



The market for organic products is growing so fast that farmers are unable to meet the demand.

Fast growth for Kenya's organic markets

TOF - Increasing awareness of Kenyan consumers on the benefits of organic food has led to a huge demand for organic products. Lack of certified organic products has, however, continued to slow down the growth of the organic farming subsector. Although the country has more than 200,000 organic farmers, most of whom have been trained by NGOs on all aspects of organic production, a

report from the Kenya Organic Agriculture Network (KOAN) shows that only 13,000 farmers have undergone certification while the rest engage in non-certified organic production. This shows that there is a huge gap that needs to be addressed if the country is to meet the demand for organic products.

More than 85 per cent of organic produce in Kenya is exported mainly to Europe, the Middle East, Asia and the Far East. Demand for organic products is growing, and is largely driven by high-end consumers consisting of well-educated and financially independent Kenyans from the middle class segment who are

increasingly becoming aware of the benefits of healthy eating. In addition, tourists and expatriate community consume 65 per cent of the organic products sold in Kenya.

Organic farmers could greatly increase their incomes if they are well supported especially in certification. They can greatly benefit from the good prices offered for organic products, which ranges between 30-40 per cent above prices of the conventional produce. It would also remove the problem of middlemen since organic produce is delivered directly to the market because of verification requirements.

TOF has new website

To make our website more interactive and farmer friendly, the TOF team has redesigned the website www.theorganicfarmer.org. Visitors to the site can not only read articles on different farming topics and download monthly copies of the magazine, but can also discuss the various topics with members of other farmers groups. They can ask questions and receive answers from the TOF team or other readers. They can also listen to TOF Radio shows, watch farm videos and even download them to learn different organic practices. Through

the site, farmers can also receive validated information, know about upcoming events such as field days, exhibitions and ASK shows. Farmers will also be able to share content across different media platforms such as facebook and twitter. We hope visitors will find the site useful to meet their farming needs.

Do you want to reach us?

Farmers can get in touch with members of the TOF team through the following numbers:
Direct Calls - 0717 403 900,
0717 551 129
SMS- 0715 916 136

Dear farmers,

Many farmers are currently preparing land especially in Central and Eastern parts of Kenya for the second season maize while those in Western and parts of the Rift Valley are already harvesting maize and beans planted during the long rains. For farmers in other areas it is planting time as they take advantage of the short rains. But overall, the country faces the possibility of an acute shortage of maize next year due to the expected reduced harvest this year. Already many parts of the country have had a long spell of drought leading to crop failure.

Some farmers in maize growing areas have a tendency to sell their maize as green maize. However, this practice seems to be very wasteful because much of the money the farmers make is often used on non-productive activities such as ceremonies and merry making. It is common to see the same farmers buying maize usually in small tins and at higher prices for their families later, after selling all the maize. This kind of situation compromises household food security and perpetuates poverty. We hope farmers will prudently use their current maize harvests to ensure their families have enough to eat and store the rest for future use or sell for other pressing needs such as paying school fees.

Did you know that just like other crops, trees are prone to diseases? In our series on agroforestry this month, we show farmers how to identify some of the common diseases that affect trees and provide possible ways to keep diseases at bay. The roadside nurseries now common everywhere have become a major source of most of the diseases that are transferred from one area to another. A farmer may buy a palm tree seedling in Mombasa and if it is diseased, he will transfer the disease all the way to Nyanza, Western Province or North Rift. Farmers are advised to buy seedlings only from licensed nurseries or KEFRI and Kenya Forest Service centres near them (page 4).

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Conservation agriculture improves yields

Conservation agriculture increases soil fertility by protecting the soil structure, retaining moisture and adding organic matter, which improves farm productivity and profit.

Waweru Mugo | Changes in climate and world populations have made it necessary for farmers to adopt better agricultural methods to increase crop yields and income over the long term. One of the recommended agricultural approaches that farmers should consider adopting is sustainable agriculture. Conservation Agriculture (CA) is a farming method where farmers adopt farming practices that take care of the soil while conserving moisture during entire crop production cycle. The method operates on three basic principles:

- i) Disturbing the soil as little as possible.
- ii) Maintaining permanent soil cover.
- iii) Practising intercropping and crop rotation.

Although only about 2 per cent of small-scale farmers practise Conservation Agriculture worldwide, it is considered a useful method that increases farm productivity, and reuses



A hand operated Jab planter used in conservation agriculture



Conservation agriculture promotes permanent soil cover to protect and conserve soil structure. Animal drawn planter (below, right).

crop residue and related organic material on the farm. There are certain compelling factors that have made some farmers adopt conservation agriculture. These include:

Ploughing: When farmers plough their land they disturb the soil and destroy its structure. Beneficial organisms that support plant life are also destroyed while all the moisture that is retained in the soil evaporates leaving the soil dry. The poor soil state affects any crop that is planted after ploughing.

Burning of crop residue: Soil cover is very important as it protects the soil from being washed away. It also provides organic matter that recycles essential nutrients that nourish crops. When crop residue is burnt, all the nutrients are destroyed and the soil is left bare. Wind and water runoff both take away the topsoil that contains most of the nutrients that plants require. Farmers practising conservation agriculture therefore protect the topsoil by conserving crop residue.

Planting of cover crops is another measure farmers use to protect the soil: Most of the cover crops such as lablab, lucerne, calliandra, leucaena, purple vetch or desmodium fix nitrogen into the soil therefore restoring fertility while adding

organic matter that retains moisture for use by next crop, which is planted after the cover crop.

To resolve the widespread food insecurity in developing countries such as Kenya, small-scale farmers could consider adopting conservation agriculture. In place of ploughing as has been the tradition, the farmers can consider ripping or direct seeding.

Direct planting (or seeding) on unploughed land otherwise referred to as no-till, zero-tillage or no-tillage serves the first two principles of conservation agriculture.

No-tillage translates to a reduction or abolition of the time period between harvest and sowing, maintaining a permanent soil cover for the farm and unlimited supply of quality organic material to the soil in sufficient quantities and regularly, to meet the soil requirements. The technologies available for this practice ranges from the simple hand operated to the animal drawn (oxen) and tractor operated (no till) planters, all fitted with seed and fertiliser application equipment. The machines come as either

single row planter and fertiliser distributor or multiple row planter and fertiliser distributor as shown in pictures. (See pictures)

Apart from increasing moisture, organic material, aeration, soil structure, organic activity and infiltration of water into the soil, conservation agriculture also decreases erosion, moderates temperature, reduces need for equipment. It also prevents soil compaction by tractors, and reduces weeds, fuel costs, equipment maintenance and man hours spent in land preparation.

The African Conservation Tillage Network (ACT) a non-governmental organisation that promotes sustainable agriculture recommends that farmers practising minimum tillage also add other good farming practices such as timely planting, proper plant



spacing and effective weed control; use of improved external inputs-improved seeds and proper use of organic fertilisers and pesticides to increase farm productivity. They should also consider crop-livestock integration and practising agroforestry - planting fertiliser trees, fodder, fruit, live fences and windbreakers on their farms. Farmers interested in conservation equipment can contact:

Brazafic Enterprises Ltd. | Mudher Industrial Park, Along Mombasa Rd., next to Soham Petrol Station - P.O. Box 76561 - 00508, Nairobi / Kenya
 Tel: +254 020 2107247 / 2107254/2107259/2107000 | Fax: +254-020-2107263 | Cell: +254-724 652560 Email: optisourceafrica@brazafic.com Skype: [spec/proj-ke](https://www.skype.com/user/spec/proj-ke)

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Organic production unable to cope with demand

Despite the huge demand for organic produce in the country, inconsistent supply and lack of policy on organic production have denied farmers an opportunity to benefit from the sector.

Peter Kamau | One question the TOF magazine has received many times from farmers across the country is where they can sell their organic produce. Although there are many farmers who produce a variety of crops organically, they are unable to market their produce due lack of a well-established marketing system. Producing and marketing organic produce by small-holder farmers has been shown to increase their gross margins by 89.5% and attracts a premium of between 30-70% over conventional prices especially for vegetables and fruits. Despite this, marketing of organic produce has not been easy for farmers more so because of lack of information on how and where farmers can sell their organic produce.

Consumers globally are increasingly aware of the need to know the origin of food they eat and how it is grown be it conventional or organic. In organic farming, the issue of verifying if the produce is organic is very important.

The organic farming industry has set up organic standards or requirements, which every organic farmer has to meet in order to have their produce to be certified as organic. Organic certification is a process of inspection, which has been put in place by the International Federation of Organic Agriculture Movements (IFOAM) to ensure organic farmers meet the set standards of organic production.

Organic farmers are expected to show a high degree of honesty, trustworthiness and transparency to create confidence among buyers of organic produce. The integrity of the organic production system ensures the organic produce is of high quality and meets all requirements for organic production. (See TOF No. 109, June 2014 for organic certification requirements).

Small-scale farmers groups that would like to sell their produce should know that it is not possible for farmers to market their organic produce



Organic production has not kept pace with the big demand for organic products.

unless they undergo the certification process, which takes one to three years. Lack of adherence to this process is one reason most small-scale organic producers in the country cannot access markets for their produce.

The Kenya Organic Agriculture Network (KOAN) has led a campaign aimed at promoting organic produce in Kenya and abroad. The awareness campaign has led to the expansion of local organic market and the export market in the last 10 years. Local markets have, however, been affected by a number of factors, some of which include:

Transport: Many of the organic producers find it difficult to take their produce to markets such as Nairobi where most of the consumers of organic produce are based. Organic farmers can only be able to access markets if they have a reliable means of transport to take their produce to the market.

Irregular Supply: Most of the farming in Kenya is sea-

sonal because crop production depends on availability of rains. This means that farmers can only produce when there is adequate rain. The main buyers of organic foods are large supermarket chains which require constant supply of vegetables, fruits, cereals and related farm produce. It is, therefore, difficult for organic farmers to meet the demand for various organic products that consumers want.

Lack of awareness: Many farmers in the country are not aware of the existence of markets for their organic produce or the certification procedures they have to undergo to have their produce certified as organic. Although most of the farmers have heard about organic farming, many still confuse it with traditional farming practices and do not know what it entails.

Cost of organic certification: Many small-scale farmers are unable to pay for inspection and certification costs. Small-scale farmers who wish to get certi-

fication are advised to do it as a group where they can share inspection and related certification costs. They can also use alternative guarantee system such as Participatory Guarantee System (PGS) which is cheaper.

Lack of organic agriculture policy: Organic agriculture is still regarded as a low output agricultural system by the government despite its immense benefits to producers and consumers and even the environment. It has not received much support in terms of promotion and funding from the government. The government is yet to operationalize the Organic Agriculture Policy to guide the sector.

Due to lack of a policy framework on organic agriculture, production and marketing of organic products has been left to the civil society organizations, private sector and farmers groups whose produce is either sold as other conventional produce or for domestic consumption.

Market outlets for organic produce

There are few market outlets for fresh organic produce in Nairobi. The Kenya Organic Agriculture Network (KOAN) has established market days in a number of outlets where organic farmers bring their produce every week. The market days are given below:

1. Paddy Arms Hotel, Karen - Every Saturday
2. US Embassy grounds - Every Thursday afternoon
3. The United Nations Recreation Centre, Gigiri - Last Friday of every month.
4. Bridges Organic Health res-



taurant next to City Market. Organic farmers who would like to bring their organic produce to

these markets can get in touch with KOAN on Tel. 0787 557 908 or 0704 428 465 email: info@koan.co.ke Nairobi.

Other outlets that sell organic foods include:

Kalimoni greens organic shop; contact Lilian Kanari 0722 509 829, lilian@kalimoni-greens.com

Bridges Organic Health Restaurant; Contact Anne Mbugua, 0722 424 125 Bridges_organic@yahoo.com

Organic Foods Ltd; Contact Lilian Malemma 0721654683, lilian@organic-foods.co.ke

Know tree diseases and ways to avoid them

Roadside tree nurseries are the major source of tree diseases. Farmers should only buy certified tree seeds and seedlings from licenced tree nurseries and regional centres run by KEFRI and KFS to prevent the transfer of diseases, some of which are difficult to control.

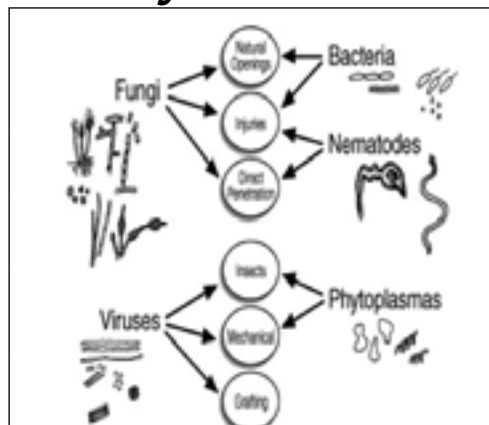
Peter Kamau | Did you know that just like crops, trees are also prone to diseases? Many farmers may not know it but trees get infected and even die when they get overwhelmed by diseases. Due to climate change and related factors the number of diseases affecting trees has increased. Farmers should remain alert to protect their valuable trees from diseases which threaten our forests and

especially the endangered tree species. In this issue we highlight some of the most common diseases including some that may have spread to farms and forests recently and which need urgent measures to control.

Diseased trees produce more seeds

One of the easiest route through which diseased trees are introduced to farms is buying of seeds or seedlings from roadside nurseries. Most roadside nurseries get their seeds from the forest as the owners cannot tell the difference between diseased trees from healthy ones. When the seed collectors visit a forest, they often look for trees with lots of seeds. What they do not know is that some of these trees are already diseased.

According to Dr Jane Njuguna, a plant pathologist



to avoid trees that produce seeds off-season as they could be diseased and could spread diseases when their seeds are collected and used in nurseries. When such seeds are used in nurseries, they transfer the diseases to other trees in farms or forests.

Common tree diseases in Kenya

at the Kenya Forestry Research Institute (KEFRI), when a tree gets infected by a disease or during periods of stress such as drought, it tends to produce more seeds before it dies. In this way, the tree tries to protect its species from extinction by passing their genetics to the next generation. She advises farmers

A tree disease is defined as any abnormal condition that damages or diminishes a tree's productivity and usefulness. The most common route for disease transmission are tree seeds. Farmers should, therefore, use high quality seeds and seedlings whose source is known to avoid transferring diseases to their farms. The following are some of the diseases that can affect trees during various growth phases.

Diseases affecting seeds and fruits

The most common diseases that affect seeds are fungal in nature. These can be avoided by careful selection and storage of seeds before they are planted in nurseries. Seeds and fruits can be affected by seed rot, poor germination and damping off caused by fungi such as *Fusarium*, *Phytophthora*, *Botryosphaeriaceae*, *Rhizoctonia* or *Pythium*, among others.



Healthy seeds



Damping off disease

Plant root diseases

Tree diseases that are found in the roots include root rots, change in root color and even rotting of the stem some of which may lead to plant death caused by the above named fungi.



Healthy pine trees



Armillaria root rot disease

Leaf and branch diseases

Under conducive environments, leaves are prone to diseases such as leaf spots, leaf blights, leaf fall, leaf yellowing, galls, rots and mildews. Branches and shoots can be affected by cankers, diebacks, and tip deaths, among others. Diseases that affect the development of seeds and fruits may sometimes cause fruit rots and falls.



Healthy Grevillea seedlings



Leaf spot disease

Nematodes and mite

Microscopic (2mm long) round worms that infect plant roots eg. *Meloidogyne sp.* (root knot) *Pratylenchus sp.* (root lesion). *Exiphinema sp.* (corky roots) and *Dixylenchus sp.* that cause stem lesions.



Healthy tree roots



Roots damaged by nematodes

Prevent tree diseases from your farm

- Seek advice from forest extension staff in your area if you notice any strange sign of disease in your trees.
 - Use clean certified seeds and non-contaminated soil.
 - Do not collect seeds from diseased trees.
 - If in doubt, dust seeds with fungicides before sowing and if necessary spray seedlings with appropriate fungicides.
- Cultural methods that can be used to eradicate or prevent the diseases include:
- Pruning and, removal and burning infected plant hosts and parts (cankers, dieback).
 - Understand the biologies of both host of the pathogen and take measures to prevent diseases from spreading as soon as signs are noted.
 - Practice crop rotation to reduce disease incidence especially in the nursery.
 - Improve sanitation to reduce pathogen establishment in tree nurseries.
 - Use integrated methods to prevent or control diseases if the infection is high: a combination of cultural, chemical and even physical methods.

Grow grevillea trees and make money

Farmers are proactive in planting trees on their farms especially the fast growing species like *Grevillea robusta*. Success in growing this type, however, not only depends on climate, soil type and choice of tree species, but also on their management.

Caroline Nyakundi | Agroforestry is a practice that is quickly gaining popularity among Kenyan farmers due to multiple benefits that farmers receive. When planting trees on the farm, farmers need to grow them in a way that minimizes competition between the plants and ensures they benefit from each other. For example, millet farmers who have livestock may plant acacia trees on the same farm as the millet. During the millet growing season, acacia trees shed their leaves and pods, which are rich in proteins, and also good provide feed for cattle.

One advantage of incorporating trees on farms is that soil fertility is maintained. Crops like maize take up a lot of soil nutrients and can exhaust the soil after a few years, leading to decline in yields. Production costs increase as farmers attempt to increase yields quickly using chemical fertilizers, with subsequent reduction in profits.

Grevillea robusta, also known as silky oak, is a high value tree in Kenya, which provides timber for furniture, plywood, veneer and poles for the building and construction industries (read TOF No.110 July 2014, page 5). It also provides shade and fodder, while controlling soil erosion and improving soil fertility through leaf litter decomposition. Initially, the tree was used in tea and coffee farms for shelter and windbreak, but quickly became popular for its wood and timber.

Planting *Grevillea robusta*

Research by the Kenya Forestry Research Institute (KEFRI) shows that most farmers plant grevillea along the farm boundaries although others plant them as woodlots in terraces/alleys and also scattered among tea, coffee, banana and bean plantations.

The trees grow in altitudes of 0-2300m above sea level and establish well in loam soils.



Mr. John Magoma, a farmer from Kisii County, observes his grevillea trees. The tree species is popular in the area for poles, firewood and timber.

When planted along farm boundaries, KEFRI recommends a minimum spacing of 2 by 2 metres between single rows. Planting at a spacing of less than 1.5m is discouraged as such trees grow slowly and are smaller in diameter than those planted at wider spacing. Leave a space of 3m-4m between seedlings. For woodlots and plantations, a spacing of 2.5m by 2.5m is recommended.

Because of its deep rooting system, *Grevillea robusta* does not interfere with shallow rooted crops and can be intercropped successfully with bananas, tomatoes, maize, beans and other crops.

Caring for young trees

The trees grow fast in areas with suitable climate and medium to fertile soils and free of weeds. In such conditions, the height increases by at least 2-3m every year while the diameter increases by at least 2cm. Farmers should prune lower branches of the trees repeatedly after the first year to provide wood and prevent excessive shade to the farm and competition with crops.

Pest and disease control

Seeds of grevillea sometimes are attacked by moulds caused by the mold fungi. They also suffer from rots caused by *Fusarium* and may sometimes harbour seedborne pathogens such as the canker fungi.

At the young stages, the seedlings may be attacked by the above fungi and many others which may cause various disease symptoms that include root collar rots, stem rots, leaf spots and blights among others.

Seed diseases are controlled by dusting the seeds with fun-

gicides such as Trichotech®, Eco-T® and Harzianum® or other common seed treatment fungicides before sowing. Once sown in the seed bed, it is important to spray the young seedlings with fungicides such as Copper Oxchloride to protect them from fungal attacks.

Insects such as cut worms may attack young seedlings and they are easily controlled using common insecticides used to control cut worms infestation in crops.

In the field, grevillea is attacked by termites and canker and die back disease (caused by canker fungi), which greatly reduce timber quality. The disease is characterized by dieback (slow death of branches or shoots), spots and blights on leaves, and cankers on stems (trunks) with moderate to severe resin flow. It is recommended that infected branches are removed as soon as dieback symptoms are noticed.

Although not common, termites can be a problem especially in the dry areas and can be difficult to locate since they mostly build their nests underground. The following are some methods that are useful in the control of termites:

1. Using plant extracts: Such as garlic (bulb), cashew (seeds and oil), tea leaves, pawpaw (fruit, fresh leaves and roots), basil and teak (wood or pulp) and black jack. To prepare the mixture, grind up the 100-200g of the relevant parts of the plant, place in boiling water, stir and leave to soak for 24 hours. Spray immediately, early in the morning or late in the afternoon.

2. Adding organic material to the soil: Compost or well-rotted manure increases organic matter in the soil, which provides termites with dead plant material

for food. This prevents them from feeding on living plants. Avoid having bare and dry soil around the trees. You can also mulch the trees with hay, wood shavings, wood ash or threshed maize cobs to decrease termite attacks. Using inorganic fertilizer is not recommended as it encourages fast growing soft tissue, which is susceptible to termite attack.

3. Natural predators: Organisms like spiders, beetles, wasps and ants as well as frogs, reptiles, birds, monkeys and humans feed on termites, which are a rich source of protein. Ensure you maintain natural habitats like bushes and trees, which are home to most of the predators.

4. Transplant only healthy seedlings: Weak plants are more susceptible to termite attack than healthy ones. Grevillea seedlings should be transplanted at the beginning of the wet season to give them a chance to establish properly and remain healthy in the field.

5. Breaking up mounds and removing the queen is effective as is regular digging and ploughing of the soil.

6. *Metarhizium anisopliae* ICIPE 69, an insect-killing fungus manufactured by Real IPM. The biopesticide is effective in controlling termite colonies and can be injected into the nest at the rate of 200ml per hectare.

These methods of control are more effective if used in combination rather than one alone. When seriously attacked by termites, the eco-friendly termiticide *Metarhizium anisopliae* ICIPE 69 is effective in keeping the termites under control to avoid huge losses especially in the warmer areas.

Harvesting and marketing trees

Mature *Grevillea robusta* trees are usually ready for harvesting once they are 6-7 years old. These can be used for wood and poles. Such young trees are not good for timber as the wood is easily attacked by pests like wood borers and rot fungi. Mr. John Magoma, a farmer from Mosocho, Kisii County, says he usually harvests his trees once they are about 15 years old.

The demand for timber is huge

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Farmer benefits from information service

TOF - A couple of weeks ago TOF received an email from a grateful farmer who benefited from iCow services. She has now increased her total milk turnover to 45 litres from 25 litres, and is working on reaching a total yield of 100 litres of daily by 2015.

Production increased

Rachel Nduriri is a proud owner of 5 Friesian cows. These consist of three heifers, one first calver and two older cows. She lives in Nyahururu, Kenya and has recently retired from formal employment and is now concentrating on farming. She subscribed for iCOW service program on 15th June 2011. Thus she has been on the iCow information platform since the day it started the service on the 3rd of June, 2011.

Farmers who subscribe to iCow service can get information and tips on all aspects of crop and animal production through their mobile phones.

In a recent interview with iCow Customer Care team Nduriri said that she no longer needs



Ms Rachel Nduriri with her cows at her farm in Nyahururu

to use her savings to subsidise her farming activities. She has increased her milk yields and can pay her farm hand comfortably. She has also invested in a new cowshed. She sees farming as a good income generating activity.

Over the period she has been using iCow services for information, Ms Nduriri has increased her production of animal fodder

including Nappier grass and lucerne. She has also improved on hygiene, which has resulted in healthier animals and improved milk yields. One cow, called Shalom, has increased milk production from 10-12 to 18 litres. Chania, another one has just calved down and is already producing 17 litres of milk in a day. "I expect Chania to produce between 20-25 litres during her second lactation," she says, noting that the cows appear to be competing in milk production.

She practises what she learns

Ms Nduriri takes the information she receives from iCow seriously. She puts into practice as

much as she can, including recycling farmyard manure in her *shamba* after it has gone through her bio-digester.

Her three cows- Shalom, Chania, Trooper and new baby calf Dotcom (now on the iCow calf calendar) are progressing well and every morning she takes time to 'greet' them. This has enabled her to easily detect and manage illness and disease early and to take the appropriate corrective action. "I am sure the cows look forward to my visits to their shed every day," she adds.

Rachel can be considered a 'digital farmer' in many ways. She encouraged the iCow team to sign her up in "Whatsapp". Using this application, she sent TOF five lovely pictures of herself with her prized animals.

Success with chicken farming

Nduriri also keeps chickens. She struggled to keep them healthy as the young were prone to a number of diseases. When she heard that iCow also had tools to help farmers with chickens, she subscribed to the service immediately.

We are certainly looking forward to sharing her success with the chickens as well, and picture too, hopefully. *Story by Green Dreams Tech. Ltd, Nairobi. Farmers can subscribe to the iCow information service. Just dial *285# and follow the instructions.*

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page 4

Growing grevillea trees...

and he sells a tree for between Kshs 16,000 - 30,000 depending on the tree's size and quality. Each tree yields about 50 pieces of timber each 14 ft long. "I have planted the trees around the farm (boundary planting) and this does not affect the crops.

The Grevillea trees improve the soil around it and do not compete with the crops for water or nutrients. We also cut the branches for firewood which provides good money for our daily needs."

Although KEFRI recommends that trees less than 10 years should not be harvested for timber, Mr. Magoma notes that this is difficult to adhere to since he has many household needs. "Waiting for 15-20 years to get timber is good but because my family needs money, we harvest some trees when they are less than 10 years old for poles and firewood, which has a high demand and fetches good prices in the local market. I planted 50 trees around my 1 acre homestead in 1984 and I harvested half of them after 15 years. I replanted seedlings and I am now almost harvesting the second lot for timber."

Facts about grevillea

- Grevillea grows best in moderately fertile to fertile and well drained soils. These are mostly found in the medium and high potential areas in Kenya.

- Grevillea grows well with crops and does not compete with them for nutrients or water. Its ability to withstand regular pruning provides farmers firewood throughout the year.

- Trees that are aged over 30 years are the best for good quality and durable timber.

- The trees can be repeatedly pruned and pollarded. As the tree matures, the volume of wood produced increases.

- Hot conditions such as those in the semi-arid areas appear to promote growth of fungus that causes canker and die back symptoms.

- Grevillea produces hard timber with beautiful grain structure, which is used to make attractive furniture.

This article draws on the research and published work of Dr. Jane Wangu Njuguna, Chief Forest Pathologist /Deputy Director, Forest Productivity and Improvement, Kenya Forestry Research Institute (KEFRI).

Kenya faces horticulture export ban

The European Union (EU) has threatened to ban Kenya's Horticultural export into the EU region due failure by farmers to follow pesticide application rules. The EU had complained that there were increasing cases of harmful organisms and pesticides being found in Kenyan horticultural exports during quality checks in Europe. The European Union periodically sets the Maximum Residue Levels (MRLs) allowed for horticultural exports to the region. The trading block has given Kenya up to Sep-

tember 30 to comply with the set MRLs or lose the EU market. The Head of the Kenya Plant Health Inspectorate Service (KEPHIS), Dr James Onsando and the Kenya Horticultural Development Authority (HCDA), Ms Grace Kyalo, have also been sent on compulsory leave for failure to ensure only quality flowers, fruit and vegetables from Kenya are exported to Europe. More than 150,000 Kenyan farmers exported fresh produce to the EU market worth Ksh 96 billion in income last year.



Compost is necessary in organic farming

How often can I prepare compost? Must I prepare a compost pit before making it?

Compost making in an organic farm is a continuous process as long as there is enough organic materials. When prepared in the right way, compost breaks down fast and is taken up by plants in a short time. Farmers should ensure compost is well rotted before application.

Compost can be prepared in many ways. If a farmer is using a pit, care should be taken to ensure that run-off water does not get into the pit because water tends to make it soggy which prevents the soil microorganisms from feeding and breaking down the compost material. For farmers who have not prepared compost before, it is important to take the following steps to make good quality compost:

1. Ensure you have collected the right material for compost preparation. Such material may include farmyard manure (cow dung, chickens, pigs, rabbit, sheep, or goat manure), and crop remains such as maize stalks, kitchen and household waste, hedge trimmings, banana stalks or sweet potato vines. Good material such as comfrey and tithonia leaves can be added if available as they help to break down other organic material such as animal and plant waste to produce humus.

2. Select a place that is sheltered from the wind, rain and sunlight. It is always advisable to make several small heaps if you have a lot of compost material instead of one large heap, which takes a lot of time for compost to be ready. A one metre high pit is ideal. But it is not always necessary to dig a pit because



If made the right way, compost can meet all your fertilizer needs



compost can be made even on a flat ground.

3. Chop down the plant material into small pieces for fast decomposition. Mix all the material and add them into the heap while adding water to make the heap moist (the breakdown of material will slow if you add too much water to make it wet).

4. Always ensure topsoil is mixed with the compost. It is important to sprinkle a mixture of EM1 and molasses into the pile as you mix to help the breakdown of the compost material. Add wood ash as this contains potassium, phosphorus, calcium and magnesium that plants need.

Rock phosphate fertilizer can also be added (together with ashes, rock phosphate helps to reduce acids produced by farmyard manure such as cow dung, pig and chicken droppings).

5. Green leguminous material such as leaves from calliandra, leucaena, sesbania, beans waste are valuable as they contain proteins that provide more nutrients such as nitrogen to the compost, which enriches it.

6. Cover the pile completely with a 10cm layer of topsoil. The layers prevents plant nutrients (such as nitrogen) in the compost from escaping into the atmosphere. Cover the topsoil with banana leaves or a plastic

polythylene sheet.

7. Take a long pointed stick and drive it into the compost such that it runs right into the bottom of the compost heap-the stick will help you check if they material is decomposing. If the stick is warm after three days, this is assign that the compost is decomposing well. Always use the stick to monitor the progress of the decomposition process-the stick will tell you if the compost is moist as required- if too dry some more water can be sprinkled to speed up the decomposition process.

8. After three weeks, turn the pile and check if the decomposition is going on well. Turn the material and mix it further-the stick will show you if it is necessary to turn the pile- if the stick is cold, then the pile is too wet and this is not good for the decomposition since the bacterial activity is reduced. If the stick shows a white substance, this is a sign that the compost is too dry and it needs more watering.

9. The period of decomposition may depend on the weather but in most cases, compost is ready after 4 weeks. If you pull the stick and find the compost is still warm, this is a sign that it is not ready. Properly decomposed compost has a pleasant and fresh smell. It does not show the material you used such as leaves, grass or animal manure.

10. Always keep your compost covered when it is ready. This prevents the loss of important nutrients such as nitrogen. When applying compost, always work it into the soil - do not apply it the way you do with chemical fertilizer; compost worked into the soil enables plants to take up all the nutrients it contains.

Greenhouse chemicals have effect on human beings

How do greenhouses affect people working in them?

Greenhouses environment has many negative and dangerous consequences for people working in them especially in conventional farming where chemical application is normal. Most of the chemicals have a lot of side effects on human health. Workers, especially in flower farms, develop serious complications as a result of the chemicals used to control pests and diseases. All companies or farmers are required to provide protective clothing to greenhouse workers. Poor use of such equipment has, however, led



Capsicums in a greenhouse

to serious ailments that impair the health of the workers.

One of the side effects of chemicals is development of incurable allergies. Some chemicals have been known to damage body organs such as the liver and kidneys, which lead to long periods of hospitalization and even death. Despite strict regulations on the use of chemicals and public health requirements by countries such as the European Union that buy flowers and other horticultural produce in Kenya, workers in greenhouses have a high risk of developing health problems with little compensation from companies that run them.

TOFRadio answers your questions

TOFRadio is broadcast on KASS FM, Mbaitu FM and Milele FM at 8:30pm on Tuesday, and KBC on Thursday at 8:15pm. Tune in and listen to farmer experiences and expert advice on agribusiness and eco-friendly farming methods. On this page, we respond to some of the issues raised by farmers in their correspondence to the radio program. Send your questions and comments via SMS 0715 916 136.

Tithonia can improve soil fertility on the farm

Musdalafa Lyaga - One of the major problems facing crop production in Kenya is declining soil fertility. According to Ms. Mary Gathara, a research scientist at the Kenya Forestry Research Institute (KEFRI) Soil Chemistry Department, many Kenyan soils are deficient in nitrogen and phosphorous.

Nitrogen is an important part of all proteins, and is one of the main chemical elements needed for plant growth and photosynthesis. Lack of Nitrogen hinders plant growth. Crops absorb nitrogen by absorbing either ammonium or nitrate through the root system. The plants then use nitrogen as a building block to produce protein in form of enzymes.

Phosphorus is another element that is necessary for growth of strong plants. Insufficient phosphorus in the soil causes stunted growth in crops. It also causes wilting, small fruits and flowers. The right amount of phosphorus helps crops yield more fruits and form healthier stocks and roots. Such crops may also mature much quicker than plants without phosphorus.

Ms. Grace Wambui, a farmer who practices agro forestry at her Farm in Laikipia County has realized the benefits of planting tithonia in her farm. This has increased her maize yields, which are healthy and have attracted many buyers in the market. She says: "Tithonia produces large quantities of biomass, which when well used as green manure provide the much needed nitrogen and phosphorous to depleted soils."

What is tithonia?

Tithonia diversifolia or the wild sunflower is a non-leguminous shrub that grows wild in many parts of Africa. It grows to a height of 1-3 metres. It can also be used as fodder for cattle, goats and sheep. In Kenya it can be found growing in Western, Central and coastal regions and in parts of the Rift Valley.

The local names of tithonia are *maua amalulu* (Luhya), *maua makech* (Luo), *amaua amaroro* (Kisii) and *maruru* (Kikuyu).



Nutritional value of tithonia

According to Ms. Mary Gathara, the quantity of nutrients found in tithonia is significantly higher than those found in synthetic fertilizers.

The moisture content of tithonia leaves is estimated to be 84%. Before the plant flowers, tithonia leaves (dry matter) on average contain the following nutrients:

Nitrogen (N) 3.17%

Phosphorus (P) 0.3%

Potassium (K) 3.22%

Calcium (Ca) 2.0%

Magnesium (Mg) 0.3%

How communities use tithonia

Many communities living in Kenya use tithonia for fencing around homesteads. Increasingly, many communities are now adopting the use of tithonia for composting and as fodder for cattle, goats and sheep.

How to propagate

Farmers can easily propagate tithonia by direct seeding. The best method, however, is to make a furrow for the seeds and cover them lightly with sandy soil. Then apply mulch to prevent the seeds from being washed away and to retain the soil moisture.

Tithonia can also be established from cuttings. The cuttings should be 20-30 cm long and cut from mature wood. They can be planted in the soil as you plant sugarcane cutting or Napier stalks. Plant the cuttings with 1 or 2 nodes below ground

level and 2 or more nodes above. Place the cuttings in the ground slanting at an angle of 45-60 degrees.

How to apply the green manure

To apply the green manure, cut leaves and soft twigs of tithonia, chop them into small pieces, and either place them in each planting hole or spread them evenly over the surface and then incorporate them into the soil. You can continue applying this green manure throughout the active growing period of the crop either by placing it along the rows of plants or by incorporating it into the soil.

After you apply the leaves, they must be mixed well with the soil or left to decompose for at least 1 week before you plant. The maize and other seeds may not germinate well if they are planted immediately.

Tithonia diversifolia can be applied as green manure to maize, sorghum, cowpeas, kale, tomatoes and beans as well as to high value crops such as French beans and pineapples.

The booklet, *Using the wild sunflower, tithonia, in Kenya for soil fertility and crop yield improvement*, provides additional information about the use of *Tithonia diversifolia* as a green manure, including traditional uses, how to plant the seeds or grow from cuttings, and the benefits for crops.

You can contact the World Agroforestry Centre (ICRAF) for more information on how to get the book on tel: 020 722 4000 email: icraf@cgiar.org



farmers forum

0717 551 129 / 0738 390 715

Land for sale: About 1.5 acres at Maganga Naitiri. Call 0727 428 879

Rabbits for sale: If you have rabbits to sell, please call 0725 205 521.

Potatoes for sale: We have 1 acre of high quality KARI certified *sangi* potatoes to be harvested at the end of October. Call 0724 696 730, Njoro.

Groundnut seeds wanted: We need groundnut seeds runner and bunch varieties. Call Ivan 0722 264 835.

Silage tubes for sale: We have silage tubes for sale. We also conduct training for farmers groups. Call Star Rays Education Centre Tel. 0721 245 443.

Goose eggs wanted: I need goose eggs (fertilized) if you have them, SMS "goose eggs" to 0722 878 635

Fleckvieh bull for sale: I have a 9-month Fleckvieh bull for sale. Interested farmers can contact me on 0726 434 521.

Sangi potatoes: I have 3 acres of certified *sangi* potatoes for sale to interested farmers to be ready in October 2014. Godfrey Ndirangu. Call 0722 892 510.

Metal silo for sale: We make metal silos for cereal storage. Call 0720 409 161.

Apple seedlings: I have 3 varieties of apples for sale to interested farmers. Call 0722 638 937, Kinangop.

Trees seedlings for sale: Indigenous tree seedlings, *Prunus Africana*. Call 0722 849 919.

Breeding buck for sale: A five way cross Toggenburg, indigenous Nubian and German Alpine, 5 month-old. Call Carboytto 0722 943 214.

Chicks for sale: Quality day old chicks for sale. Call 0719 808 222

Chicks for sale: Month-old chicks from Kenchic. Call 0729 358 593, Narok.

Organic foliar fertilizer: We sell imported organic foliar fertilizer (KEPHIS certified). Call 0726 754 014 (office hours, week days).

Organic cabbages wanted: I would like to buy organic cabbages from organic farmers. Contact Oscar email: making_a_life-inchrist@yahoo.com.