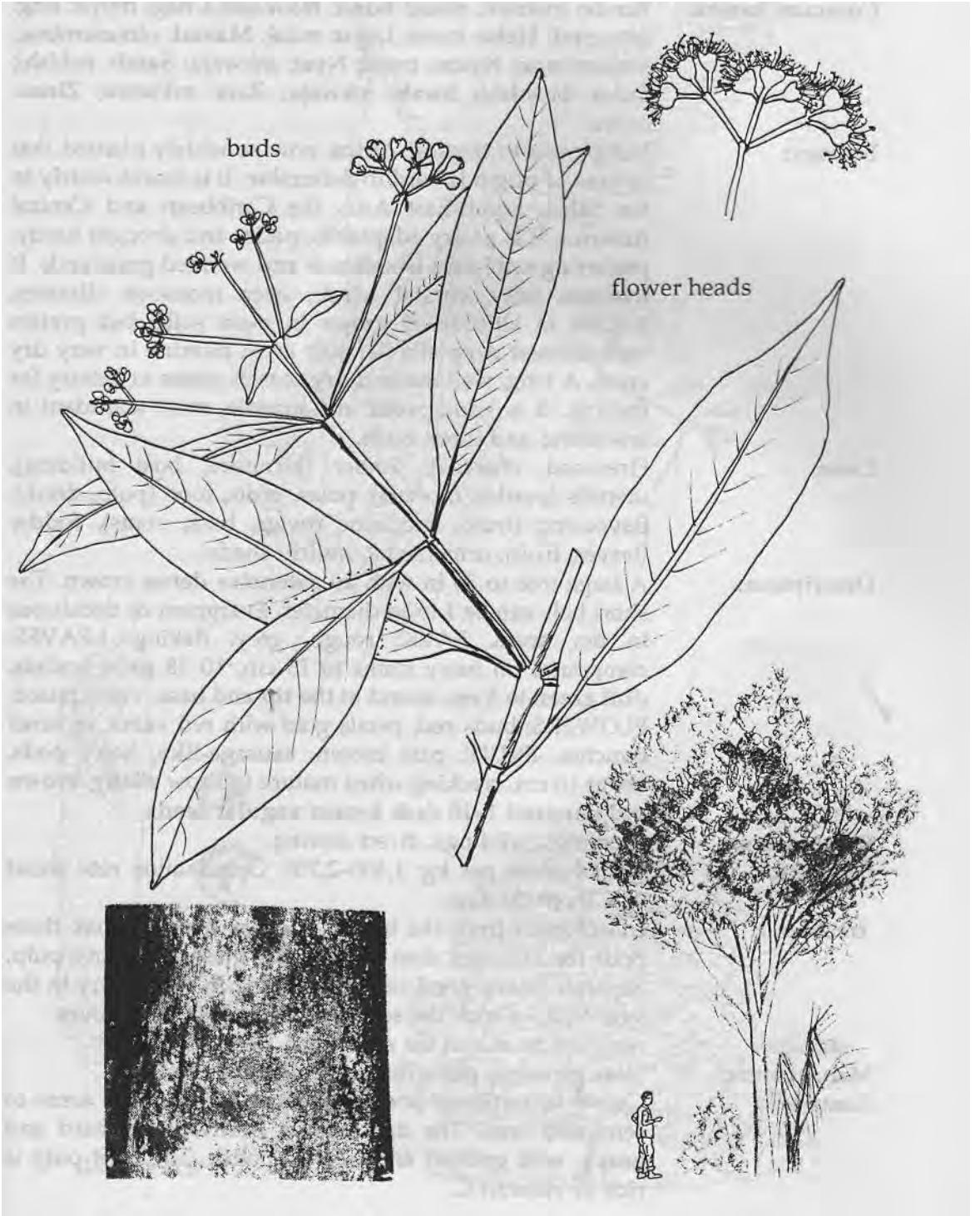
Seed info.: No. of seeds per kg: about 400. Germination is very good, up to 90% after 30 days.

treatment: not necessary.

storage: can retain viability for only a day.

Management: Coppicing, pollarding.

Remarks: Can be planted along river banks. It is said to be the best *Syzygium* species for honey. The leaves and fruit contain the essential oil eugenol which has been used for flavouring food (Guinea "cloves"). In swamp forest the roots produce knee-shaped air roots.



Tamarindus indica

Caesalpinioideae

Indigenous

Common names: **Bende:** mshishi, msisi; **Bond:** mkwazu; **Chag:** moya; Eng: tamarind; **Hehe:** msisi; **Lugu:** mdai; **Maasai:** olmasambrai, masamburai; **Nyam:** msisi; **Nyat:** mkwaju; **Samb:** nshishi; **Suku:** bushishi; **Swah:** mkwaju; **Zara:** mkwesu; **Zinza:** msisa.

Ecology: Indigenous to tropical Africa; now so widely planted that its area of origin is hard to determine. It is found widely in the Sahel, South-East Asia, the Caribbean and Central America. It is a very adaptable species and drought hardy, preferring semi-arid woodlands and wooded grasslands. It tolerates salty, coastal winds, even monsoon climates, 0-1,500 m altitude. It grows in most soils, but prefers well-drained deep alluvial soil; often riverine in very dry areas. A long, well-marked dry season seems necessary for fruiting. It is widespread in Tanzania, most abundant in woodland and thorn bush.

Uses: Firewood, charcoal, timber (furniture, boat building), utensils (pestles, mortars), poles, posts, food (pulp, drink), flavouring (fruit), medicine (twigs, bark, roots), fodder (leaves, fruit), ornamental, mulch, shade.

Description: A large tree to 30 m with an **extensive dense crown**. The short bole can be 1 m in diameter. Evergreen or deciduous in dry areas. **BARK:** rough, grey, flaking. **LEAVES:** compound on hairy stalks to 15 cm, 10-18 pairs leaflets, **dull green to 3 cm, round at the tip and base**, veins raised. **FLOWERS:** buds red, petals gold with red veins, in small bunches. **FRUIT:** pale brown, **sausage-like**, hairy pods, about 10 cm, cracking when mature to show **sticky, brown pulp around 1-10 dark brown angular seeds**.

Propagation: Seedlings, wildings, direct sowing.

Seed **info.:** No. of seeds per kg: 1,400-2,700. Germination rate about 90% in 40-50 days.

treatment: collect pods from the tree as soon as mature. Soak these pods for 24 hours, then rub on wire mesh to remove pulp. Separate heavy good seed by floating in water. Dry in the sun. Nick or soak the seed in cold water for 12 hours, seed can be stored for more than two years.

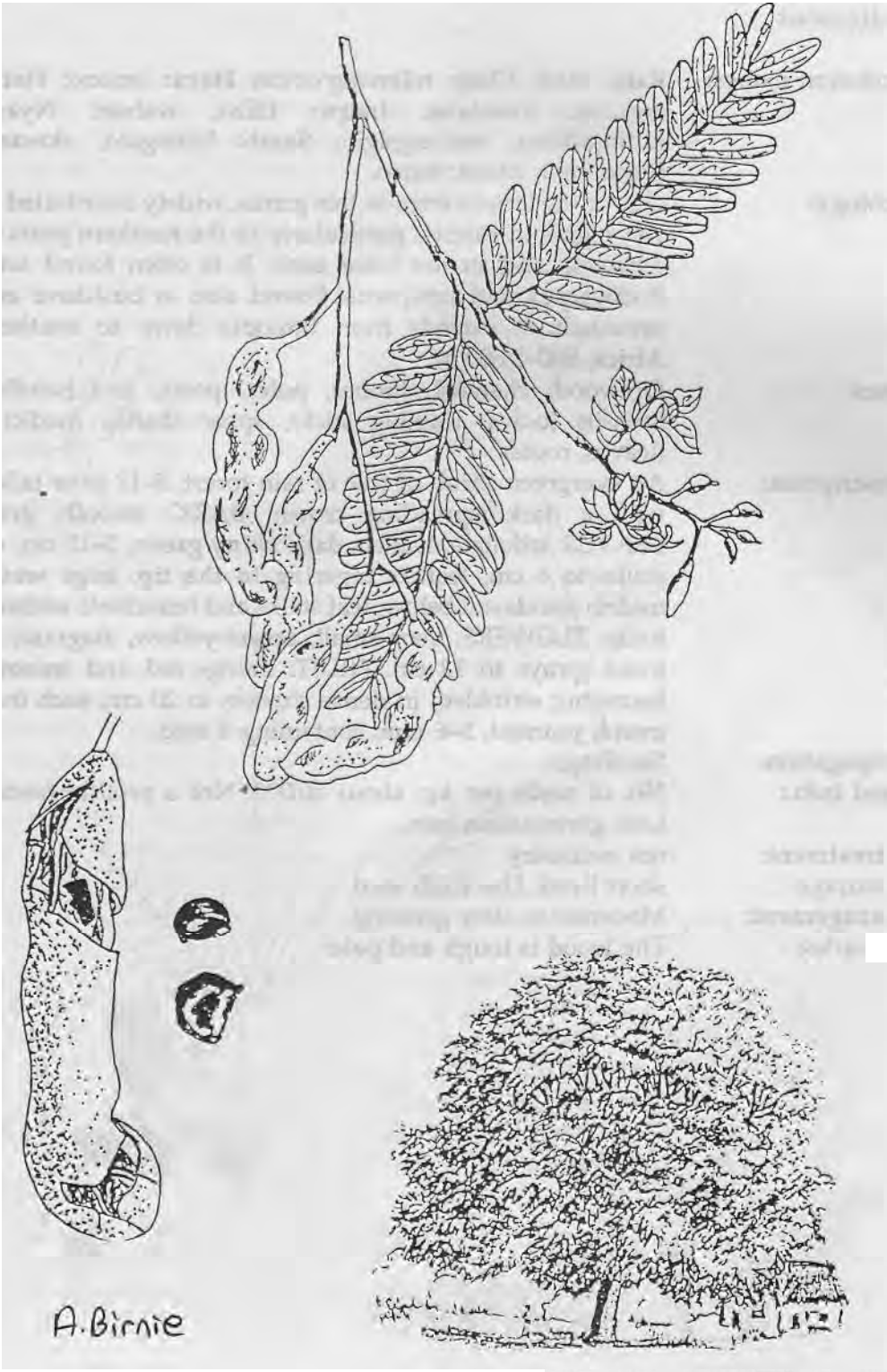
storage:

Management: Slow growing; pollarding, coppicing.

Remarks: Grows in fertile to poor soils from high-rainfall areas to semi-arid ones. The dark brown heartwood is hard and heavy, well grained and easy to polish. The fruit pulp is rich in vitamin C.

Tamarindus indica

.Caesalpinioideae



Teclea nobilis

Rutaceae

Indigenous

Common names: **Bara:** iitisi; **Chag:** mlimang'ombe; **Haya:** omuzo; **Hehe:** mputsa, mwatatsi; **Iraqw:** liliisi, wahari; **Nyam:** mdimudimu, mulungsigiti; **Samb:** kilongolo, nkwaati; **Suku: mju; Zinza:** muzo.

Ecology: One of the largest trees in this genus, widely distributed in wet highland forests, particularly in the northern parts of Tanzania and in the Lake zone. It is often found with Podocarpus and Juniperus. Found also in bushland and savannah. It extends from Ethiopia down to southern Africa, 900-2,600 m.

Uses: Firewood, charcoal, timber, poles, posts, tool handles, utensils (bows, walking sticks, spear shafts), medicine (leaves, roots).

Description: An evergreen shrub or tree of rain forest, 5-12 m or taller, with a dark, spreading crown. **BARK:** smooth, grey. **LEAVES:** trifoliate, leaflets **dark shiny green**, 5-15 cm, on stalks to 6 cm, leaflets **tapering to the tip, edge wavy**, midrib stands out below, leaf stalks and branchlets **without hairs**. **FLOWERS:** very small, **cream-yellow, fragrant**, in loose sprays to 12 cm. **FRUIT:** **orange-red and smooth**, becoming wrinkled, in dense clusters to 20 cm, each fruit **ovoid, pointed, 5-6 mm**, containing 1 seed.

Propagation: Seedlings.

Seed info.: No. of seeds per kg: about 20,000. Not a prolific seeder. Low germination rate.

treatment: not necessary.

storage: short lived. Use fresh seed.

Management: Moderate to slow growing.

Remarks: The wood is tough and pale.

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Tectona grandis

Verbenaceae

South-East Asia

Common names: **Eng:** teak; **Swan:** msaji.

Ecology: The natural range is wet tropical lowland forests of Burma, India, Thailand, and on the Indonesian islands. It grows in a variety of soils but deep soils with good drainage are necessary for satisfactory growth. Its climatic range is moist plateau and wet tropical. In Tanzania it is planted in large-scale plantations in Mtibwa (Morogoro), Longuza (Tanga) and in the Usambaras.

Uses: Firewood, timber (boat building, heavy construction, furniture), poles.

Description: A large deciduous tree over 30 m in height in favourable growing conditions. The bole is often buttressed and may be fluted to a considerable height, up to **15 m long below** the first branches, and up to 1 m in diameter at breast height. Crown open with many small branches. **BARK:** brown on the bole, distinctly fibrous and with shallow longitudinal fissures. **LEAVES:** **4-sided**, branchlets bear the **very large leaves** which are shed for 3-4 months during the later half of the dry season. Leaves shiny above, **hairy below**, vein network clear, about 30 x 20 cm but young leaves up to 1 m long. **FLOWERS:** small, about 8 mm across, **mauve-white** and arranged in **large flowering heads**, about 45 cm long, found on the topmost branches in the unshaded part of the crown. **FRUIT:** round, hard and woody, enclosed in an **inflated, bladder-like covering, pale green** at first, then brown after maturity.

Propagation: Stumps (12-18 months).

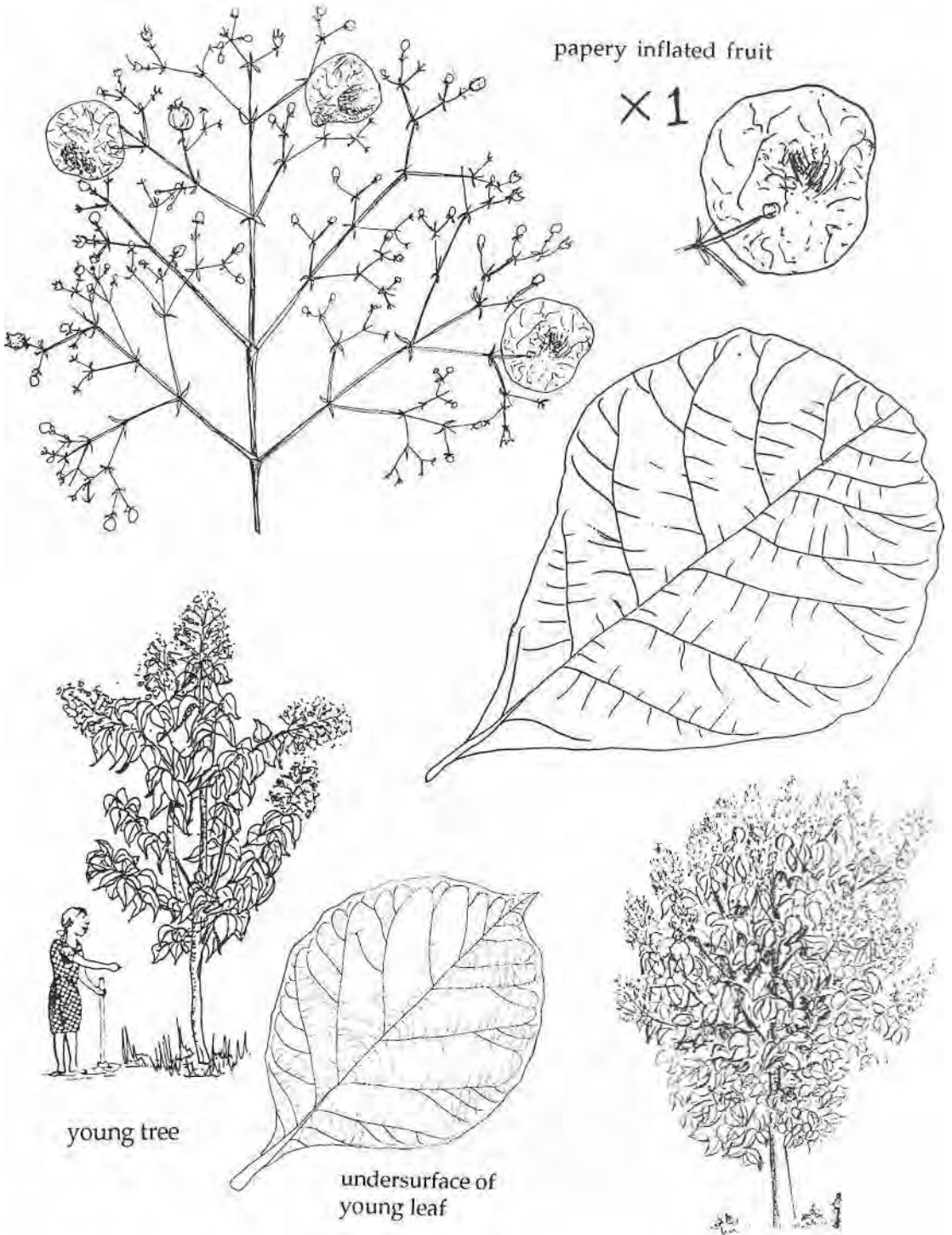
Seed info.: Germination is good and uniform after 5-6 weeks. No. of seeds per kg: 1,000-1,700.

treatment: alternate soaking in cold water and drying in sun for 2-3 days over a period of 2-3 weeks. A second method is to char (or half burn) the fruits by covering them with a thin layer of grass and setting this alight,

storage: seed can be stored for up to 3-4 years.

Management: Coppicing, thinning, weeding. Shoots can grow to 3 m in 2 years. Rotation period is 80 years.

Remarks: One of the most useful timbers in the world. Recommended as a timber tree in suitable sites in wetter areas below **1,200** m and for fuel and poles on the better soils in the moist plateau areas. Thinnings are useful timber also. Teak is heavier than water until dried out.



Terminalia brownii

Combretaceae

Indigenous

- Common names:** Chag: mpoke, mpuko; Fiome: bukuumo; **Lugu:** mvumba; Maasai: olbugoi, olbukoi; **Rangi:** mwanya.
- Ecology:** This is one of the very useful trees of semi-arid areas in Zaire, Kenya, Nigeria, Sudan, Ethiopia and Somalia. It is found in deciduous woodland, bushland, wooded grassland and riverine vegetation, 730-2,000 m. In Tanzania it is found in Kilimanjaro, Kondoia and Kilosa, growing best in well-drained soils.
- Uses:** Firewood, charcoal, timber (bedsteads), poles, posts, tool handles, utensils (mortars, pestles), medicine (leaves, bark), fodder (leafy branches), mulch, soil improvement, shade, dye.
- Description:** A tree 7-13 m high with a **rounded crown**, in layers, foliage drooping. **BARK:** dark grey, longitudinally fissured, thick and fibrous. **LEAVES:** spirally arranged, at ends of branchlets, oval, 6-16 **cm long, wider at tip, pointed or notched**, edge wavy, side veins clear, young leaves fresh green, old leaves red before leaf fall; **stalk and young leaves hairy below**. **FLOWERS:** white or cream, in spikes to 12 cm, with an unpleasant smell. **FRUIT:** small and winged, reddish-purple, 3.5-5.5 cm long, **tip rounded or notched**, narrowed to base.
- Propagation:** Seedlings, wildings.
- Seed info.:** About 1,800 winged fruits per kg. Fruit are ready for collection if the wings break off easily. Shake the tree to collect on -the ground then dry for about a week. Germination good and fast for fresh seeds—about 30% in 60-90 days.
- treatment:** remove the wings; the woody covering can be nicked very carefully to increase germination.
- storage:** can retain viability for a long period if kept dry.
- Management:** A fairly fast-growing tree on moist sites; pollarding, coppicing.
- Remarks:** A tree with good potential for agroforestry in semi-arid areas as it is termite and drought resistant. Leaves are used as medicine for stomach ache and diarrhoea in both humans and livestock. In spite of its dense canopy, crops grow well in its shade. The yellow-brown timber, medium hard but light, is highly valued for house construction, etc The bark is useful as fuel.



Terminalia catappa

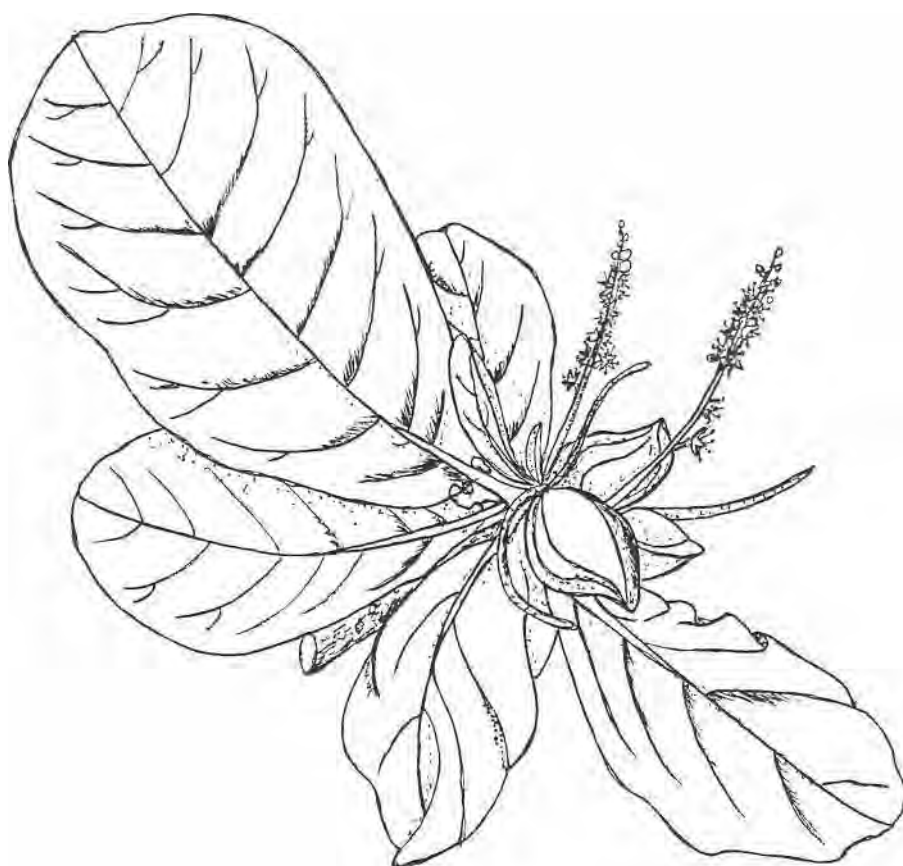
Combretaceae

Andaman Islands, India, tropical Asia, Malaysia

- Common names: Eng: bastard almond, Indian almond, tropical almond;
Swah: mkungu.
- Ecology: A conspicuous semi-deciduous tree of coastal areas throughout the warm tropics, including those of eastern Africa. In Tanzania, the Indian almond has been frequently planted near Lake Victoria and is used increasingly in the country's expanding urban areas as a shade tree.
- Uses: Timber (boats), food (seed kernel), shade, ornamental, soil conservation, tannin (fruit shell), wrapping material (large leaves).
- Description: A wide shady tree to 25 m with **clear horizontally layered branches** when young. Mature trees with a spreading crown. BARK: grey-brown, rough with age. LEAVES: very **large to 30 x 15 cm, leathery** and shiny, in clusters, bright red before **falling**, wider at the tip, veins very clear. FLOWERS: inconspicuous **green-white spikes**. FRUIT: hard, to 7 cm, green-red, **rounded and flattened with two ridges** but no wings.
- Propagation: Seedlings.
- Seed info.: No. of seeds per kg: 150-860. Germination is good but takes a long time—about 2 months.
- treatment: soak seeds in cold water for 24 hours.
- storage: can retain viability only for a few months.
- Management: Medium to fast growing.
- Remarks: Fruits float in sea water and the kernel contains an extractable oil. The kernels (rather like almond nuts of Europe) can be eaten raw or roasted and have an almond taste. The outer shell is rich in tannin. The red timber has been used to build boats. The tree's vast root system binds together both sand and poor soils.

Terminalia catappa

Combretaceae



young tree

Terminalia sericea

Combretaceae

Indigenous

Common names: **Eng:** silver terminalia; Gogo: mpululu; **Goro:** bukuumo, sarakwi; Hehe: mpululu; **Iraqw:** bukuumo, sarakwi; **Mate:** mulamwili; Nyam: mpululu, mzima; **Nyat:** mufuruu; **Nyir:** mupuluu; Rangi: mwanya; **Sand:** sengh'aa.

Ecology: A tree widespread in Tanzania and occurring in many other parts of Africa from Zaire to South Africa. It occurs in Brachystegia woodland and wooded grasslands, especially on sandy soils, 450-1,300 m.

Uses: Firewood, charcoal, timber (general, bedsteads), poles (building), posts, tool handles, medicine (leaves, roots), bee forage, rope (bark), red dye (bark).

Description: A small, well-formed deciduous tree, 3-16 m with spreading branches to a light rather flat crown. **BARK:** dark grey or grey-brown, rather rough with longitudinal fissures. Branchlets with **characteristic purplish bark** peeling off in strips, pale below. **LEAVES:** simple, **clustered** towards the tips of branchlets, 5-12 cm long, narrowed to the base, pale green, leathery, with **silvery silky hairs below**. Young leaves pink and dying leaves deep pink before they fall. **FLOWERS:** cream to pale yellow, in **short spikes to 5 cm**, buds silky hairy, opening with new leaves. **FRUIT:** pink-purple-brown, to 4 cm long, oval and flat, **winged around the central seed, tip notched**.

Propagation: Seedlings, root suckers.

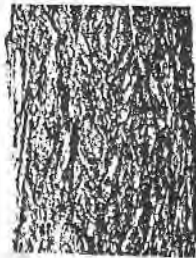
Seed **info.:** No. of seeds per kg: about 1,200. Germination is good with fresh seeds,

treatment: remove wings.

storage: seed can be stored if kept dry. They can remain viable for up to 3 years.

Management: Pollarding, coppicing.

Remarks: This species can grow in very poor soils which are not suitable for farming. The hard yellow wood is generally useful, and posts both for fences and houses last well and resist insect attack. Leaves have been used to treat stomach ache, diarrhoea, snake bite, and wounds.



Terminalia spinosa

Combretaceae

Indigenous

Common names: **Eng:** spiny terminalia; **Lugu:** mtagala; **Nguu:** mtagalo; **Swah:** mwangati, mwarambe; **Zara:** mtakalla, muhangula, mwangare, tagala.

Ecology: A spiny tree of dry bush country, dry coastal forests and wooded grassland in the north of Tanzania into Kenya, Somalia, northern Uganda and the Sudan, 0-1,770 m. It grows with *Terminalia -prunioides*.

Uses: Firewood, charcoal, timber (construction, furniture), poles, carving, live fence.

Description: A tree to 15 m, the branches horizontal, long shoots zigzag. **BARK:** rough, grey, longitudinally fissured, **stout spines, 2-3** together are found on one side, shoots up to 2 cm long. **LEAVES: in clusters from side shoots, up to 5 cm, usually 2-3 cm, wider at the tip, clearly notched,** narrowed to a short stalk, often red. **FLOWERS:** 4-5 pink-white spikes in clusters beside leaves. **FRUIT: 2-3 cm long on stalks.** orange-brown to dark brown, thin winged.

Propagation: Seedlings, wildings.

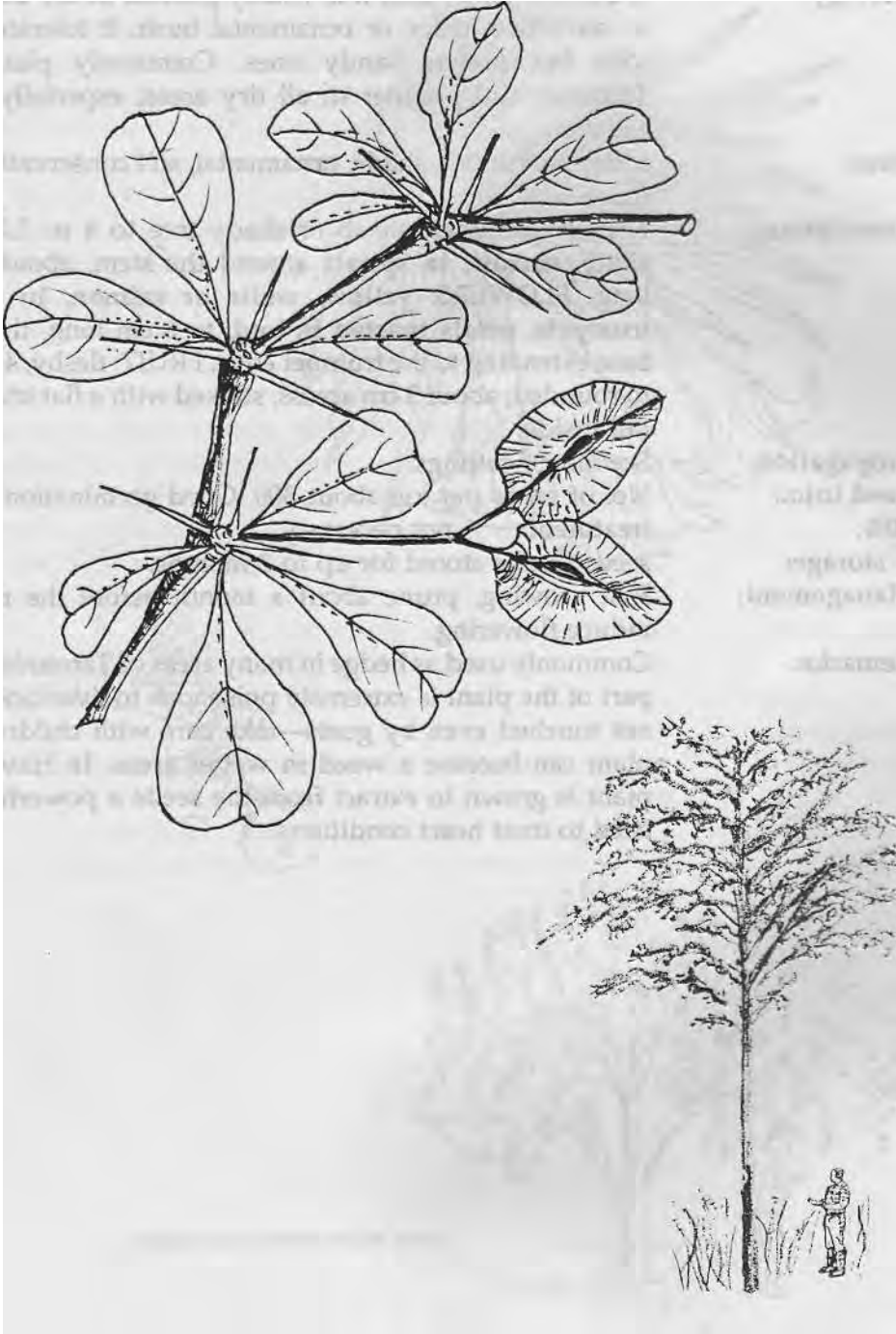
Seed info.: No. of seeds per kg: 8,000-20,000. The tree seeds prolifically. Germination is slow but the rate is good.

treatment: remove wings.

storage: seed can be stored if kept cool and dry.

Management: Trim as a hedge.

Remarks: The tree is believed to have magical properties. It is not browsed by goats so makes a useful live fence. Wood is resistant to termites and fungal attack. The timber is **dark** brown, hard and durable and therefore valued for building.



Thevetia peruviana (T. neriifolia)

Apocynaceae

West Indies and Central America

Common names: Eng: lucky nut, yellow oleander.

Ecology: A bush or small tree, it is widely planted in the tropics as an attractive hedge or ornamental bush. It tolerates most soils but prefers sandy ones. Commonly planted in Tanzania and popular in all dry areas, especially below 1,200 m.

Uses: Medicine (seeds), shade, ornamental, soil conservation, live fence.

Description: A multi-stemmed shrub or shady tree to 4 m. LEAVES: shiny, **narrow, in spirals** around the stem, about 10 cm long. FLOWERS: **yellow, white or salmon, in narrow trumpets, petals twisted in bud**, to 6 cm long, the green base extending to the trumpet edge. FRUIT: fleshy, 4-angled to rounded, about 3 cm across, stalked with a flat triangular nut inside.

Propagation: Seedlings, cuttings.

Seed info.: No. of seeds per kg: about 300. Good germination rate of **80%.** **treatment:** not necessary.

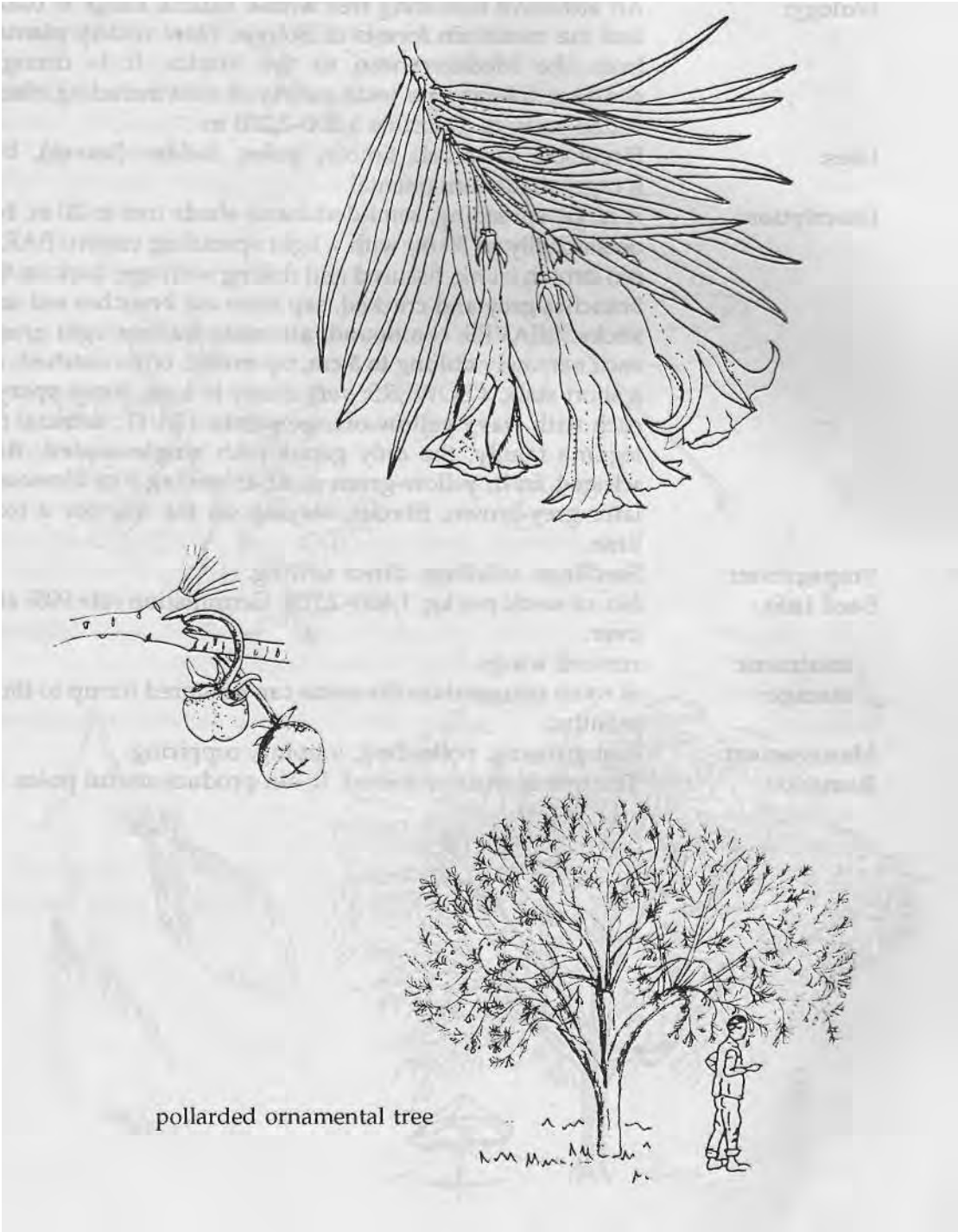
storage: seeds can be stored for up to 3 months.

Management: Fast growing, prune about a month before **the** rains to induce flowering.

Remarks: Commonly used as hedge in many areas of Tanzania. Every part of the plant is extremely poisonous to livestock and is not touched even by goats—take care with children. The plant can become a weed in wetter areas. In Hawaii the plant is grown to extract from the seeds a powerful drug used to treat heart conditions.

Thevetia peruviana (T. neriifolia)

Apocynaceae



Tipuana tipu (Machaerium tipu)

Papilionoideae

Bolivia, Brazil

Common names: **Eng:** pride of Bolivia, tipu tree.

Ecology: An attractive flowering tree whose natural range is Brazil and the mountain forests of Bolivia. Now widely planted from the Mediterranean to the tropics. It is drought resistant, tolerating a wide variety of soils including black-cotton soils; in Tanzania 1,200-2,200 m.

Uses: Firewood, charcoal, timber, poles, fodder (leaves), bee forage, shade, ornamental.

Description: A large, spreading, semi-deciduous shade tree to 20 m, but occasionally to 30 m, with a light spreading crown. **BARK:** red-brown trunk, fissured and flaking with age, bark on the branches grey and cracked, sap from cut branches red and sticky. **LEAVES:** compound, **alternate leaflets** light green, each narrowly **oblong to 5 cm, tip round**, often notched, on a short stalk. **FLOWERS:** very many in long, **loose sprays**, each with **wavy yellow-orange petals**. **FRUIT:** unusual for legume family, the only genus with **single-seeded, flat-winged fruit**, yellow-green at first, looking like blossoms, later grey-brown, fibrous, staying on the tree for a long time.

Propagation: Seedlings, wildings, direct sowing.

Seed info.: No. of seeds per kg: 1,600-2,700. Germination rate 90% and over.

treatment: remove wings.

storage: at room temperature the seeds can be stored for up to three months.

Management: Fast growing; pollarding, lopping, coppicing.

Remarks: The tree is shallow rooted. It can produce useful poles.



Treculia africana

Moraceae

Indigenous

Common names: Eng: African breadfruit, wild jackfruit; **Haya:** mbungu; Lugu: ezeya, mjaya; **Mate:** maya.

Ecology: A fruit tree of riverine forest in tropical Africa, Madagascar, Uganda and Tanzania, 0-1,200 m. In Tanzania it is found in Bukoba (Munene Forest Reserve), Kilosa (Kidodi), Morogoro (Sanje Forest Reserve), East Usambara (Amani) and Ruvuma (Mbinga).

Uses: Firewood, timber, food (seed), fodder (leaves), shade, mulch, soil conservation.

Description: An evergreen tree 15-30 m, up to 50 m, with a dense spreading crown and a fluted trunk. **BARK:** grey, smooth thick, exuding **white latex** when cut, which later **turns rusty-red**. **LEAVES:** simple, alternate, **very large, about 30 x 14 cm** (up to 50 x 20 cm), dark green, smooth above, tough, paler below with some hairs on the **10-18 pairs of clear veins, tip pointed, a short stalk** to 1.5 cm. Young leaves red or yellow. **FLOWERS:** Flower head brown-yellow, **rounded, 2.5-10.0 cm across**, male and female usually separate, growing **beside leaves** (axillary) or **on older wood** down to the trunk. **FRUIT:** compound, **rounded, very large, up to 30 cm across**, on the trunk or main branches, containing many orange seeds, about 1 cm, buried in spongy pulp of the fruit. The outer surface is covered with rough pointed outgrowths.

Propagation: Seedlings, but not well known.

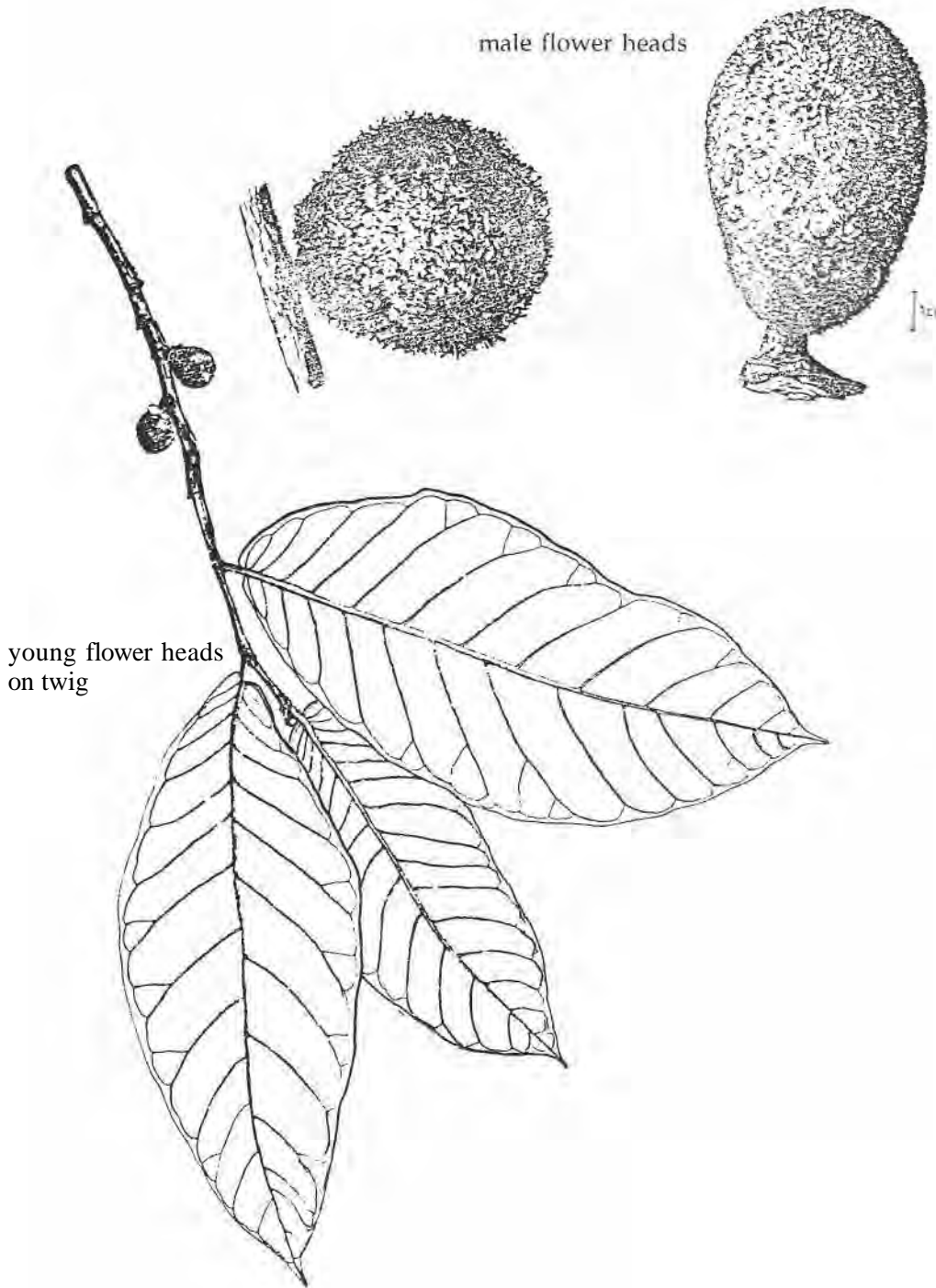
Seed info.: No. of seeds per kg: 4,500-5,000. Germination rate not well known.

treatment: not necessary.

storage: perishable.

Management: A fairly fast-growing tree.

Remarks: A tree with potential for domestication on farmlands in valleys and riverine areas. The seeds can be dried, fried and eaten.



Trema orientalis (T. guineensis)

Ulmaceae

Indigenous

Common names: Arusha: ol matata; Chag: mshinga, mwesii, mwezi; Eng: pigeon wood; Haya: omuhuwe, muuwe; Iraqw: slarakahe; Kere: omuhohwe; Lugu: mbefu; Mate: mpeho; Mbug: lushinga; Meru: mwefu; Nyak: mpehwe; Pare: mwesu; Samb: mshinda, mshinga; Suku: mohowe; Swah: mgendagenda; Zara: mpehe, mshanulo; Zigua: boriti, mpera, mshinga.

Ecology: A small, short-lived tree, widely distributed in Asia and Africa from Senegal and the Sudan to the Cape in higher-rainfall areas, 0-2,000 m. It is found in riverine forest or forest margins as a pioneer which quickly invades clearings and disturbed soils.

Uses: Firewood, charcoal, poles, fodder (leaves, pods, seeds), bee forage, shade, ornamental, mulch, nitrogen fixation, soil conservation, soil improvement, black dye (bark), brown dye (leaves), oil (seed).

Description: A shrub or much branched tree to 12 m. BARK: light grey smooth, branchlets hairy. LEAVES: alternate along drooping branchlets, to 14 cm long, rough and dull above, hairy below, the edge finely toothed all round, the blade unequal sided. FLOWERS: small, yellow-green, separate male and female flowers. FRUIT: small, round and flesh) black when ripe, 4-6 mm, containing one black seed in green flesh.

Propagation: Seedlings, cuttings.

Seed info.: No. of seeds per kg: 370,000. Germination rate is about 30%.

treatment:

storage: can retain viability for a few months.

Management: Very fast growing; coppicing.

Remarks: A host tree for many butterflies and the fruit are eaten by birds, the main agents of distribution. It is a very fast-growing tree but the timber is poor. It does not compete with crops. Medicine from the leaves is reported to be an antidote to poison in general. Both bark and leaves contain a saponin, a tannin and sugar and have been used for deworming and as cough medicine.



Trichilia emetica (T. roka)

Meliaceae

Indigenous

Common names: **Chag:** mchengo, mechengo, mkongoni, mututu, mwavai; **Eng:** Cape mahogany; **Gogo:** nyembe mwitu; **Ha:** mtandaruka; **Lugu:** mtengotengo; **Nguu:** mgolimazi; **Nyak:** msanguti; **Samb:** mgolimazi; **Suku:** sungute; **Swah:** mkungwina, mtimaji, mtimai; **Zigua:** mgolimazi.

Ecology: A widespread and important tree of high forest, often by rivers in Uganda, Ethiopia, Kenya and Tanzania, south to Mozambique, 0-1,800 m. Prefers well-drained, rich soil and high ground water. There is a smaller savannah form with corky grey bark.

Uses: Firewood, timber (furniture, boats), poles, tool handles, medicine (leaves, bark, roots, oil), fodder, bee forage, shade, ornamental, soil conservation, oil, soap (seed).

Description: An evergreen tree, 15-30 m, with **dark hanging foliage**, crown oval to rounded and dense when mature, rather smooth. **BARK:** red-brown, scaling to show green underbark. **LEAVES:** compound 4-5 pairs leaflets, thick and glossy, **leaflets increase in size from the base upwards to largest terminal leaflet**, maximum 16 cm, underside with soft hairs and midrib continues as a hairy tip; leaf stalks and shoots softly hairy. **FLOWERS:** creamy white, fragrant in inconspicuous clusters in heads to 10 cm, 5 thick petals about 2 cm around hairy centre of stamens. **FRUIT:** rounded, furry, brown capsules to 3 cm across, split into 3 or 4 parts to reveal **3-5 shiny black seeds each with a fleshy orange aril** almost covering the seed.

Propagation: Seedlings, direct sowing.

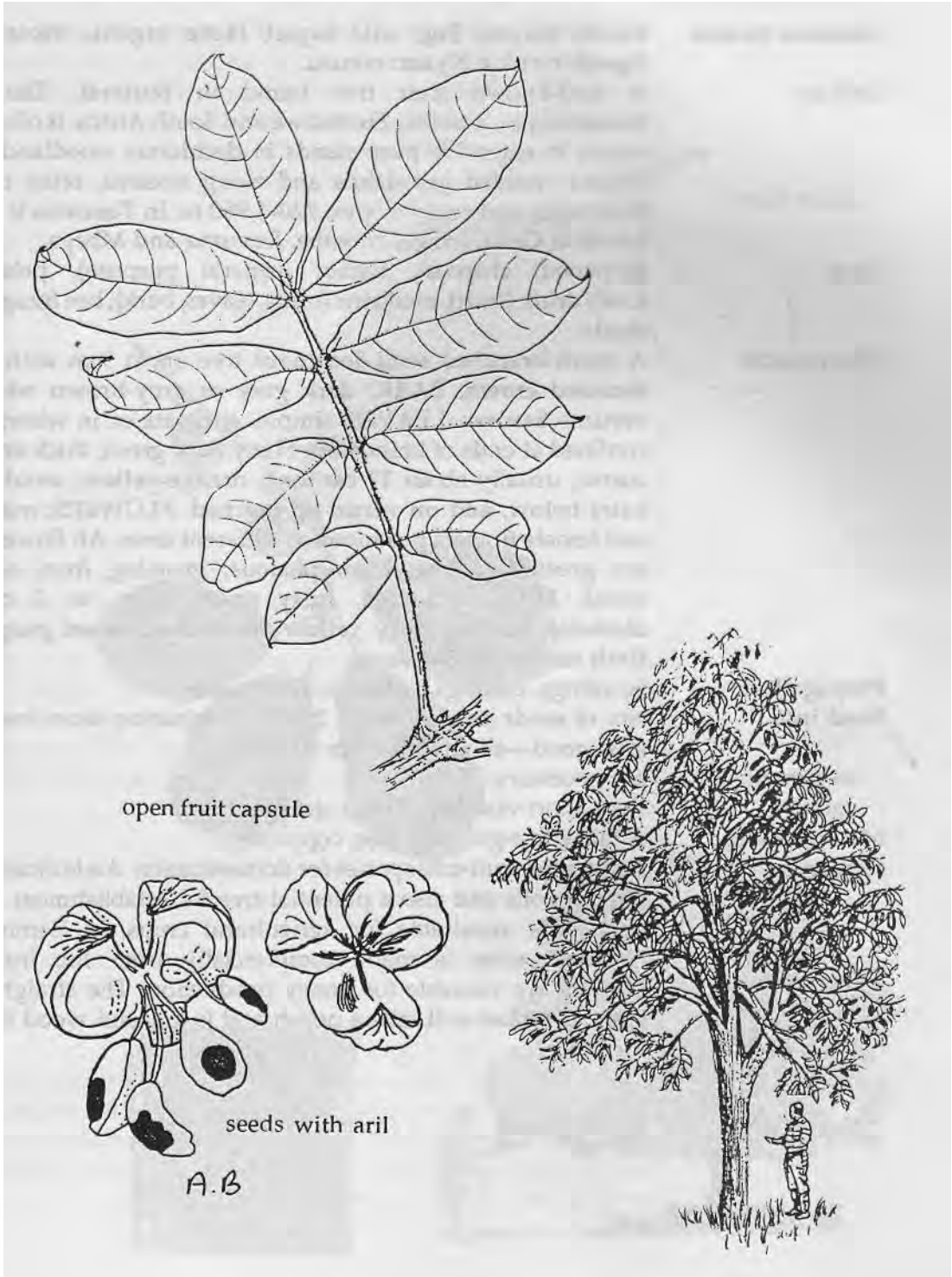
Seed info.: No. of seed per kg: 300. Sow fresh seeds for best results; seeds do not store. Collect when capsules start opening, dry in the shade, shake out seed and sow immediately,

treatment: collect when capsules start opening, dry in the shade then shake out seed; remove aril by maceration in water, then sow immediately,

storage: seed loses viability quickly.

Management: Fairly fast growing.

Remarks: The aril is removed from the seed and crushed with water to form a suspension used in cooking. Seeds are extremely poisonous. Leaves have some soapy properties and have been exploited during bad economic periods in Tanzania (e.g. 1979-1982). The pink-grey-brown timber is very susceptible to insect attack.

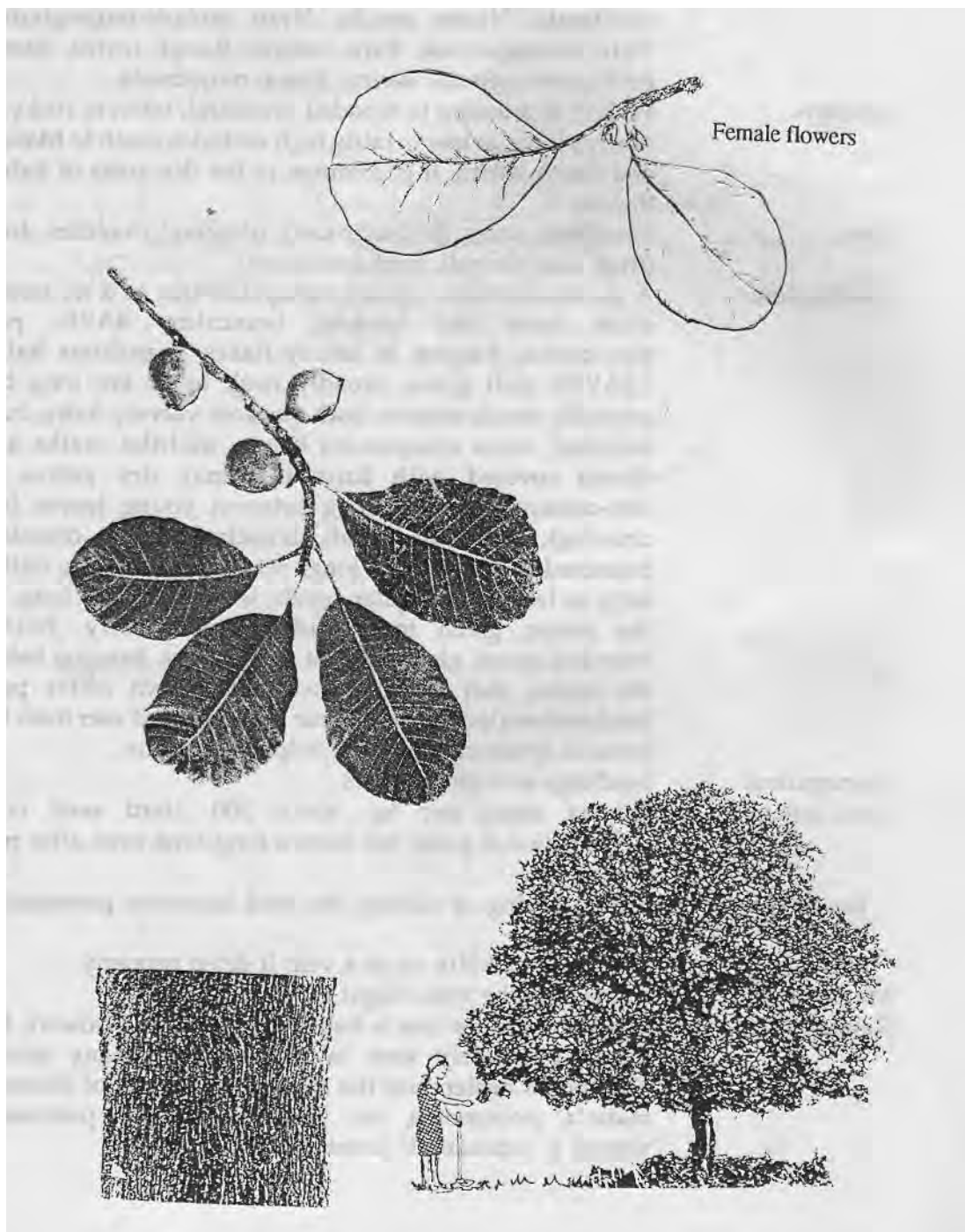


Uapaca kirkiana

Euphorbiaceae

Indigenous

- Common names: Bende: mkusu; Eng: wild loquat; Hehe: mguhu, mkusu; Ngoni: msuku; Nyam: mkusu.
- Ecology: A well-known fruit tree found in Burundi, Zaire, Mozambique, Zambia, Zimbabwe and South Africa. It often occurs in extensive pure stands in deciduous woodlands, upland wooded grasslands and along streams, often on stony soils and rocky slopes, 720-1,950 m. In Tanzania found in Geita, Iringa, Njombe, Ruvuma and Mbeya.
- Uses: Firewood, charcoal, timber (general purpose), poles food/drink (fruit), medicine (roots, leaves, bark), bee forage, shade.
- Description: A much-branched semi-deciduous tree up to 9 m with a rounded crown. BARK: dark grey or grey-brown with vertical fissures. LEAVES: simple, alternate or in whorls, confined at ends of branchlets. Shiny dark green, thick and coarse, usually about 17 cm long, orange-yellow, woolly hairs below, and on veins, tip notched. FLOWERS: male and female flowers produced on different trees. All flowers are greenish-yellow, inconspicuous, growing from old wood. FRUIT: rounded, rusty green berry, to 3 cm diameter, turning rusty yellow when ripe, sweet pulpy flesh surrounds 3-4 seeds.
- Propagation: Seedlings, cuttings, wildings, root suckers.
- Seed info.: No. of seeds per kg: about 2,500. Germination from fresh seed good—about 70% after 30 days.
- treatment: not necessary.
- storage: Very short viability. Avoid storage.
- Management: A fairly fast-growing tree; coppicing.
- Remarks: A potential fruit-tree species for domestication. An indicator of poor soils and also a potential tree for establishment in poor soils unsuitable for agricultural crops. In Zambia "msuku" wine is made commercially from the **fruit**. Flowers are valuable for honey production. The straight-grained timber will take a polish and is a useful wood for furniture.



Vangueria infausta

Rubiaceae

Indigenous

Common names: Arusha: engumi; **Bara:** babaxchet, barangu, malharimog; Eng: wild medlar; **Fipa:** msanda; **Hehe:** msambalawe; **Kere:** mufitanda; Nyam: msada; **Nyat:** mulade-mujenghuma; Nyir: mkungulusuli; **Fare:** mdaria; **Rangi:** mviru; **Samb:** mvilu, mviu; **Swah:** mviru; **Zinza:** mnyabwita.

Ecology: Widely distributed in wooded grassland, often in rocky or sandy places, at low to fairly high altitudes south to Malawi and South Africa. It is common in the dry areas of Babati district.

Uses: Firewood, poles (houses), tools (digging), handles, food (fruit, seed kernel), medicine (roots).

Description: A deciduous hairy shrub or shapeless tree to 8 m, with a short trunk and hanging branchlets. **BARK:** pale grey-brown, peeling in untidy flakes, **branchlets hairy**. **LEAVES:** dull green, broadly oval, to 30 cm long but generally much smaller, **both surfaces velvety hairy**, base rounded, veins conspicuous below, **midribs, stalks and shoots covered with hairs** that may dry yellow or rust-coloured, stipules long between young leaves (see drawing). **FLOWERS:** small, **densely hairy, in crowded, branched heads** to 3 cm long, petals yellow-green, falling early to leave 5 triangular sepals, less than 2 mm long, on the young green fruit, buds pointed, hairy. **FRUIT:** rounded, green, **glossy, about 4 cm across**, hanging below the leaves, dull orange-brown, soft brown edible pulp inside when ripe. The fruit bear a **star-shaped scar** from the remains of the calyx, which helps recognition.

Propagation: Seedlings and root suckers.

Seed info.: No. of seeds per kg: about 500. Hard seed coat Germination is good but takes a long time even after pre-treatment.

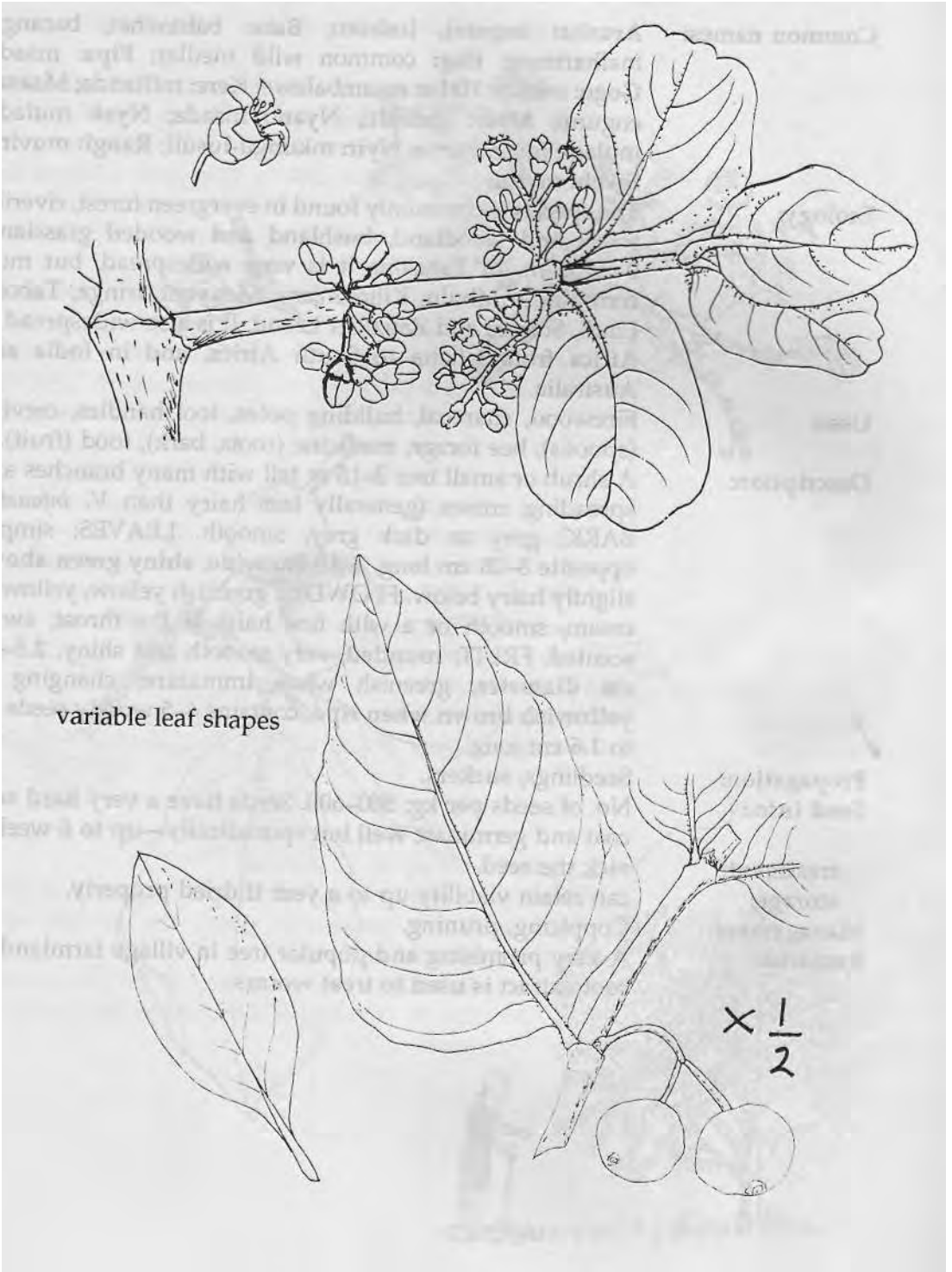
treatment: none (soaking or nicking the seed improves germination very little).

storage: can retain viability up to a year if dried properly.

Management: Coppicing; the tree is light demanding.

Remarks: In some areas the tree is believed to have evil powers, but it can be widely seen in farmlands in many places. Traditional healers use the roots for a variety of illnesses: malaria, pneumonia, etc. This species was previously named *V. rotundata/V. tomentosa*.

Vangueria infausta



Vangueria madagascariensis (V. acutiloba)

Rubiaceae

Indigenous

- Common names: Arusha: engumi, loshoro; **Bara:** babaxchet, barangu, malharimog; Eng: common wild medlar; **Fipa:** msada; Gogo: msada; **Hehe:** msambalawe; **Kere:** mfitanda; **Maasai:** engumi; **Mate:** lindikiti; Nyam: msada; **Nyat:** mulade, mulade mujenguma; Nyir: mkungu-lusuli; **Rangi:** muviru; Swah: mviru.
- Ecology: The species is commonly found in evergreen forest, riverine forest and woodland, bushland and wooded grassland, 0-2,130 m. In Tanzania it is very widespread, but most common in Mbulu, Kilimanjaro, Manyoni, Iringa, Tabora, Lindi, Songea and Zanzibar Island. It is also widespread in Africa from Ghana to South Africa, and in India and Australia.
- Uses: Firewood, charcoal, building poles, tool handles, carving (spoons), bee forage, medicine (roots, bark), food (fruit).
- Description: A shrub or small tree 2-15 m tall with many branches and spreading crown (generally less hairy than *V. infausta*). BARK: grey or dark grey, smooth. LEAVES: simple, opposite 8-28 cm long, 3-15 cm wide, **shiny green above**, slightly hairy below. FLOWERS: greenish yellow, yellow or cream, smooth or a with few hairs at the throat, sweet scented. FRUIT: **rounded**, very smooth and shiny, 2.5-5.0 cm diameter, greenish when immature, changing to yellowish **brown when ripe**, contains 4-5 woody seeds up to 1.6 cm long.
- Propagation: Seedlings, suckers.
- Seed info.: No. of seeds per kg: 500-600. Seeds have a very hard seed coat and germinate well but sporadically—up to 6 weeks, treatment: nick the seed.
- storage: can retain viability up to a year if dried properly.
- Management: Coppicing, pruning.
- Remarks: A very promising and popular tree in village farmland. A root extract is used to treat worms.



Vangueriopsis lanciflora

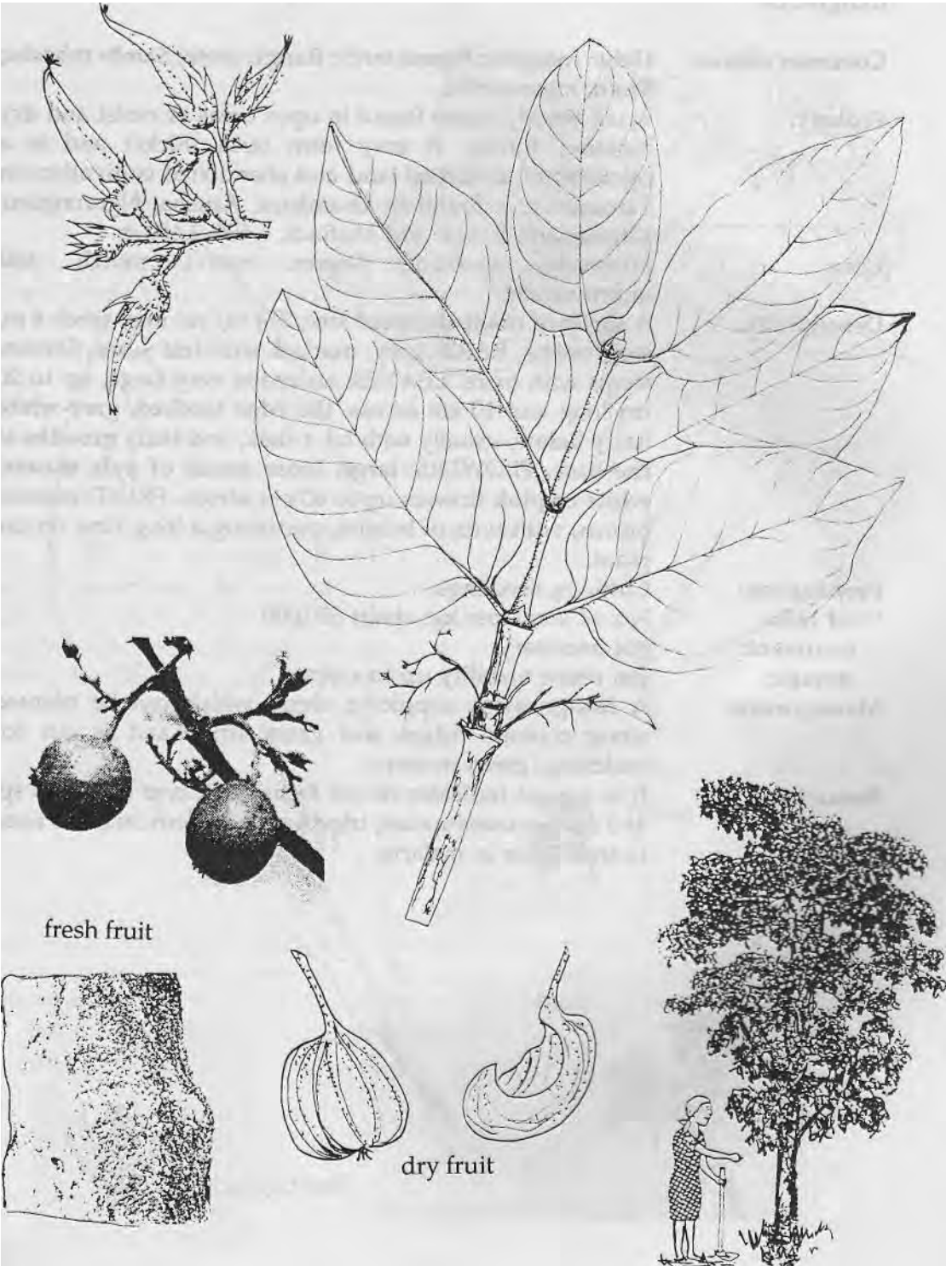
Rubiaceae

Indigenous

- Common names: Eng: crooked false medlar; Hehe: msambalawe-lulenga; Nyam: mgelelya.
- Ecology: A shrub of central and east Africa and into Mozambique, common at medium to higher altitudes in woodland and wooded grassland, often associated with rocky outcrops. In Tanzania it is found near Tabora, Manyoni, Chunya and Iringa, 250-1,250 m.
- Uses: Firewood, charcoal, utensils (spoons), food (fruit), bee forage, medicine (bark, roots), live fence.
- Description: A shrub or small tree 7 m or more in height with spreading more-or-less horizontal branches. BARK: smooth, grey on trunk and older branches; **powdery red-brown on** young branches, flaking to show brown-pink underbark. LEAVES: variable, about 3-13 cm long, oval and opposite, blue-green, roughly hairy above or smooth but **grey-white hairs below** tip rounded or not, edge wavy on a stalk about 1 cm. FLOWERS: appear before the leaves, **tubular** green-yellow **buds**, hairy, about 2 cm long, open to reveal white **petals which curl back, sweet scented** and showy. Flowers borne in leaf axils. FRUIT: **rounded** when it has 2 seeds but **one sided** when only 1 seed develops, **up to 3 cm long, green and hairy, becoming yellow-brown**; fleshy slightly acid pulp around seeds.
- Propagation: Seedlings, root suckers.
- Seed info.: Germination is poor owing to hard seed coat; at best 60% after 40 days.
- treatment: soak seed in cold water for 24 hours,
- storage: mature green fruits can be picked and stored for ripening. Can be stored for up to 12 months.
- Management: Seedlings give best results. Although regeneration from coppicing and root suckers is good, the growth often succumbs to drought and fire.
- Remarks: The species is light demanding and should be planted after partial clearance of vegetation. The leaves and fruit are attacked by insects.

Vangueriopsis lanciflora

Rubiaceae



Vernonia myriantha (V. subligera)

Compositae

Indigenous

Common names: Hehe: mtogoto; **Nguu**: mteli; **Rangi**: seese; **Samb**: mhasha; **Suku**: mgumambu.

Ecology: A tall woody shrub found in open areas of moist and dry montane forests. It may form bush thicket and is a colonizer of disturbed land and abandoned cultivation. In Tanzania it is found in Usambara, Arusha, Ngorongoro, Kilimanjaro, Iringa, and Mufindi, 1,600-2,400 m.

Uses: Firewood, medicine (leaves, roots), mulch, soil improvement.

Description: A shrub or multi-stemmed tree, 3-4 m, but may reach 6 m, stout stems. **BARK**: grey, marked with leaf scars, fibrous, stems with hairs. **LEAVES**: alternate, very **large**, up to 20 cm long and 10 cm across, the **edge toothed, grey-white hairy below**, usually without a stalk and **leafy growths at the base**. **FLOWERS**: large, loose **heads of pale mauve, white or pink** flowers up to 60 cm across. **FRUIT**: minute, brown, with tufts of bristles, persisting a long time on the plant.

Propagation: Cuttings, seedlings.

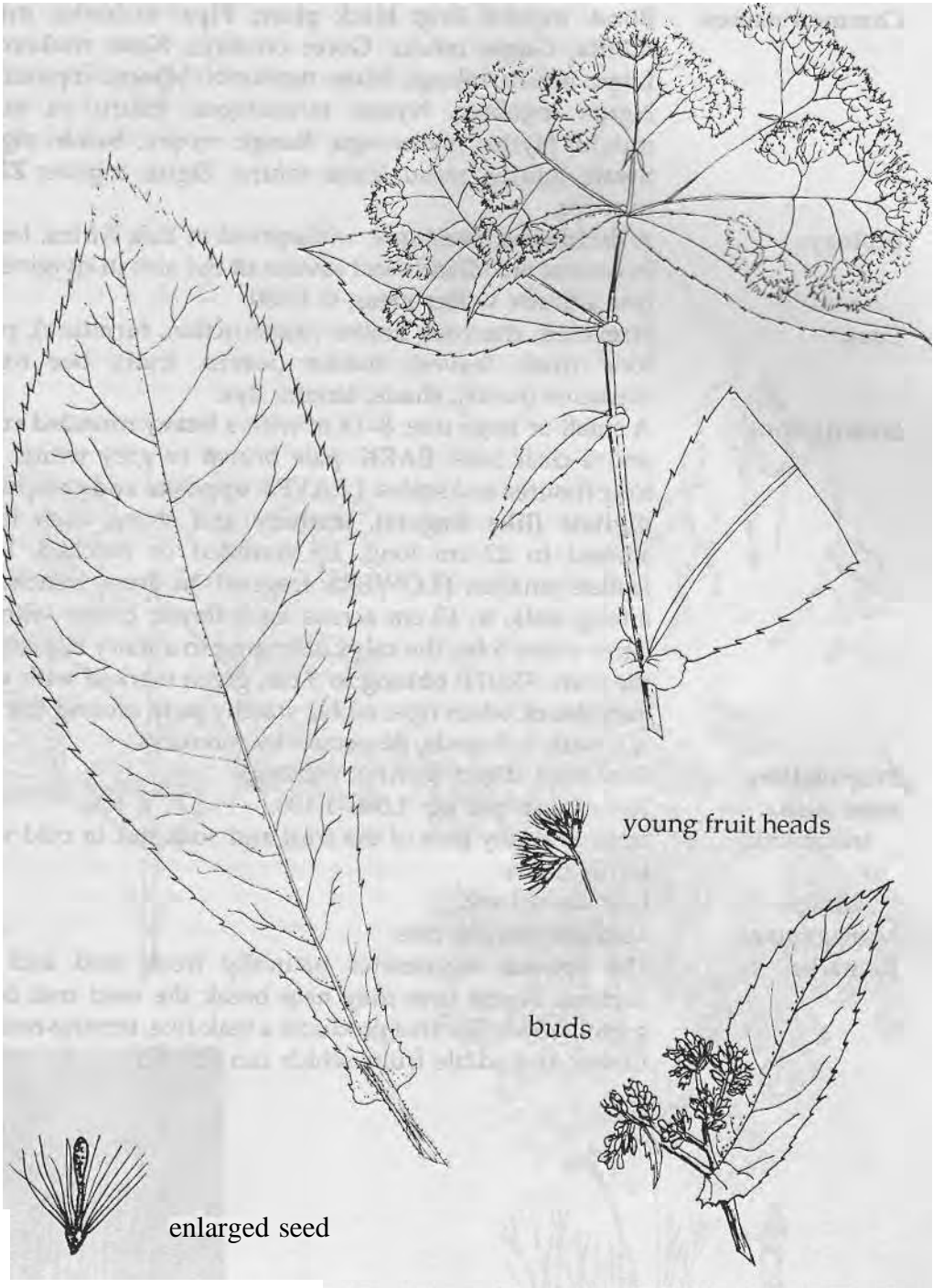
Seed info.: No. of seeds per kg: about 850,000.

treatment: not necessary.

storage: can retain viability up to a year.

Management: A fast-growing, coppicing shrub which can be planted along contour ridges and grass strips and is cut for mulching/green manure.

Remarks: It is a good indicator of soil fertility. Leaves of *Coleus* sp. and *Rumex usambarensis*, together with Vernonia, are used to treat fever in malaria.



Vitex doniana (V. cuneata, V. cienkowskii)

Verbenaceae

Indigenous

Common names: **Bond:** mgobe; **Eng:** black plum; **Fipa:** mchinka, mfuru, mufita; Gogo: mfulu; **Goro:** orrolmo; **Kere:** mukoronto; **Lugu:** mfuru, mkoga; **Mate:** mpitimbi; **Mwera:** mpindimbi; **Nguu:** mgobwe; Nyam: mfurulegea, mfuru ya mtoni, mpulu; Nyiha: mkunungu; **Rangi:** mpuru; **Samb:** mgobe; **Swah:** mfudu, mfuu; **Zara:** mfuru; **Zigua:** mgobe; **Zinza:** muvuru.

Ecology: A deciduous forest tree, widespread in East Africa, largely in coastal woodlands and savannah but also in riverine and low-altitude wetter areas, 0-1,800.

Uses: Firewood, charcoal, timber (construction, furniture), poles, food (fruit, leaves), fodder (leaves, fruit), bee forage, medicine (roots), shade, tannin, dye.

Description: A small or large tree, 8-14 m with a **heavy rounded crown** and a clear bole. **BARK:** pale brown or grey white, with long fissures and scales. **LEAVES:** **opposite and compound, digitate (like fingers), leathery** and shiny, each leaflet stalked to 22 cm long, tip rounded or notched, lower leaflets smaller. **FLOWERS:** fragrant, in dense bunches on a long stalk, to 12 cm across, each flower cream with one hairy violet lobe; the calyx enlarging to a hairy cup around the fruit. **FRUIT:** **oblong to 3 cm**, green marked with white dots, **black** when ripe, edible starchy pulp around the hard nut with 1-4 seeds, dispersed by monkeys.

Propagation: Seedlings, direct sowing, wildings.

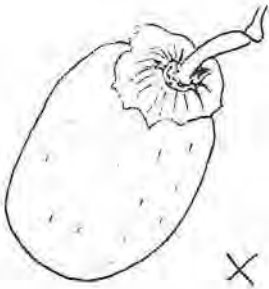
Seed info.: No. of nuts per kg: 1,000-1,100.

treatment: remove fleshy part of the fruit and soak nut in cold water for 24 hours.

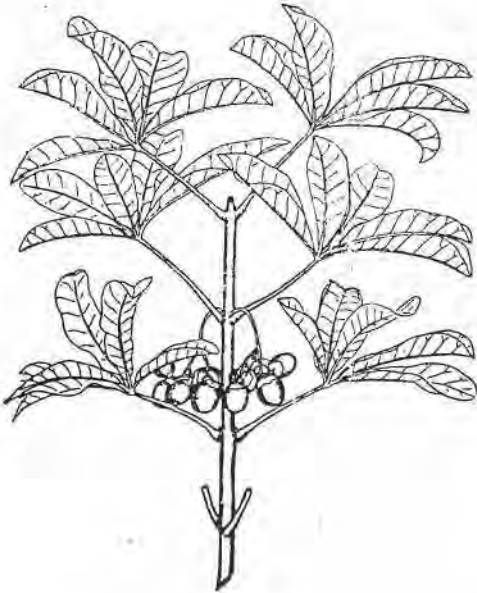
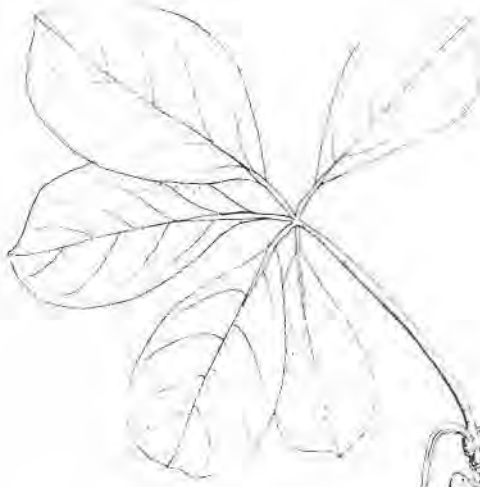
storage: best sown fresh.

Management: Medium growth rate.

Remarks: The species regenerates naturally from seed and root suckers. Forest fires may help break the seed coat before germination. The tree produces a teak-like, termite-resistant timber and edible fruits which can be sold.



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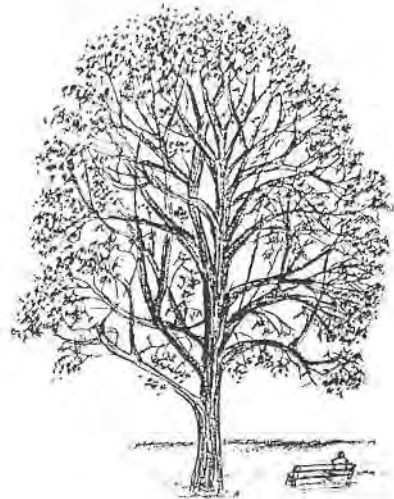
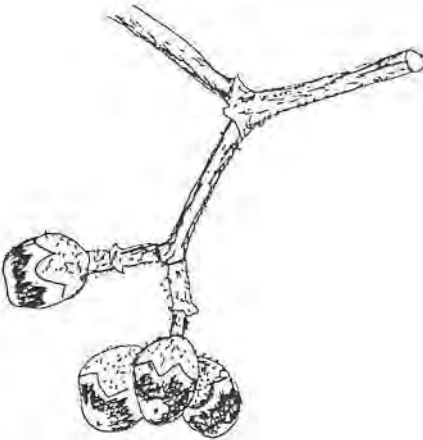
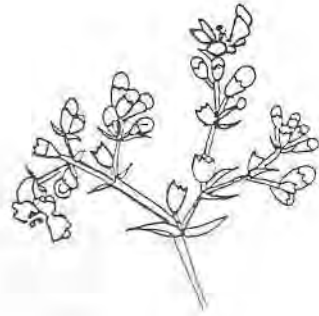


Indigenous

- Common names:** **Eng:** Meru oak; **Meru:** moru, muuru; **Swah:** mfuu.
- Ecology:** A valuable timber tree occurring in Kenya on the eastern slopes of Mt. Kenya, Meru District. Now planted elsewhere, e.g. in Tanzania on Mt. Kilimanjaro, 1,500-1,850 m. Locally common with *Commiphora eminii* on thicketed rocky hills in Shinyanga and Lake Victoria. It prefers deep sandy-loam soils.
- Uses:** Firewood, timber (furniture, veneer, panels), food (fruit), ornamental, mulch, windbreak.
- Description:** A tall deciduous tree up to 30 m high with a rounded crown and a clear straight bole. **BARK:** pale brown, with narrow vertical fissures, dark brown with age. **LEAVES:** **compound with 5 leaflets on long leaf stalks**, up to 25 cm long, leaflets light green above, pale green **and hairy beneath**. **FLOWERS:** small, in loose heads, about 1 cm long, creamy white, with one prominent mauve petal. **FRUIT:** rounded, about 1.5 cm across, green at first, becoming soft **and black** when ripe, the **hairy calyx remaining**. The inner nut usually has 1-2 seeds. Black fruit fall to the ground.
- Propagation:** Seedlings.
- Seed info.:** No. of seeds (nuts) per kg: about 3,000. Germination is low and sporadic, up to 40% after 9 weeks. Dry **Fruit**, then rub over a wire mesh to remove pulp. Dry in the shade.
- treatment:** not necessary, or soak in cold water for 24 hours.
- storage:** can retain viability for a long time if kept dry.
- Management:** A fairly fast-growing tree. Deciduous and produces a useful mulch of leaf litter. Coppicing.
- Remarks:** A useful tree for planting on a small scale on farms. **Can** also be grown in commercial plantations in humid **lower** highlands. The timber is hard and durable, very pale and similar to teak. The fruit are only eaten in emergency.

Vitex keniensis

Verbenaceae



Indigenous

Common names: **Bena:** msasati; Eng: smelly berry vitex; **Fipa:** mchinka, mkiinka, mfulu; Hehe: mfudululenga, msasati; **Nyam:** msungwe, msungwi mtalali; **Nyat:** msasati; **Nyir:** msasati, msassi; Rangi: mjumbau; **Suku:** mgukubi, msungwi; **Swah:** mfudumaji, mtalali; **Zigua:** mgobe; **Zinza:** mkakata, msungwa.

Ecology: A shrub or tree found at low to medium altitudes on stony outcrops and in deciduous woodland from Kenya and Zambia to South Africa. In Tanzania it is widespread from the coast to Tabora and the Lake Victoria islands, and common north of Kongwa. Also found in riverine forest near Kigoma, 0-1,600 m.

Uses: Firewood, food (fruit), bee forage, shade.

Description: A stiffly branched deciduous shrub or small tree to 8 m. **BARK:** rough grey to brown with **deep longitudinal fissures**. Branchlets densely covered with brown-red hairs. **LEAVES:** compound, opposite, with **5 leaflets**, sometimes 3 leaflets (lower 2 leaflets deformed or absent), widest above the middle, **abouro cm long, short soft hairs above but dense orange hairs below**, on hairy stalks to 9 cm. **FLOWERS:** few flowers in a branched head on **stalks to 6 cm**, each flower 5 mm, all violet-blue or all white with upper lip only blue; **petals twice as long as calyx lobes, ovary hairy**. **FRUIT:** rounded to oblong, 2-3 cm long, green at first, turning black when ripe, juicy. **Calyx lobes enlarge, cover the fruit but later open out or bend back.**

Propagation: Seedlings, direct sowing.

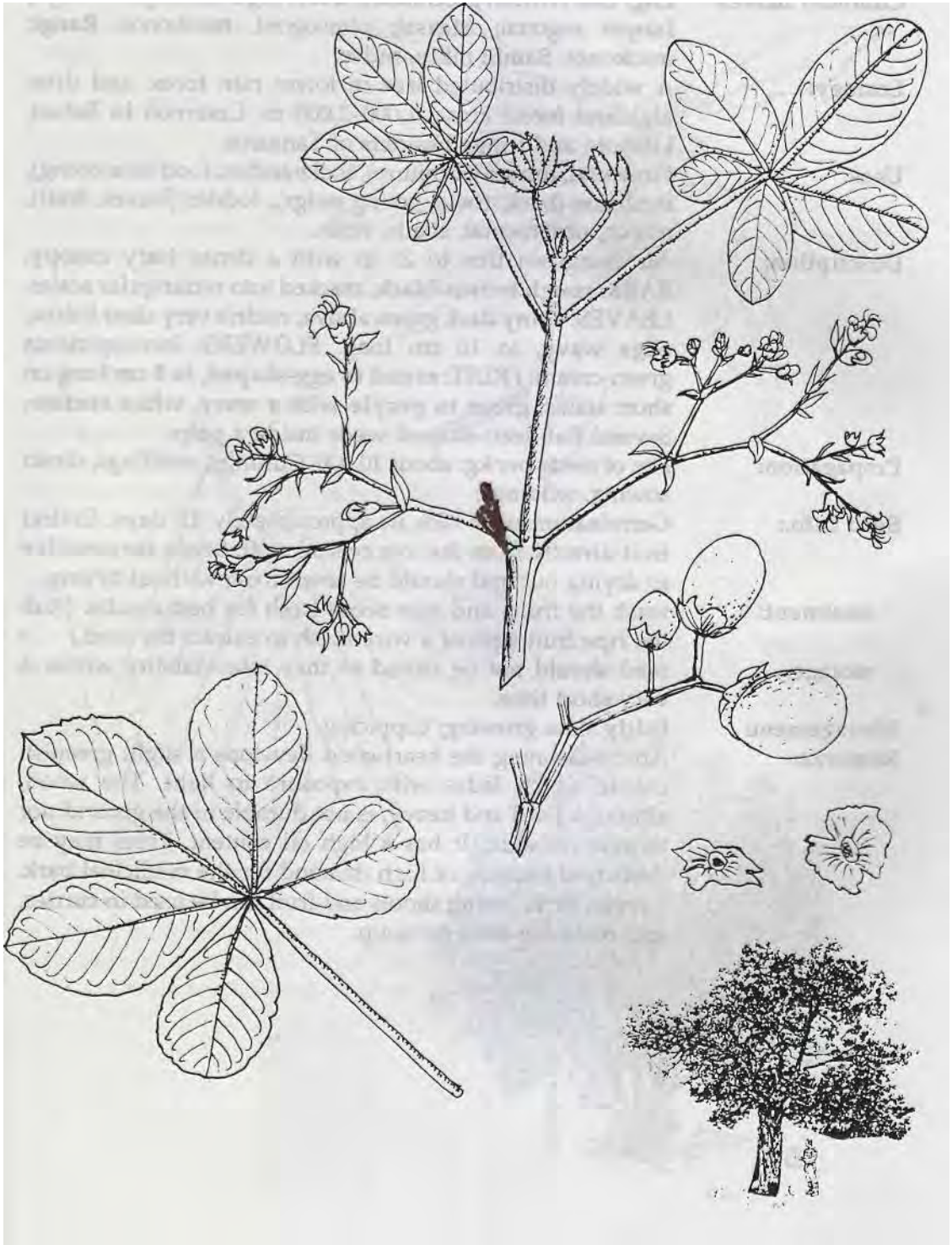
Seed **info.:** No. of seeds per kg: about 1,000. Hard seed coat which inhibits germination, but may be broken by forest fires. Germination is poor and sporadic.

treatment: Soak in cold water for 24 hours. Scratch the seed coat surface to increase water absorption.

storage: seeds can be stored for up to 12 months.

Management: Coppicing.

Remarks: This tree regenerates naturally from seed. Clearing land can help natural regeneration as the species is a light demander and prefers open areas. It is usually left in the farms for its fruit and shade. The fruit contains vitamin C and stains a dark purple-black. It has an unpleasant smell and persistent taste, but is much sought after in some areas.



Warburgia ugandensis (W. salutaris)

Canellaceae

Indigenous

- Common names: Eng: East African greenheart; Goro: sagonai; Haya: muhiya; Iraqw: sagonai; Maasai: olmsogoni, msokonoi; Rangi: msokonoi; Samb: mlifu, mdee.
- Ecology: A widely distributed tree in lower rain forest and drier highland forest areas, 1,000-2,000 m. Common in Babati, Lushoto and Iringa Districts of Tanzania.
- Uses: Firewood, timber (furniture), tool handles, food (seasoning), medicine (bark, roots, young twigs), fodder (leaves, fruit), mulch, ornamental, shade, resin.
- Description: An evergreen tree to 25 m with a dense leafy canopy. BARK: rough brown-black, cracked into rectangular scales. LEAVES: shiny dark green above, midrib very clear below, edge wavy, to 10 cm long. FLOWERS: inconspicuous green-cream. FRUIT: round to egg-shaped, to 5 cm long on short stalks, green to purple with a waxy, white surface. Several flat heart-shaped seeds inside a pulp.
- Propagation: No. of seeds per kg: about 10,000. Cuttings, seedlings, direct sowing, wildings.
- Seed info.: Germination over 80% in approximately 15 days. Collect fruit directly from the tree or shake off. Seeds are sensitive to drying out and should be sown fresh without drying, wash the fruits and sow seeds fresh for best results. (Rub the ripe fruit against a wire mesh to extract the seed.)
- treatment: seed should not be stored as they lose viability within a very short time.
- storage: seed should not be stored as they lose viability within a very short time.
- Management: Fairly slow growing; coppicing.
- Remarks: After seasoning the heartwood develops a slight greenish colour which fades with exposure to light. The wood, although hard and heavy, is not durable in the ground nor termite resistant. It has a high oil content. Trees may be destroyed because of high demand for the medicinal bark. Leaves, bark, young shoots and fruit can be used in curries, and roots are used for soup.



Xeroderris stuhlmannii

Papilionoideae

Indigenous

Common names: **Eng:** wing pod; Gogo: mnyinga; Nyam: munyenye; Nyat: mjimbua, mjohou; **Nyir.** munene; **Sand:** leba; **Suku:** njundu; **Swah:** mnyinga, mondogondo; **Zara:** mHINGI; **Zigua:** mnyinga, munyinga.

Ecology: A tree found in Senegal, Nigeria, Kenya and southwards to South Africa. It occurs in deciduous woodland and bushland particularly on well-drained soils, 100-1,650 m. In Tanzania common in all regions except highland areas.

Uses: Firewood, charcoal, utensils (mortars, stools, milk pots), carving, fodder (leaves, fruit), famine food (seeds), medicine (sap, roots), shade, red dye (sap).

Description: A medium or large deciduous tree, 6-10 m, with spreading rounded crown. **BARK:** grey or grey-brown, smooth to rough with longitudinal flakes exuding blood-red sap when slashed. **LEAVES:** compound with **4-9 pairs of leaflets**. The leaflets are dark green, crowded near the tips of branchlets, **when young covered with silky hairs**. **FLOWERS:** small, **white or greenish white, pea shaped**, profusely borne on many-branched flowering stalks. Buds rusty brown. **FRUIT:** **a large flat pod 9-18 cm long**, swollen over the seed cases and with **distinctive ridged vein** around the indehiscent pod. Outside this is a **hard wing up to 1 cm wide**.

Propagation: Seedlings, suckers.

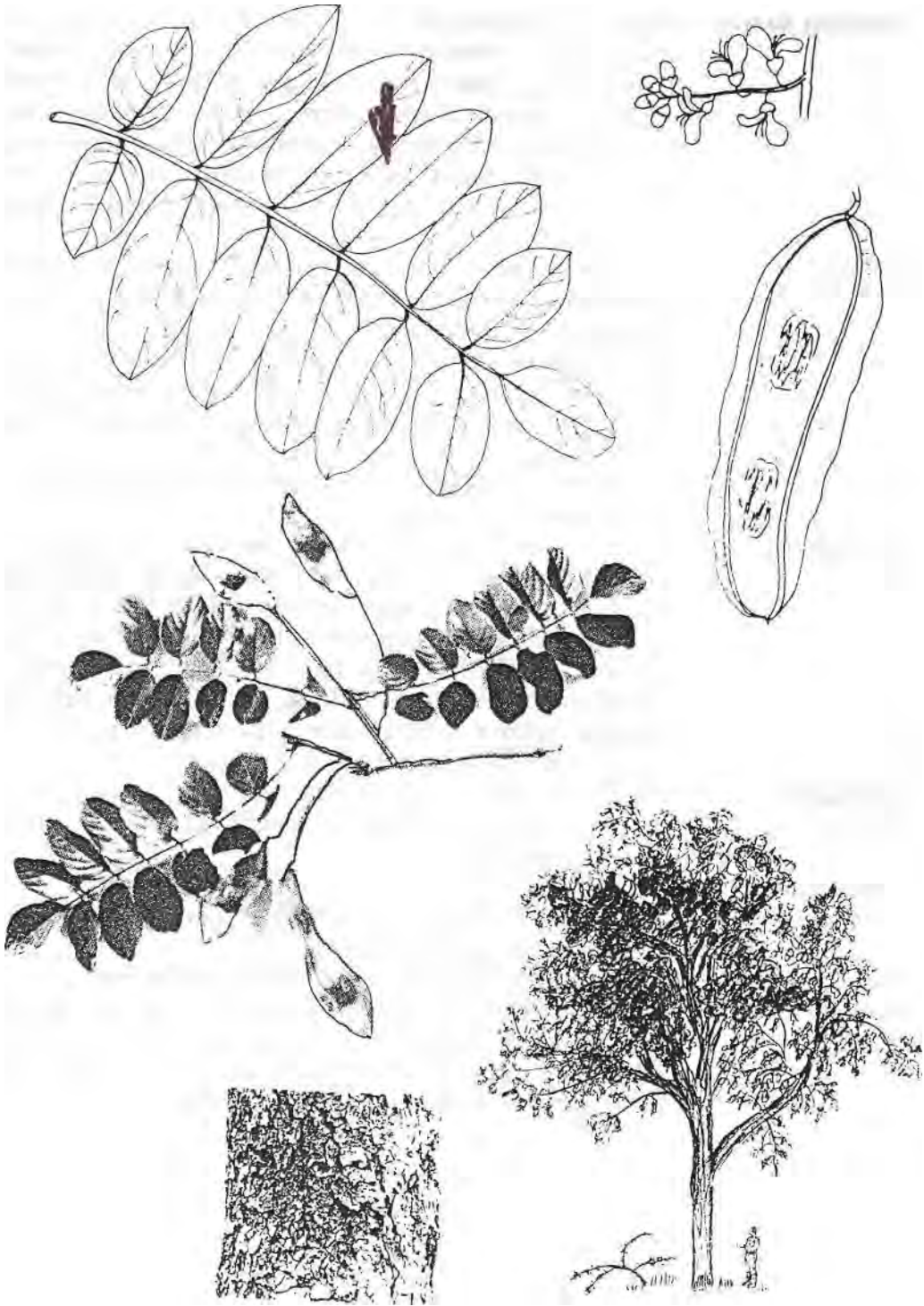
Seed info.: No. of seeds per kg: 3,500-5,000. Germination 40-70% after two weeks,

treatment: not necessary.

storage:

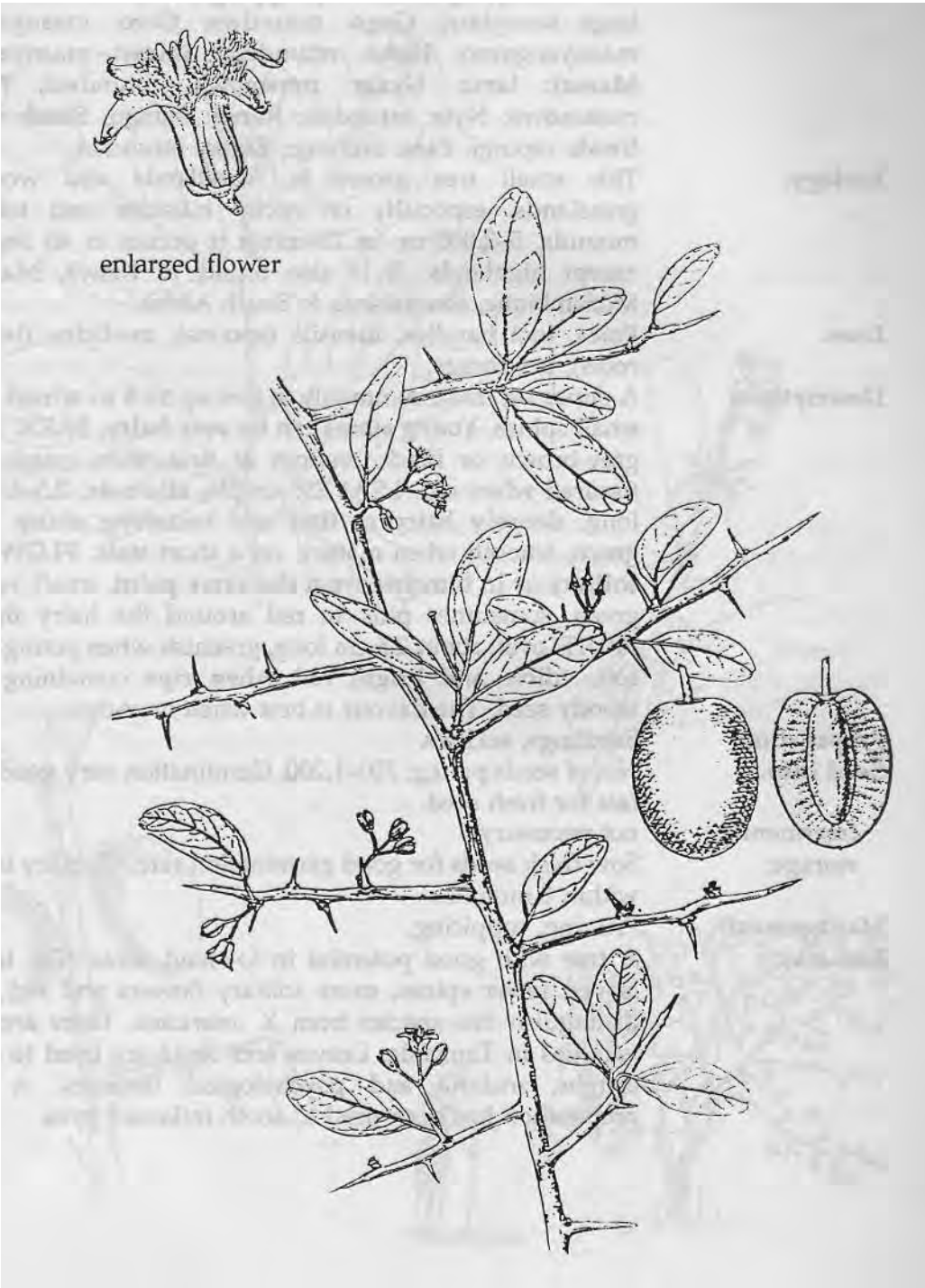
Management: Pruning, pollarding, coppicing.

Remarks: This tree has the synonym *Ostryoderris stuhlmannii*. It can grow in poor sandy soils and is drought resistant. **The seeds can only be eaten as famine food after long boiling as they are poisonous when raw. Both leaves and fruit are eaten by cattle and game, however. The red gum from the bark has been used for tanning. The red sap is used to treat wounds and the roots are used for stomach ache.**



Indigenous

- Common names:** **Bena:** mpingipingi; **Bende:** msantu; **Chag:** lama; **Eng:** wild plum; **Fipa:** mnembwa; **Gogo:** mtundwe; **Goro:** tarantu; **Hehe:** mingi, mtundwahi; **Iraqw:** mutuhu, tahhamanto, tarantu; **Maasai:** olama; **Mbug:** olamai, tarantu; **Nyam:** mnembwa mudo, mtundwa; **Samb:** mtundui; **Sangu:** mingi, mtundwahi; **Suku:** mpingi, **mtundwa;** **Swah:** mpingi, mtundakula; **Zara:** membwa, mHINGI, mpingi; **Zigua:** mtundwi.
- Ecology:** This is a pan-tropical tree species found in African savannah, America, and tropical Asia. In Tanzania **it** occurs in coastal, Rift Valley and northern areas in open sandy woodland, on stony slopes, scattered thorn bush, arid and semi-arid zones, 0-2,000 m. It is drought resistant. At the coast, seeds are collected in July-August, **but** it flowers and fruits throughout the year in other areas.
- Uses:** Firewood, tool handles, food (fruit), medicine (leaves, roots, bark), fodder, oil (seed).
- Description:** Usually a spiny shrub or a small tree up to 4 m, spines to 1 cm, thin and straight. **BARK:** brown-black small scales. **LEAVES:** alternate, **simple or tufts**, oblong to 2-4 cm long, blue-grey-green, **fold upwards along midrib**, tip round **or** notched. **FLOWERS:** very fragrant, small green-white in small branched clusters. **FRUIT:** oval to 2.5 cm, **thin skin usually yellow, occasionally pink-red, pulp sour but** refreshing, One large seed, containing oil.
- Propagation:** Seedlings, protect natural regeneration.
- Seed info.:** No. of seeds per kg: 700-1,400. Germination very good **and** fast for fresh seed.
- treatment:** not necessary.
- storage:** seeds can be stored for a short period (only 3 months). **Sow** fresh seed for good germination rate.
- Management:** Pruning, coppicing. Protect natural regeneration.
- Remarks:** A useful tree for arid and semi-arid areas. The wood **is** heavy, hard and durable. The seed contains a non-drying oil suitable for soap and lubrication—has been used as a body and hair oil and for softening leather.



Ximenia caffra (X. americana var. caffra)

Olacaceae

Indigenous

Common names: **Bara:** maanyangu; **Bena:** mpingipingi; **Bende:** msantu; **Eng:** large sourplum; **Gogo:** mtundwe; **Goro:** maanyangu, maanyangumo; **Hehe:** mtundwa; **Iraqw:** maanyangu; **Maasai:** lama; **Nyam:** mnembwa, mtundwa; **Nyat** mutundwe; **Nyir:** mtundwi; **Rangi:** mjingu; **Sand:** xaya; **Swah:** mpingi; **Zara:** muhingi; **Zigua:** mtundwi.

Ecology: This small tree grows in woodlands and wooded grasslands, especially on rocky hillsides and termite mounds, 5-2,000 m. In Tanzania it occurs in all regions except highlands. It is also found in Kenya, Malawi, Mozambique, southwards to South Africa.

Uses: Poles, tool handles, utensils (spoons), medicine (leaves, roots), bee forage.

Description: A shrub or, more commonly, a tree up to 8 m armed with small spines. **Young stems can be very hairy.** **BARK:** grey, grey-brown or black, smooth at first, then rough and fissured when old. **LEAVES:** simple, alternate, 2.5-6.0 cm long, **densely hairy at first** and becoming **shiny dark green**, smooth when mature, on a short stalk. **FLOWERS:** **solitary or in bunches from the same point**, small, white-green, sometimes pink to red around the hairy throat. **FRUIT:** oval, about 2.5 cm long, greenish when young then soft, edible and **bright red when ripe** containing one woody seed. The flavour is best when over-ripe.

Propagation: Seedlings, suckers.

Seed info.: No. of seeds per kg: 700-1,200. Germination very good and fast for fresh seed,

treatment: not necessary.

storage: Sow fresh seeds for good germination rate. Viability is lost within 3 months.

Management: Pruning, coppicing.

Remarks: A tree with good potential in lowland areas. The larger leaves, fewer spines, more solitary flowers and red fruit distinguish this species from *X. americana*. There are two varieties in Tanzania. Leaves and roots are used to treat coughs, malaria and psychological illnesses. A leaf preparation has been used to sooth inflamed eyes.

Ximenia caffra (X. americana var. caffra)

Olacaceae



Zanthoxylum chalybeum

Rutaceae

Indigenous

Common names: **Arusha:** oluisuki; **Bara:** wapkan; **Eng:** knobwood; **Fiome:** morungi; **Fipa:** popwe; **Goro:** morungi; **Haya:** entare yeirungo; **Lugu:** mhunungu; **Mbug:** molongo; **Rangi:** mulungu; **Swah:** mjafari; **Zara:** mnungu.

Ecology: A deciduous tree of medium to low altitudes in dry woodland or grassland, often on termite mounds, from Ethiopia to Southern Africa, 0-1,500 m.

Uses: Firewood, utensils (spoons, combs), carving, food (leaves), medicine (leaves, bark, roots), stamps from cork.

Description: A spiny deciduous shrub or tree to 8 m, the crown rounded but open. The bole has characteristic **large, conical woody knobs with sharp prickles**. **BARK:** pale grey smooth, **dark scales and prickles protect buds**. **LEAVES:** compound, a strong **lemon smell if crushed, the leaf stalk with hooked prickles below**, 6-9 pairs of shiny leaflets. **FLOWERS:** yellow-green in short sprays below leaves on new branchlets. **FRUIT:** **red-brown-purple, like berries**, open to release **shiny black seeds**.

Propagation: Seedlings, wildings.

Seed info.: No. of seeds per kg: about 30,000.

treatment: not necessary.

storage: short lived; lose viability within a few weeks.

Management: The wood is of little value.

Remarks: *Zanthoxylum holtzianum* grows with this species all along the coast into Somalia and can grow on coral, 0-230 m. It is very similar but smaller, sometimes a climber. It is used for carving and for medicine.



Ziziphus mauritiana

Rhamnaceae

South-East Asia

Common names: **Eng:** geb, Indian jujube; **Hehe:** mtanula; **Nyam:** kagowole, mgugunu; **Sangu:** mtanula; **Suku:** mgugunu; **Swah:** mkunazi.

Ecology: This tree is now widely naturalized in the tropics, including the Mediterranean and Africa. It has a strongly developed root system and does best in areas with high a watertable. In Tanzania it is a common coastal tree, 0-1,400 m.

Uses: Firewood, charcoal, timber (beds, dhow ribs), poles, utensils (bows, arrows), carving, fodder (leaves, fruit), bee forage, shade, soil conservation, resin, gum, windbreak, live fence, tannin, dye.

Description: A much-branched, **spiny tree**, small, but may reach 7 m, drooping angular branches, **crown rounded**, often forming thickets. **BARK:** grey, branches with curved **thorns**. **LEAVES:** alternate, shiny above, hairy white below, thin, three veins from the base, rather small **but** up to 8 cm, **leaf base rounded and equal sided**. **FLOWERS:** small yellow-green, in clusters beside leaves, on hairy stalks. **FRUIT:** **rounded 1-2 cm**, shiny yellow then **red-brown**, pulp edible, **two seeds in a large stone**.

Propagation: Seedlings, direct sowing, root suckers, cuttings.

Seed info.: No. of seeds per kg: 430-2,000. Germination rates often low.

treatment:

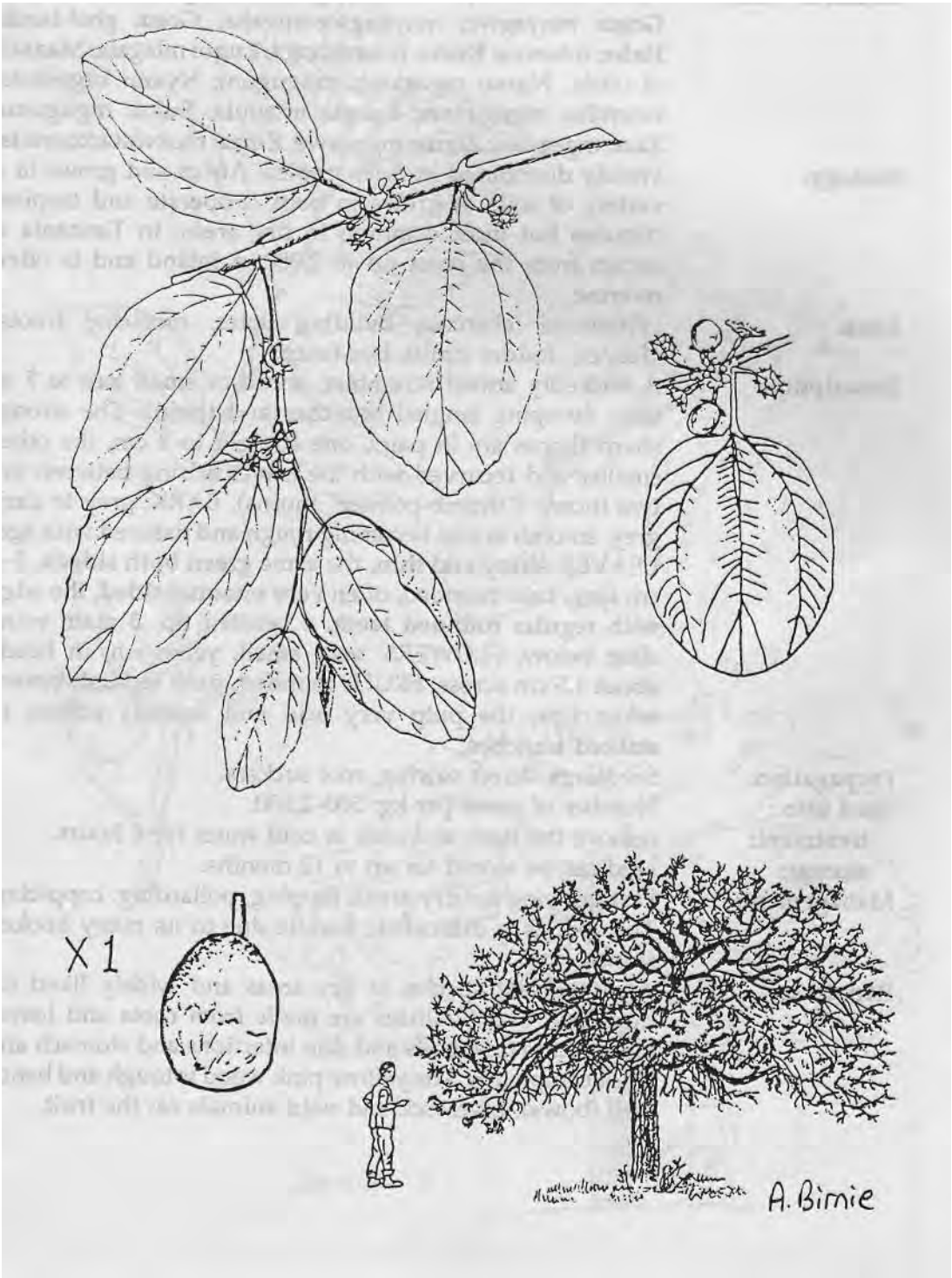
soak in cold water, crack hard seed cover.

storage:

seed can be stored for up to a year, after which viability starts to drop gradually.

Management: Fast growing for dry areas; lopping, pollarding, pruning, coppicing.

Remarks: A very important tree for dry areas because of its many uses. However, many parasites attack the leaves and fruits.



Ziziphus mucronata

Rhamnaceae

Indigenous

Common names: **Arusha:** oloilahi; **Bende:** kagobole; **Eng:** buffalo thorn; **Gogo:** mnyagwe, mnyangwe-mwaha; **Goro:** ghal-landi; **Hehe:** mtanula; **Kuria:** msarakanga; **Lugu:** mlagala; **Maasai:** ol oilale; **Nguu:** mgagawe, muguguni; **Nyam:** kagowole, kalembo, mgugunwa; **Sangu:** mtanula; **Suku:** mgugunu; **Zara:** mgegewa; **Zigua:** mgagawe; **Zinza:** mukwatanzumula.

Ecology: Widely distributed in drier tropical Africa and grows in a variety of soils. It grows in both temperate and tropical climates but most common in dry areas. In Tanzania it occurs from the coast up to 2,000 m inland and is often riverine.

Uses: Firewood, charcoal, building poles, medicine (roots, leaves), fodder (fruit), live fence.

Description: A wickedly armed scrambler, shrub or small tree to 7 m with drooping tangled branches and thorns. The strong, sharp thorns are in pairs, one straight to 2 cm, the other smaller and recurved with the leaves arising between the two thorns ("thumb-pointer" thorns). **BARK:** grey to dark grey, smooth at first becoming rough and fissured with age. **LEAVES:** **shiny and thin**, the **same green both** sideds, 3-6 cm long, base rounded, often very **unequal sided**, the edge with **regular rounded teeth**, a pointed tip, 3 main veins clear below. **FLOWERS:** very small, yellowish, in heads about 1.5 cm across. **FRUIT:** rounded, **dark reddish-brown** when ripe, the pulp very acid and scarcely edible, **in stalked bunches**.

Propagation: Seedlings, direct sowing, root suckers.

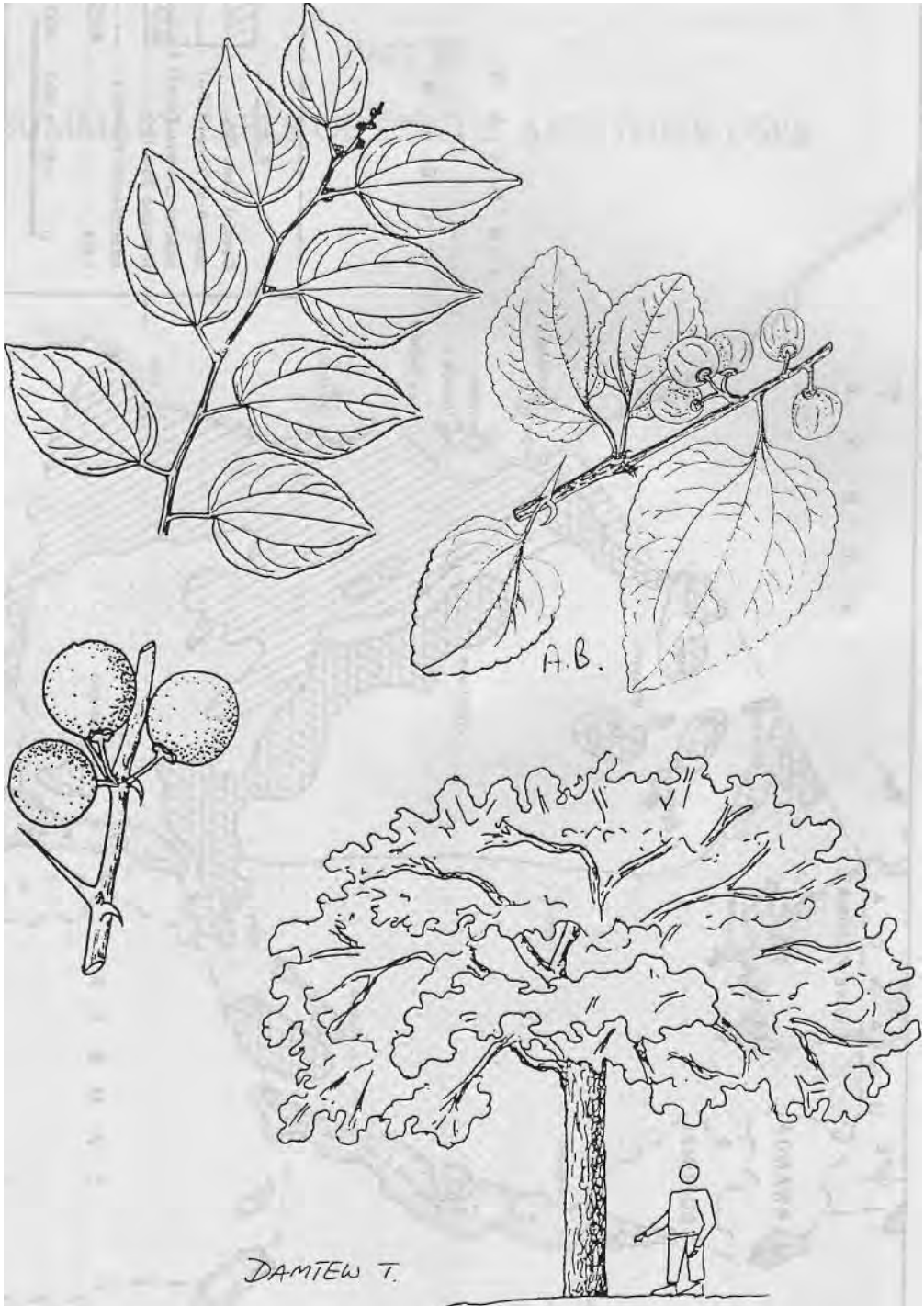
Seed info.: Number of seeds per kg: 500-2,000.

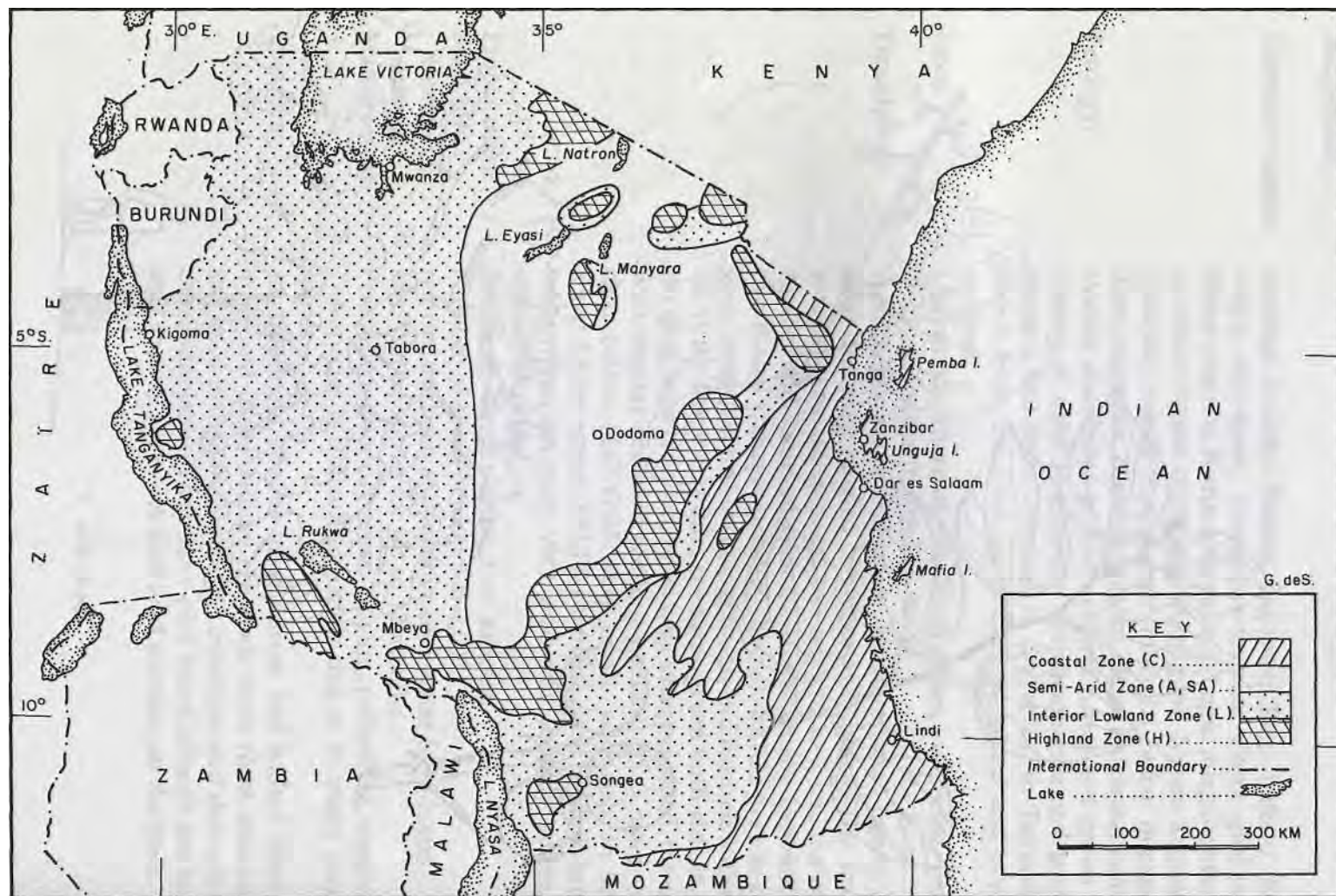
treatment: remove the flesh and soak in cold water for 6 hours.

storage: seed can be stored for up to 12 months.

Management: Fast growing for dry areas; lopping, pollarding, coppicing. The species is difficult to handle due to its many hooked spines.

Remarks: An important species in dry areas and widely liked for medicinal use. Poultices are made from roots and leaves and used to treat boils and skin infections and stomach and chest complaints. The yellow-pink wood is tough and bends well (bows). Livestock and wild animals eat the fruit.





Map 4. The main agro-ecological zones of Tanzania

PART III

SUMMARY TABLE OF SPECIES AND THEIR USES

	Wood										Food					Fodder	Environmental					Other Uses						AGRO-ECOLOGICAL ZONES														
	Firewood	Charcoal	Timber / Furniture	Poles/Posts	Flooring / Panelling	Roof shingles / Beehives	Veneer / Plywood	Tools/Tool handles	Carvings / Utensils	Pulp / Fibreboard	Boat building	Fruit / Food / Nut	Vegetable	Seasoning / Flavouring	Drink / Soup	Oil / Edible gum	Jam / Syrup	Medicine / Stimulant	Fodder	Bee forage	Shade	Ornamental	Mulch	Nitrogen fixation	Soil conservation / Dune fixation	Soil improvement	Windbreak		Fibre / Weaving / Rope	Thatch / Roofing / Mats	Resin / Gum / Glue / Latex	Basketry	Tannin / Dye	Toxin / Insecticide	Cosmetic / Soap / Perfume	Live fence / Dry fencing	Ceremonial / Boundary marking	Toothbrushes / Stuffing				
<i>Acacia albid</i>	x	x	x	x				x						x				x	x			x																			A,C	
<i>Acacia auriculiformis</i>	x	x					x		x												x		x	x									x								C	
<i>Acacia hockii</i>	x																											x													S,A,L	
<i>Acacia lahai</i>	x	x	x	x																			x																		S,A,L	
<i>Acacia mearnsii</i>	x	x		x			x											x		x			x					x	x												H	
<i>Acacia melanoxylon</i>	x	x	x	x			x	x														x	x																		S,A,L,H	
<i>Acacia mellifera</i>	x	x						x										x	x	x																					S,A,L	
<i>Acacia nilotica</i>	x	x		x			x	x										x	x	x																					C,S,A,L	
<i>Acacia polyacantha</i>	x		x	x			x											x	x																						C,S,A,L,H	
<i>Acacia saligna</i>	x			x																	x																				H	
<i>Acacia senegal</i>	x	x		x			x											x	x																						S,A,L	
<i>Acacia seyal</i>	x	x		x														x	x	x																						S,A,L
<i>Acacia tortilis</i>	x	x	x	x																	x	x	x																		S,A,L	
<i>Acacia xanthophloea</i>	x	x		x														x	x	x																					SA	
<i>Acokanthera schimperi</i>							x											x																							ii	
<i>Acrocarpus fraxinifolius</i>	x		x		x																																				L,H	
<i>Adansonia digitata</i>							x								x			x	x	x																					C,SA	
<i>Adenanthera pavonina</i>																																									C,SA	
<i>Azelia quanzenis</i>			x				x																																		SA,L	

USEFUL TREES AND SHRUBS FOR TANZANIA

	Wood								Food				Fodder	Environmental				Other Uses								AGRO-ECOLOGICAL ZONES																	
	Firewood	Charcoal	Timber / Furniture	Poles/Posts	Flooring / Panelling	Roof shingles / Beehives	Veneer / Plywood	Tools/Tool handles	Carvings / Utensils	Pulp / Fibreboard	Boat building	Fruit / Food / Nut	Vegetable	Seasoning / Flavouring	Drink / Soup	Oil / Edible gum	Jam / Syrup	Medicine / Stimulant	Fodder	Bee forage	Shade	Ornamental	Mulch	Nitrogen fixation	Soil conservation / Dune fixation		Soil improvement	Windbreak	Fibre / Weaving / Rope	Thatch / Roofing / Mats	Resin / Gum / Glue / Latex	Basketry	Tannin / Dye	Toxin / Insecticide	Cosmetic / Soap / Perfume.	Live fence / Dry fencing	Ceremonial / Boundary marking	Toothbrushes / Stuffing					
<i>Agave sisalana</i>																											x	x											C,S,A				
<i>Albizia amara</i>	x	x	x	x			x										x	x				x	x	x	x															C,S,A,L			
<i>Albizia gummifera</i>	x		x			x		x									x	x	x			x	x	x	x					x										L,H			
<i>Albizia lebbeck</i>	x	x	x	x	x												x	x	x			x	x	x	x					x											C,S,A,L,H		
<i>Albizia saman</i>																																										SA	
<i>Albizia schimperiana</i>	x	x	x				x										x		x			x	x	x																	SA		
<i>Albizia versicolor</i>	x	x	x			x		x	x		x							x							x																	C,L,SA	
<i>Anacardium occidentale</i>	x	x		x							x							x				x	x							x												C,S,A,L	
<i>Annona cherimola</i>											x																															H	
<i>Annona muricata</i>											x																															SA,L,C	
<i>Annona senegalensis</i>											x							x	x																							C,S,A,L,H	
<i>Annona squamosa</i>											x																																C,S,A
<i>Artocarpus heterophyllus</i>	x		x								x							x	x			x									x												C,L,H
<i>Arundinaria alpina</i>				x				x	x		x												x			x																	H
<i>Azadirachta indica</i>																			x	x			x	x			x																C,S,A,L
<i>Azanza garckena</i>	x	x	x				x	x			x								x	x									x														SA,L,H
<i>Balanites aegyptiaca</i>	x	x	x	x				x	x									x													x												C,S,A,L
<i>Bauhinia petersiana</i>											x								x																								L
<i>Bauhinia variegata</i>	x										x																																C,S,A,L

	Wood										Food				Fodder		Environmental					Other Uses						AGRO-ECOLOGICAL ZONES												
	Firewood	Charcoal	Timber / Furniture	Poles/Posts	Flooring / Panelling	Roof shingles / Bechives	Veneer / Plywood	Tools/Tool handles	Carvings / Utensils	Pulp / Fibreboard	Boat building	Fruit / Food / Nut	Vegetable	Seasoning / Flavouring	Drink / Soup	Oil / Edible gum	Jam / Syrup	Medicine / Stimulant	Fodder	Bee forage	Shade	Ornamental	Mulch	Nitrogen fixation	Soil conservation / Dune fixation	Soil improvement	Windbreak		Fibre / Weaving / Rope	Thatch / Roofing / Mats	Resin / Gum / Glue / Latex	Basketry	Tannin / Dye	Toxin / Insecticide	Cosmetic / Soap / Perfume.	Live fence / Dry fencing	Ceremonial / Boundary marking	Toothbrushes / Stuffing		
<i>Berchemia discolor</i>			x	x							x			x			x	x	x	x	x					x			x		x							C.L		
<i>Bersama abyssinica</i>	x		x			x		x									x				x	x																	L,H	
<i>Bombax rhodognaphalon</i>											x											x																	L,H	
<i>Borassus aethiopum</i>			x	x				x	x		x				x	x		x	x									x	x										C,SA	
<i>Boscia salicifolia</i>	x			x													x	x			x	x																	C,L	
<i>Brachylaena huillensis</i>	x	x	x	x				x	x																														C,SA,L	
<i>Brachystegia bussei</i>	x	x	x					x									x	x	x									x		x									SA,L	
<i>Brachystegia spiciformis</i>	x	x	x			x		x									x	x	x	x								x											SA,L	
<i>Breonadia salicina</i>	x		x	x													x																						L,H	
<i>Bridelia micrantha</i>	x	x	x	x				x			x						x	x		x		x																	C,SA,L,H	
<i>Burkea africana</i>	x	x	x	x				x									x	x	x									x											L	
<i>Cadaba farinosa</i>	x										x	x					x	x																					SA,L	
<i>Caesalpinia decapetala</i>																	x		x																					II
<i>Caesalpinia pulcherrima</i>																	x																							C
<i>Cajanus cajan</i>	x										x								x	x			x	x	x	x													C,SA,L,H	
<i>Calliandra calothyrsus</i>	x			x														x	x	x			x	x	x	x	x													C,L,H
<i>Callistemon citrinus</i>	x	x																		x							x												C,L,H	
<i>Callitris robusta</i>			x	x				x																															H	
<i>Calodendrum capense</i>	x	x	x	x				x												x	x	x	x			x													II	

	Wood										Food					Fodder		Environmental					Other Uses					AGRO-ECOLOGICAL ZONES													
	Firewood	Charcoal	Timber / Furniture	Poles/Posts	Flooring / Panelling	Roof shingles / Beehives	Veneer / Plywood	Tools/Tool handles	Carvings / Utensils	Pulp / Fibreboard	Boat building	Fruit / Food / Nut	Vegetable	Seasoning / Flavouring	Drink / Soup	Oil / Edible gum	Jam / Syrup	Medicine / Stimulant	Fodder	Bee forage	Shade	Ornamental	Mulch	Nitrogen fixation	Soil conservation / Dune fixation	Soil improvement	Windbreak		Fibre / Weaving / Rope	Thatch / Roofing / Mats	Resin / Gum / Glue / Latex	Bakery	Tannin / Dye	Toxin / Insecticide	Cosmetic / Soap / Perfume	Live fence / Dry fencing	Ceremonial / Boundary marking	Toothbrushes / Stuffing			
<i>Cordia sinensis</i>	x		x								x							x	x	x																			C,SA,H		
<i>Cordyla africana</i>			x	x		x		x	x			x									x																			C,L	
<i>Crotalaria grandibracteata</i>																			x	x		x			x															C,SA,L,H	
<i>Croton macrostachyus</i>	x		x	x				x										x	x	x																				H	
<i>Croton megalocarpus</i>	x	x	x	x														x		x	x																			L,H	
<i>Cupressus lusitanica</i>	x		x	x																	x	x					x													L,H	
<i>Cussonia kirkii</i>			x					x										x																						L,H	
<i>Cyphomandra betacea</i>											x	x																												H	
<i>Dalbergia melanoxylon</i>	x		x						x									x	x	x			x	x																C,SA,L	
<i>Dalbergia nitidula</i>	x	x		x				x	x																															C,SA,L	
<i>Dalbergia sissoo</i>	x	x	x	x				x	x									x	x	x	x																			C	
<i>Delonix regia</i>	x																	x		x	x																			C,SA,L,H	
<i>Dichrostachys cinerea</i>	x	x		x				x										x	x	x							x													C,SA,L,H	
<i>Diospyros mespiliformis</i>	x	x	x					x			x							x		x	x																				C,SA,L
<i>Dodonaea angustifolia</i>	x	x		x				x										x		x																					SA,H
<i>Dombeya rotundifolia</i>	x																	x	x	x							x													SA,L,H	
<i>Dovyalis caffra</i>											x										x																				H
<i>Dracaena usambarensis</i>																		x	x																						H
<i>Ekebergia capensis</i>	x		x	x				x										x	x	x	x																			SA,L,H	

	Wood										Food					Fodder		Environmental						Other Uses						AGRO-ECOLOGICAL ZONES										
	Firewood	Charcoal	Timber / Furniture	Poles/Posts	Flooring / Panelling	Roof shingles / Beehives	Veneer / Plywood	Tools/Tool handles	Carvings / Utensils	Pulp / Fibreboard	Boat building	Fruit / Food / Nut	Vegetable	Seasoning / Flavouring	Drink / Soup	Oil / Edible gum	Jam / Syrup	Medicine / Stimulant	Fodder	Bee forage	Shade	Ornamental	Mulch	Nitrogen fixation	Soil conservation / Dune fixation	Soil improvement	Windbreak	Fibre / Weaving / Rope	Thatch / Roofing / Mats		Resin / Gum / Glue / Latex	Basketry	Tannin / Dye	Toxin / Insecticide	Cosmetic / Soap / Perfume.	Live fence / Dry fencing	Ceremonial / Boundary marking	Toothbrushes / Stuffing		
<i>Entada abyssinica</i>	x																x			x			x	x															L,H	
<i>Eriobotrya japonica</i>	x			x				x			x					x			x	x	x	x														x			L,H	
<i>Erythrina abyssinica</i>	x				x			x									x	x	x			x	x	x		x													C,S,A,L,II	
<i>Eucalyptus camaldulensis</i>	x	x	x	x		x													x	x	x																			C,S,A,L
<i>Eucalyptus citriodora</i>	x	x	x	x													x		x																					C,S,A,L
<i>Eucalyptus globulus</i>	x	x	x	x	x	x											x		x							x														H
<i>Eucalyptus saligna</i>	x	x	x	x		x											x		x																					H
<i>Eucalyptus tereticornis</i>	x		x	x															x																					C,S,A,L
<i>Euclea divinorum</i>	x		x				x	x										x																						SA,L,H
<i>Euphorbia tirucalli</i>	x																	x																						SA,L
<i>Fagaropsis angolensis</i>	x		x		x																																			H
<i>Faurea saligna</i>	x	x	x	x													x		x																					SA,L,H
<i>Ficus sycomorus</i>	x				x			x			x							x				x	x		x	x														L
<i>Ficus thonningii</i>																	x	x				x	x	x				x		x										SA,L,H
<i>Flacourtia indica</i>	x		x				x				x							x	x																					SA,L,II
<i>Flemingia macrophylla</i>	x						x											x	x				x	x																H
<i>Fraxinus pennsylvanica</i>	x		x	x														x	x																					SA,L,H
<i>Garcinia livingstonei</i>							x				x							x	x						x															C,S,A,L,H
<i>Gliricidia sepium</i>	x	x		x														x	x																					C,L,H

	Wood										Food			Fodder	Environmental					Other Uses					AGRO-ECOLOGICAL ZONES																	
	Firewood	Charcoal	Timber / Furniture	Poles/Posts	Flooring / Panelling	Roof shingles / Beehives	Veneer / Plywood	Tools/Tool handles	Carvings / Utensils	Pulp / Fibreboard	Boat building	Fruit / Food / Nut	Vegetable	Seasoning / Flavouring	Drink / Soup	Oil / Edible gum	Jam / Syrup	Medicine / Stimulant	Fodder	Bee forage	Shade	Ornamental	Mulch	Nitrogen fixation		Soil conservation / Dune fixation	Soil improvement	Windbreak	Fibre / Weaving / Rope	Thatch / Roofing / Mats	Resin / Gum / Glue / Latex	Basketry	Tannin / Dye	Toxin / Insecticide	Cosmetic / Soap / Perfume	Live fence / Dry fencing	Ceremonial / Boundary marking	Toothbrushes / Stuffing				
<i>Pithecellobium dulce</i>	x		x	x							x			x				x	x	x	x			x		x													C,SA,L			
<i>Podocarpus falcatus</i>	x		x	x		x											x			x	x																			II		
<i>Podocarpus latifolius</i>	x		x	x		x											x			x	x																			II		
<i>Podocarpus usambarensis</i>	x		x	x				x	x													x																		II		
<i>Polyscias fulva</i>	x		x			x	x										x					x																		SA,L,H		
<i>Prosopis chilensis</i>	x	x	x	x							x							x	x	x	x	x						x												C,L		
<i>Prosopis juliflora</i>	x	x	x	x					x		x							x	x	x					x	x		x													C,L	
<i>Prunus africana</i>	x	x	x	x					x								x		x	x	x																				H	
<i>Prunus persica</i>	x										x											x																			SA,H	
<i>Pseudolachnostylis maprouneifolia</i>	x	x	x														x	x		x																					C,SA,L,H	
<i>Psidium guajava</i>	x			x				x			x					x	x								x																L,H	
<i>Ptaeroxylon obliquum</i>	x		x														x																								H	
<i>Pterocarpus angolensis</i>	x	x	x	x				x	x	x							x	x	x						x	x															L	
<i>Rauvolfia caffra</i>	x	x				x			x								x		x																						L,H	
<i>Rhus natalensis</i>	x	x	x					x			x						x																								SA,L,H	
<i>Ricinus communis</i>																																										C,SA,L,H
<i>Salvadora persica</i>	x										x						x	x								x																SA,L,H
<i>Schinus molle</i>	x	x		x													x																									SA,L,H
<i>Sclerocarya birrea</i>	x		x			x					x																															SA,L,H

	Wood										Food				Fodder		Environmental					Other Uses						AGRO-ECOLOGICAL ZONES												
	Firewood	Charcoal	Timber / Furniture	Poles/Posts	Flooring / Panelling	Roof shingles / Beehives	Veneer / Plywood	Tools/Tool handles	Carvings / Utensils	Pulp / Fibreboard	Boat building	Fruit / Food / Nut	Vegetable	Seasoning / Flavouring	Drink / Soup	Oil / Edible gum	Jam / Syrup	Medicine / Stimulant	Fodder	Bee forage	Shade	Ornamental	Mulch	Nitrogen fixation	Soil conservation / Dune fixation	Soil improvement	Windbreak		Fibre / Weaving / Rope	Thatch / Roofing / Mats	Resin / Gum / Glue / Latex	Basketry	Tannin / Dye	Toxin / Insecticide	Cosmetic / Soap / Perfume.	Live fence / Dry fencing	Ceremonial / Boundary marking	Toothbrushes / Stuffing		
<i>Tectona grandis</i>	x		x	x						x																														C,S,A,L
<i>Terminalia brownii</i>	x	x	x	x			x	x									x	x			x	x																		C,SA
<i>Terminalia catappa</i>			x							x	x										x	x																		C,L
<i>Terminalia sericea</i>	x	x	x	x			x										x		x									x												SA,L,C
<i>Terminalia spinosa</i>	x	x	x	x				x																																C,S,A,L
<i>Thevetia peruviana</i>																	x				x	x			x															L
<i>Tipuana tipu</i>	x	x	x	x														x	x	x	x																			L,H
<i>Treculia africana</i>	x		x								x							x			x																			L
<i>Trema orientalis</i>	x	x		x														x	x	x	x	x																		C,S,A,L,H
<i>Trichilia emetica</i>	x		x	x			x			x							x	x	x	x	x																			C,S,A,L,H
<i>Uapaca kirkiana</i>	x	x	x	x							x						x		x	x																				SA,L
<i>Vangueria infausta</i>	x			x			x										x																							SA,L,H
<i>Vangueria madagascariensis</i>	x	x		x			x	x			x						x		x																					SA,L,H
<i>Vangueriopsis lanciflora</i>	x	x						x		x							x		x																					L
<i>Vernonia myriantha</i>	x																x																							H
<i>Vitex doniana</i>	x	x	x	x							x						x	x	x	x																				SA,L,H
<i>Vitex keniensis</i>	x		x				x				x																													H
<i>Vitex mombassae</i>	x										x																													C,L
<i>Warburgia ugandensis</i>	x		x				x										x	x																						SA,H

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The Swedish International Development Authority, SIDA, has supported rural development programmes in countries in Eastern Africa since the 1960's. Many of these programmes have over the years developed a clear environmental profile. It has been recognized that conservation of soil, water and vegetation must form the basis for sustainable utilization of land. Hence the importance of integrating conservation in smallholder farming systems.

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RSCU organizes training courses, workshops and study tours, prepares and distributes manuals and textbooks, gives technical advice, facilitates exchange of expertise and initiates pilot activities for the development of new knowledge, techniques and approaches. The regional mandate includes Eastern Africa defined as Eritrea, Ethiopia, Kenya, Tanzania, Uganda and Zambia.

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ISBN 9966-896-16-3