

TOF Radio in Ukambani

TOF will now feature farming issues in the arid and semi-arid areas such as Ukambani. TOF Radio will be airing programmes in Kamba language.

TOF - Farming in semi-arid areas such as Makueni, Kitui, Machakos and others is a challenging undertaking, especially for small-scale farmers. Lack of sufficient water - and in most cases - its poor management is a limiting factor in crop and animal production. In addition, most small-scale farmers, as a newly undertaken study states, "are unable to invest in crop technologies such as improved seed varieties, soil conservation, water harvesting and post-harvest management due to lack of affordable credit and financial services."

The way forward

In this issue, we highlight the problems of small-scale farmers in semi-arid areas and publish contacts of information centres in the region run by the Bio-vision Farmer Communication Programme, which also supports TOF magazine, where our readers can get further information on mitigating such problems. In the June issue of *The Organic Farmer* magazine, we shall feature improved seed varieties with special qualities such as drought tolerance and pest and disease resistance. In

our July issue, we shall further enlighten farmers about water harvesting and management methods.

This initiative of the magazine will be supported by the radio programs of *The Organic Farmer*, TOF Radio. Our usual TOF Radio programme on KBC is still on air every Thursdays at 08.15pm, the programs for Ukambani will be aired in Kamba language, on Radio Mbaitu FM.

Tune in to Mbaitu 92.5 FM on 7th, 11th, 21st and 28th of June, 2013 on Fridays, at 8.15 — 8.45pm.



Pig farming pages 4 & 5

TOF changed Simon's way of farming

TOF | When Simon Maina Ngiriri got in contact with *The Organic Farmer* magazine eight years ago, he decided to change from conventional to organic farming. He has never regretted it, but he is disappointed that organically produced vegetables and fruits do not fetch a higher price in the market, even though they are healthier and have better taste. *Page 6*



Lost fertilizer can be replaced

All farmers were happy when the current rains started. But the rains have been heavier than they expected. The excessive rains have washed away the top-soil in sloppy farms and flooding low lying areas, washing away or leaching the

fertilizer that farmers applied to their maize and other crops. If your crops show a change in their normal colour, then it means they require nutrients. We show you how to restore the lost nutrients and fight pests. *Page 2*

Dear farmers

We have revealed, severally in this magazine, how the unsuspecting small-scale farmers fall prey to the untrustworthy middlemen in the purchase of essential farm inputs such as fertilizers, seeds, transport of farm produce and even marketing of various farm products.

Let us look at the issue of fertilizer, it is now the planting season and small-scale farmers are rushing to buy government subsidized fertilizers. Sadly, very little of this fertilizer has reached them. Traders masquerading as large-scale farmers have obtained fake papers as evidence of being large scale farmers which they have taken to agricultural officers who give them introduction letters to enable them buy huge amounts of fertilizers from the National Cereals and Produce Board (NCPB). They then sell it to small scale farmers at current retail prices, making huge profits. These transactions are done in collusion with officials from the Ministry of Agriculture and the NCPB itself.

We are treated to these kinds of stories year after year. Perhaps it's time farmers shift to better, cheaper and sustainable methods of restoring soil fertility such as the use of manure, compost, foliar feeds, nitrogen fixing trees and practicing crop rotation. These organic methods do not impact negatively on the soil the way chemical fertilizers do, and they are a reliable and efficient alternative in improving crop production.

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TOF Radio

KBC Thursday 8.15 pm



You like reading TOF? Go to our website!

TOF has updated its website! Under www.theorganicfarmer.org you find all TOF magazines since its launch in April 2005 as well as the TOF modules for download and some special articles. We have also a market place, where you can place advertise-

ments. Just click on the left side of the website under Farmers forum. If you need advise and would like to contact the field workers of Biovision's outreach program, you will find a map on the website with all the their contacts. **TOF**

Restore nutrients, fight pest with plant extracts

Farmers can control pests and replace the fertilizer lost through heavy rains by making their own plant extracts. They maintain crop health and growth.

Peter Kamau | Most farmers took advantage of the current rains and planted when the rains started. Unfortunately, the rains have intensified, flooding planted fields and even carrying away the topsoil, if not washing away the planted maize and even the fertilizer. Now the main problem facing the farmers is that all the fertilizer that they had bought has been washed away. If you notice a change of colour in your maize especially when the leaves turn yellow in depressions or low-lying areas, where there was standing water, this is a true sign of nutrient deficiency because all the nutrients have been washed away or leached down the soil profile where the plant roots cannot reach them.

Easy way to control harmful pests

The main task for many farmers is to restore the nutrients lost through excess rainfall in order to ensure that their crops maintain their normal growth. Since many farmers do not have the resources to go back to the shops to buy additional fertilizers, the only alternative available to them is to use the resources available within their farms to make foliar fertilizers. Apart from the fertilizer deficiencies there will be many pests this season, which cause considerable damage to crops especially in June when the rains subside and the temperatures rise. The most devastating pests include stalkborers, thrips, whiteflies, redspider mites, aphids, caterpillars, termites, armyworms, ants and cutworms among others.

Farmers can control these pests easily if they can make plant extracts and spray their

crops in the same way that they do using pesticides. Plant extracts are made using plants that are found within the farm environment such as African marigold, pepper, garlic, black-jack (*micege* in Kikuyu, *musee* in Kamba *onyiego* in Luo), neem, tomato leaves, pyrethrum, stinging nettle (*thabai* in Kikuyu), sodom's apple (*Dongu* in Kikuyu).

There are also nutrient-rich plants that can be used to replace the fertilizer that was lost in the rains; the most useful of these plants are tithonia (*kiruru* in Kikuyu, *ilaa* in Kamba, *maua amalulu* in Luhya, *maua makech* in Luo) and comfrey (*mabaki* in Kikuyu) onions, and stinging nettle. A farmer who mixes all the plants mentioned above to make a plant extract solution (also called Fermented Plant extracts or FPE) has the advantage of controlling both pests and replacing essential nutrients such as nitrogen, phosphorus and potassium that the growing crops are in great need of to grow well and give a good yield. Below we give a recipe that farmers can use:

How to prepare 20 litres of FPE

Ingredients:

- 1 litre of molasses
- 1 litre of EM 1
- 4kg of a mixture of all plants mentioned above such as African marigold, pyrethrum, neem, comfrey, tithonia, pepper, sodom's apple, black jack, garlic, tomato leaves, etc.

Preparation

Mix the molasses with EM1 and 5 litres of water.

- Chop up the plant extracts into small pieces and add to the jerrycan fill the jerrycan with water to the brim and seal to keep it airtight for 7 to 14 days.

Spraying

After 7 or even 14 days, the extract is ready for use. Filter the solution using a piece of cloth

to sieve out all the tiny pieces of the plant extracts. Dilute the solution by adding 1 litre of FPE to 100 litres of water (1:100). If the FPE is properly filtered you can use a normal knapsack sprayer to spray your crops.

Farmers interested in detailed information on Plant Extracts can order our Special publication on this topic at TOF office.

Or visit our website at www.theorganicfarmer.org/modules to download the same. It provides information on what pest can be controlled by which plant extract. It also shows you some beneficial insects.

facts & figures

- The FPE is not like chemical pesticides used for pest control. For it to be effective, the farmer has to spray 3 to 4 times a week.

- Do not wait until you see the pests in your crop for you to start spraying. Some pests such as the whitefly are difficult to eradicate once they have established themselves in your crop even chemical pesticides cannot eliminate them once they attack a crop.

- Always add some soap solution into the FPE to make it stick; spread all over the entire plant once sprayed to ensure the FPE is not washed away by the rains.

- Fermented Plant Extracts (FPE) do not work like chemical pesticides and that is why it is important to apply them before your crop is infested by pests.

- Plants extracts do not kill beneficial insects like chemicals that most farmers use, but the good insects remain and help you to control the bad ones.

Although you may use some little extra labour, plant extracts are cheaper and will save your costs.



Comfrey, best for plant extract



Ladybird eating aphids



Stemborer



Ant milking aphids

The Organic Farmer is an independent magazine for the East African farming community. It promotes organic farming and supports discussions on all aspects of sustainable development. It is published monthly by **icipe**. The reports in the *The Organic Farmer* do not necessarily reflect the views of **icipe**.



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Turning drylands into food baskets

Farming can be greatly improved in arid and semi-arid areas if water resources are harnessed, new farming technologies and drought tolerant crops adopted by farmers.

The Organic Farmer | In the last few weeks, farmers in Ukambani must have heaved a sigh of relief following the good rains that have been received in the area. This is not surprising. Most parts of Ukambani are found in arid and semi-arid areas that receive limited rainfall in much of the year. Water scarcity is a major challenge to improving productivity and enhancing food security in this region since smallholder farming is typically rain-fed.

Subsistence farmers in Eastern regions of Kenya for instance "face serious crop failure about twice every seven years due to

severe droughts", states a newly published study about agriculture in arid and semi-arid lands of Kenya*. Moreover, "Poor soil fertility is one of the major impediments in drought prone areas delaying recovery from such shocks." These are dangerous developments, especially if confronted with the negative effects of the threatening climate change.

From the total Kenyan land area, only 26 percent is under mixed rain-fed systems (crop-livestock systems). Of these total rain-fed systems, the largest proportion of land is classified as arid or semi-arid. To cope with the growing population, the national maize production is expected to increase from the baseline of 3.19 million tons per year by 17.8 percent to the year 2050. But for the arid and semi-arid areas scientists expect a reduction in the maize production by 8.4 percent - due to the consequences of climate change. The study, analysing the situation in the Machakos and Makueni counties as examples, states that already a slightly reduced maize production in these areas could impact on the overall national maize production negatively.

Improved seed varieties...

It is obvious that the effects of climate variability and change will affect developing countries much more and there again are the risks for resource poor households far greater, especially for the ones in ecological fragile zones like the arid and semi-arid areas, where the climate change is felt the most. But there are many obstacles. The study findings conclude, "that water (and its poor management) is by far the major limiting factor in these areas and farmers face imminent risk of crop failures as a result of recurrent droughts. Farmers, in most cases are unable to invest in crop technologies such as improved seed varieties, soil conservation and water harvesting, and post-harvest managements due to lack of affordable credit and financial services."

No doubt, in the last few years, the development of improved

**Technologies for enhancing productivity of Cereals, Pulses and Tubers in the Arid and Semi-Arid areas of Kenya. Report by Regional Strategic Analysis and Knowledge Support Systems, PO Box 30709, Nairobi. www.resakss.org*



Dryland

seed varieties with special attributes such as drought tolerance, pest and disease resistance, early maturing and high yielding, made tremendous progress. Emphasis has been given to maize, not only because it is the staple food in Kenya, as the study states; the mandate of international donors often give priority to crops with global importance, to some extent neglecting crops relevant to dry lands such as dry land legumes and dry land cereals: "164 improved varieties of maize have been developed and released compared to sorghum (18), cowpea (10), millet (8), pigeon pea (7), beans (5), sweet potatoes (4) and green gram (1)".

... but limited adoption

The finding in this study show "limited adoption of crop technologies" such as improved seed varieties, improved soil and water management, initiatives in food processing and new and efficient storage methods. Is this surprising? Not really. Of course, farmers are cautious when it comes to new seed varieties; they cannot risk failure.

New series

With this article, which gives some basic information, we open a series on farming in arid and semi-arid areas. In the June issue we will inform you about water management and conservation methods. In the July issue of *The Organic Farmer*, will introduce new seed varieties for cereals, pulses, roots and tubers, which are drought and to some extent pest tolerant. And in August, we feature a very successful farmers' initiative with more than 250 farmers' groups, the Katoloni Mission in Machakos.

According to field research in the Machakos and Makueni counties, it needs on average, eight years for a large scale adoption of newly developed seeds.

But this is not the only reason. The limited adoption, as the study states, "is greatly attributed to inadequate access to information and knowledge on the existing crop technologies; lack of financial capital; limited extension services; under developed output markets; chronic drought and less efficient coordination of supply value chain for the technology systems." But the "most crucial stumbling block for uptake of crop technologies" is farmers' lack of financial capability, as the study recognizes.

From this point of view, the free seed distribution by many NGOs can cause problems. Of course, small-scale farmers appreciate free seeds as they do not have to spend money to buy them. But apart from making the farmers dependent on this assistance, free seed distribution can distort input markets, thereby dampening the demand for new technologies, which might cope better with drought and water scarcity.

Lack of information

As regards extension services, arid and semi-arid areas are neglected. For example, the ratio of extension officers to farmers households in Machakos is 1:1,800, in Makueni it is 1:1,434. To some extent, NGOs and faith-based organisations fill the gap. They contribute to the farming community by building capacities of CBOs and facilitate technology uptakes. Biovision Farmer Communication Programme plays an active role in this. (see box in grey). ■

Biovision Farmer Communication Programme

iTOF Eastern

Information centre of *The Organic Farmer* magazine, Victoria Mutinda, Kangundo and Sultan Hamud, (0724 331 405, 0726 319 422, itof1@organickenya.org).

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housed at KARI-Katamani

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Independent field officers, cooperating with Biovision Farmer Communication Programme

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Main breeds of pigs in Kenya

Maurice Rangoma | The main common breeds of pigs available in Kenya are the Large White, Landrace, Hampshire and Duroc. Each of these pig breeds has its unique characteristics that make it suitable for a particular production system and market.

The Large White

Originally developed as an outdoor breed, the Large White is a robust, adaptable and of higher performance than most of the other breeds. They do very well in intensive production systems. Most pig farmers in the country prefer this breed because of its wide availability.

Characteristics and use

The breed is a late-maturing type, hardy animal that can withstand a wide range of climatic conditions. The sows have been noted for their large litter size (10 to 12 piglets), their high milk production and for having excellent maternal instincts. However, the breed is very prone to sunburn. Their hams tend to be of a lesser quality compared to other breeds, but have a high lean meat to fat ratio, making them suitable for the modern market. Their crossbred offspring have a better meat structure.



The Large White is commonly used in crossbreeding or hybrid programs, with the most popular cross being Large White and Landrace. This cross is often used as the maternal line in commercial herds. A third breed such as a Duroc or Hampshire (see below) is often used as a terminal sire.

The Landrace

Originally developed in Denmark by crossing the native pig with the Large White, the Landrace is a flexible breed performing well under either indoor or outdoor systems of management. Its excellently fleshed carcass is ideal for either fresh pork or bacon production.

Breed characteristics and use

Sows produce and rear large litters of piglets with very good daily gain and high lean meat content ideal for either pork or bacon production. The Landrace is popular in cross-breeding programs with the Large White breed. The greatest strength of the breed is its acknowledged ability to improve other breeds of pig when crossed to produce hybrid gilts. The Landrace is noted for



its early, rapid growth and its weight at weaning is higher than that of other breeds. Its coat and skin colour makes it prone to sunburn.

The Duroc - (Duroc-Jersey)

Also referred to as the "Red Hogs", the Duroc is an older breed of domestic American hog. It can survive in extreme cold and wet conditions. Its tenacity in looking after its young combined with its docility makes it an ideal outdoor pig.

Breed characteristics and use

Traditionally, Durocs have been used as terminal sires when crossed with the Large White-Landrace cross sows. This cross is very suitable for the bacon. The Duroc or Duroc cross does not make a good maternal sire. Litter size is lower



than that of other breeds and the boars are known to be aggressive. The flesh is succulent and heavy muscled making it very suitable for anything from light pork to heavy hog production.

The Hampshire

The Hampshire was developed in the United States of America. It can cross with nearly any other breed and is used extensively as the sire of cross-bred pigs for pork and bacon production.

Breed characteristics and use

Regarded by many as the best terminal sire breed for all purposes due to their lean meat, the breed is used extensively as the sire of cross-bred pigs for pork. They are a favorite of small-scale farmers because of their good temperament, fast



growth rate and large litters of between 8 and 14 piglets. Their sows make excellent mothers.

Scavenging pig diseases and

Scavenging pigs not only lose weight when roaming around for fodder; they also get infected with various parasites.

The Organic Farmer | According to the standards for organic animal production, pigs should have adequate space to move (see article on the right). This "right of movement" is not the same as the behaviour of free-range pigs, which scavenge most of the time outside the homestead, in the roads, on garbage disposal areas, latrine places, etc.

A study conducted by scientists at the International Livestock Research Institute (ILRI) and at the University of Edinburgh have brought the problems of free-range pigs to light. The study was conducted in an area surrounding Busia town. The scientists tried to understand the transmission of several pathogenic organisms (organisms capable of causing diseases in their host).

Pig movement tracked

To study the behaviour of the pigs, the scientists used GPS technology, which is a satellite based positioning system. The ten selected pigs carried a collar with a GPS recorder. This allowed the scientists to monitor every step in the movement of the pigs on their scavenging tour. The perimeters of the homesteads and their main features, including human dwellings, cooking points, rubbish disposal areas and latrines, were all mapped. The pig collars recorded the coordinates of the pigs every 3 minutes during the course of one week.

Long-distance runners

All ten pigs were kept under free-range conditions, but also regularly fed supplementary crop and (mostly raw) household waste. The pigs, which scavenge both day and night, were found to spend almost half their time outside the homestead, travelling an average of more than 4km in a 12-hour period (both day and night), with a mean home range of 10,343 square metres.

Parasites and tapeworms

All the pigs in the study were found to be infected with at least one parasite. Additionally most pigs had also gastrointestinal parasites (parasites in the stomach and intestine), and all carried ticks and head lice. Three of the ten pigs were found to be infected with *Taenia solium*, a tapeworm common in pigs whose larva, when ingested by humans in undercooked pork, causes the human disease known as *cysticercosis*.

Pigs are prone to diseases and parasites

taeniasis, which can cause epilepsy and other disorders, and can be fatal if not treated. *Taenia solium* infection in pigs is acquired by their ingestion of infective eggs in human faecal material, which is commonly found in the pigs that are let loose to feed on garbage dumps and other unhygienic sites in most rural areas.

Scavenging reduces weight

One of the interesting findings of the study is that roaming contributes to the loss in weight of the pigs at slaughter. Mean live weights at the abattoir in the Busia area are 30kg, giving a dressed weight of only 22.5kg and earning the farmer only Ksh 2,000–2,500 per animal. That means that encouraging the confinement of pigs is likely to improve feed conversion and weight gain.

"Confinement of pigs would also reduce the risk of contact with other domestic or wild pigs", as the scientists write in their study. Pig to pig contact is a driver of African Swine Fever (ASF) virus transmission. ASF regularly causes outbreaks in much of Africa. Confining pigs within properly constructed pig shelters with adequate space would also reduce the chances of contact between pigs and tsetse flies. The Western part of Kenya is a trypanosomiasis-endemic area and pigs are known to be important hosts and reservoirs of protozoan parasites that causes sleeping sickness in humans, which eventually is fatal for all those who don't get treatment. The African animal trypanosomiasis, a wasting disease of cattle and other livestock, is arguably Africa's most devastating livestock disease.

In addition, both trichinellosis (caused by eating undercooked pork infected by the larva of a roundworm known as *trichinella spiralis*) and toxoplasmosis (caused by a protozoan pathogen through ingestion of cat faeces or undercooked meat) are "very real threats to these scavenging pigs, with access to kitchen waste, in particular meat products, being a risk factor for infection," the scientists wrote.

While confining pigs would clearly be advantageous for all of these reasons, the practice of free range will likely be hard to displace, not least because this low-input system is within the scarce means of this region's severely resource-poor farmers. However, the study may persuade farmers to start 'zero-scavenging' pig husbandry: The findings demonstrate to farmers the economic as well as health benefits, which they will obtain by keeping pigs in pens, where they can be fed in a disease-free environment that has adequate space for movement and rest. ■

Healthy pigs need clean shelter

Most pigs are kept in poor hygienic and stressful conditions that lead to slow development, low weight gain and diseases.

Peter Kamau | Pig feeding and general management is a real challenge to most pig farmers in the country. The way pigs are reared in most farms is responsible for poor growth, low weight gain and even low general productivity. The cost and quality of feeds are two other problems that confront pig farmers. Unless a pig is well fed and taken care of, it cannot attain the desired weight to enable the farmer to fetch a good price at the time of sale. In this article, we shall talk about pig management and in the June issue we will explain the pig feed requirements at each stage of growth and advise farmers on how they can cut down the cost of feeding.

Clean and spacious housing important

Like any other animals, pigs also require good management. Unfortunately many farmers keep pigs in very unhygienic conditions. That reduces their health condition and productivity. Indeed, the main reason for low productivity is not necessarily due to poor feeding but hygiene and management. There is a general belief among farmers that pigs prefer a dirty environment and can eat anything. This is why many pigs, especially those on free range are often found in dump sites or fed on food leftovers.

Farmers in cold areas should ensure that pigs are kept in well-constructed sheds that are not too cold or too hot. The pigs' sty should be spacious enough to allow for free movement so that when it is hot, each of the animals can lie down alone and also to cuddle together during the cold spells in order to share their body warmth.

The pigpen should have a separate area where they can defecate (make their droppings). The shed should also have a feeding and water trough or water nipples for them to take water at all times whenever they need it. In terms of animal welfare and even in organic farming standards, pigs should be allowed adequate space to move so that they can get adequate exercise and also express their normal



Young pigs are very vulnerable to diseases especially when they are reared in unhygienic conditions.

behavior. Farmers are advised to leave an open area beside the sheds where pigs can move freely. This reduces stress in the animals while giving them an opportunity to play and take in fresh air.

Poor hygiene causes diseases and parasites

Dirty sheds are breeding grounds for disease-causing pathogens and even parasites. Some of the diseases likely to affect pigs in dirty sheds are given below:

Scouring (diarrhoea): Diarrhoea in pigs is one of the most common problems that farmers face. The main cause of diarrhoea is lack of hygiene in the pig sheds. The most affected by this problem are young pigs.

Mange (sarcoptes): This is the most common parasite in pigs. Pigs infested by the parasite spend most of their time scratching and rubbing against the walls of their sheds. The parasite causes enormous losses to farmers because the affected pigs spend a lot of time scratching, which depletes their energy. Research shows that sarcoptes can result in a loss of 5% to 10% in feed conversion and weight gain. The parasites are transferred from one pig to another by body contact. Farmers who notice their pigs scratching and rubbing themselves should immediately consult a veterinarian for treatment.

Worms: Pigs on free range in Kenya and many other African countries are allowed to scavenge for food in garbage dumps, where they feed on all sorts of waste including human waste and discarded food. These pigs get infested with worms such as *Taenia solium* and *Trichinella*

spiralis (see the brown box on the left) these are dangerous worms which can cause epilepsy in people who eat pork from such pigs. ■

facts & figures

- Pigs reproduce very fast. A sow produces young ones twice a year; she can produce up to 12 pigs in each cycle bringing a total of 24 pigs. A good pig farmer can therefore produce a large number of pigs within a short period.

- Farmers are advised to start with 10 sows and 1 boar. The average price of a gilt is Ksh 30,000. Please ensure you make your order early enough. Below are some pig breeders:

- Mark Gachuma, 0722 810 374, Muchatha, Kiambu
- John Magu, 0721 325 265, Juja
- Michael Wanyarika, 0722 981 400, Isinya
- George Muritu, 0722 898 456, Bombo, Maragua
- Samuel Gitonga, 0722 357 320, Nakuru
- Farmers Choice, 020 871 17 22, 020 871 04 16, Nairobi

Farmers Choice Ltd has a training programme for farmers who want to start pig production. The training is conducted on Monday of every week.

- Farmers with their own butcheries are doing good business selling pork, a white meat that is now becoming very popular in many parts of the country. At 5 or 6 months an average pig can weigh up to 50kg after slaughter. A kilogram of pork goes for Ksh 230 in most butcheries, therefore one pig can fetch an average of Ksh 11,500.

"TOF educated me on chickens"

Peter Murage It is really challenging to indulge in a new venture, especially in agriculture, where farmers are cautious about losing in case they engage in a new practice. Initially, farmers associated organic farming only with compost making and nothing beyond that. This was due to lack of information and lack of aggressive organizations promoting organic farming hence discouraging many farmers from engaging in organic farming practices.

Simon Maina Ngiriri is an example of a farmer who was willing to practice organic farming but lacked supportive information to enable him realize his dream. Simon was employed as a senior nurse in Mwea and at the same time practicing small-scale farming in Gitooini village. In this latter venture, Simon used to practice conventional farming and opted to start organic farming after he was introduced to *TOF* magazine by his friend Benedict Wamukira. Consequently, he was quick to apply for a copy for himself after he developed a keen interest in the magazine.

It is now seven and a half years since Maina started reading *The Organic Farmer*. He has realised many benefits such as the perfect way to make compost - the first thing he learnt from *TOF*. "Through compost making, cost of buying chemical fertilizers is to me a thing of the past. It is also through compost that my soil fertility has drastically improved and my yield increased," he adds.

Improved chicken breeds

Maina is currently practicing local chicken rearing and through *TOF*, he has been able to accumulate more experience on breeding. He crosses the local breeds with the hybrid chicken to get an improved breed, which has more weight and resistance to diseases. To reduce the cost of feeds, Simon formulates his own chicken feeds using the formula provided by *TOF* magazines. He also uses aloe vera, *croton megalo-carpus* seeds and EM (Effective Micro-



organisms) to curb disease problems in chicken.

When I visited Maina, he took me around his *shamba* that has many enterprises representing a real organic farm. Simon practices agroforestry; he has a nursery with both seedlings for herbs, vegetables and medicinal trees, an arrow root garden, aloe vera garden and an orchard. He rears rabbits to provide his family with healthy meat. With all these ventures, Maina is in a position to meet food security for his family, get energy as well as promote family income from the farm. Maina has already introduced his fellow work mates to *TOF* magazine as one of the steps to propagating information.

Alot of labour, but little income

However, changing from conventional to organic farming was not an easy task as he did not know that flow of impacts from organic farming was gradual and that its results cannot be realized immediately. Maina also learnt that the practice is labour intensive. But the returns are good and help to save on the cost of purchasing chemicals. Simon has been encountering problems in marketing his organic products. After working hard to grow healthy produce, he has to sell them in the local market where customers buy them at the same price as the conventional ones. He feels that his products should earn him more since they are healthy and have more nutritional value.



Maina pumping water on his farm.

More in-depth information!

As much as Simon appreciates *The Organic Farmer* magazine, he has made some recommendations on the information he would like to be featured in the *TOF* magazine's future issues; information on the right varieties of aloe vera for domestic use, value addition, how to grow aloe vera, and how aloe vera can benefit farmers economically. "TOF should provide more in-depth information on aloe vera production," he advises. Other areas *TOF* should cover include: local names of fodder trees, report on indigenous ways of pest and disease management in poultry, local poultry breeding methods, permaculture and using human waste as compost.

innovative farmers' corner

Brick makers' new idea

TOF When making bricks, the land from where the soil is dug, often becomes unsuitable for agriculture or any other purpose. The pits develop to breeding grounds for mosquitoes, which are a health hazard to people living near the abandoned pits.

Maurice Wanyonyi, a farmer in Wekhomba village in Likuyani district, has discovered a useful method of putting the derelict (unusable) land into productive use. Like many other farmers in the village, Wanyonyi has been making bricks for many years. But all this time, he had agonised at the sight of wasted land that could not be used any more for farming purposes once he had made and sold the bricks.

However, Wanyonyi who is an avid reader of *TOF* Magazine knew a few organic farming methods such as double digging and preparation of kitchen gardens such as the Mandala garden. Using this knowledge, he has decided to try his own method of reclaiming the wasted lands.

Organic waste fills trenches

He has now opted to making bricks in a different way. He digs trenches instead of the round pits and uses the soil for making bricks. After

b a k i n g the bricks, he starts filling up the trenches with organic matter starting with tree b r a n c h e s , kitchen waste and well-decomposed rabbit, sheep and chicken m a n u r e .

He allows a space of about 1 metre between the trenches, which becomes an alternate trench for making bricks the in next phase.



Wanyonyi shows the brick trenches, (above). Reclaimed trenches filled with organic material, planted with vegetables (below).



Land used for vegetable growing

Once the trenches are full, he puts them under various vegetables such as *sukumawiki*, cabbages, indigenous vegetables such as *terere* (amaranth), black nightshade or even carrots. He has been able to get very good vegetable yields even during the dry season because the organic matter in the trenches retains moisture. There are fewer incidences of diseases because brick baking fumigates the soil around the site. But the greatest benefit is the reduction of malaria and other water-borne diseases in the village, because the trenches are no longer filled with water and therefore cannot become breeding grounds for mosquitoes.

Wanyonyi has now become a major supplier of vegetables in the village as well as the local market. Other farmers have realized the benefit of this brick making method and have already adopted it. **pk**



Use of manure in a fishpond

Should I use dry or raw animal dung when applying to the pond for growth of phytoplanktons (fish food) and pond fertilization? Evans Mwambu, Mautuma.

The best manure is one that is decomposed. Decomposition uses oxygen in the water, yet the fish requires it too. Fish and decomposition will compete for

the oxygen, so it is advisable to use manure that is already decomposed. The quality of manure applied depends on the source of the manure. Pig, chicken and duck manure increase fish feed more than cow and sheep manure. Ensure that the manure you apply to the pond is fine or well decomposed as this facilitates the growth of microorgan-

isms in the pond that the fish feed on. The manure should be well distributed over the entire pond. Fish farmers should be careful when applying manure in a pond. Accumulation of manure at the bottom of the pond causes the release of poisonous chemicals that can kill fish. The recommended rate of manure application is 5kg per 100m³ per week.

Sufficient oxygen is important

How can one add oxygen in a fishpond to prevent fish from dying due to insufficient supply? Gabriel Namasaka, Mautuma

Fish need oxygen for their metabolism. Lack of it will cause death. The oxygen in water is called dissolved oxygen; it is absorbed from the atmosphere and also from plants when they make food from the sun (photosynthesis). The entry of oxygen into the water from the atmosphere is a very slow process; therefore, much of the oxygen used by fish in the water comes from the microscopic plants found in the water (phytoplanktons). There is no oxygen produced by these plants at night because at this time, there is no sunlight available to the plants for photosynthesis to take place. Oxygen also decreases on cloudy days when there is less sunlight reaching the pond.

Deep water, less oxygen

The deeper the water in a pond, the less the oxygen available to fish. In developed countries or in advanced fish farming, there are special machines (aerators) that are used to increase the amount of oxygen available to the fish in ponds to improve their growth and productivity. One way you can increase the amount of oxygen in your fishpond is by ensuring that the longer side of the pond is constructed parallel to the general wind direction. This way, the wind blowing over the water

surface will increase the amount of oxygen in the pond.

Keep predators away

Which crop can fish farmers plant around the fishpond specifically to scare or keep off snakes that are a threat to fish? Boaz Onziru, Mautuma.

Some farmers have reported that fertilizing the pond with cow manure keeps off snakes. Maybe this helps! Ensure all the long vegetation around the pond is kept short.

"My cows are losing teeth"

"My cows are losing teeth", said one farmer. Farmers attached to the Mautuma Fish Farmers Group who practice dairy cow rearing are complaining about their cows losing teeth and this they allege is caused by molasses which they feed on their cows. However, can molasses cause teeth decay and breakage?

From our research, molasses alone cannot cause teeth decay in animals. The animal diet is mainly composed of fresh grasses such as Napier grass, fodder trees, limited concentrates and mineral licks. After feeding on all these, animals take a lot of water, which acts as a teeth-cleaning mechanism. Many people on the other hand take a lot of sugary food and very little vegetable food. That is why the rate of tooth decay is higher among humans. Another major cause of tooth decay

Stock the right number of fish

What is the effect of under stocking and overstocking a fishpond? Edward Kekongo Mautuma

Overstocking will stress the fish because there will be limited food, space for movement and oxygen. With all these stressors, the fish can easily get sick or even die.

On the other hand, under stocking wastes the resources in the pond, which is a loss.

among people which can also affect animals is the quality of the water they drink. Some water contains a lot of fluoride, which accelerates tooth decay. The age of an animal can also be a factor in tooth decay; older animals tend to have this problem. We recommend that you and the farmers consult a veterinarian to examine the animals and advise you accordingly, because tooth decay can affect the productivity of the animals.



I have a problem with tick resistance

I do spray my three dairy cows every week for tick control. Recently I noticed that ticks usually found on dogs were also on my cattle. The ticks seem to be resistant to acaricides. I have changed acaricides I use but the ticks do not come off the animals. Is there a special acaricide for these types of ticks? FB Justus Wanyama

Ticks pose a big problem to livestock keepers. One of the reasons for this is due to their ability to develop resistance to almost all pesticides in the market. The situation has been worsened by privatisation of cattle dips whose management has been transferred to farmers and yet they have no training on the management of dips and lack knowledge on the appropriate method of applying tick chemicals in community dips. We are not sure which acaricides you have tried on your animals but acaricides made from pyrethrum tend to be more effective. One of these is Delete®, try this



A tick

and others that are pyrethrum-based.

Another problem could be the way you are applying the acaricides on your animals. You state that the ticks in your cows are the same ones you have seen in your dogs; do you ever spray your dogs to control the ticks? If you have not been doing so, then that could be the source of your problem; since the dogs always interact with your cows, they will transfer the ticks to your cows even after you have dipped them. So it is advisable to spray all your dogs and cows at the same time to ensure all the ticks are eradicated, this way your tick problem will have been solved. We would also advise you to consult a veterinarian to inspect your cows (including the dogs) and advise you on the cause of the problem.

NOTE: In one of our upcoming issues, we will provide farmers with other environmentally friendly methods on how to control ticks using herbs in their farms.



Organic honey certification

TOFI Organic production is a holistic system of practices that promote the sustainable health and productivity of the ecosystem – soil, plants, animals and people. Organic foods are farmed in an environmentally sustainable and socially responsible way; focusing on soil regeneration, water conservation and animal welfare.

For organic honey production, beekeepers are expected to observe the following standards:

Hive Location: Hives should be located within 5km from possibly contaminated fields and water sources.

Bee feeding: In case of feeding, it should be done using food from organic sources. In Mwingi, hives are located in wild areas where there is sufficient supply of bee food (nectar and pollen), water and all other bees' welfare needs. Beekeepers should leave at least 30 per cent of honey in the hives at the end of harvesting season and adequate pollen for bee consumption during the dry season when the bees cannot collect enough nectar or pollen for honey making.

Only organic honey should be used to feed bees during the dry season.

Harvesting: Should be done in a clean environment, according to set procedures. Beekeepers should only harvest ripe honey, which is 75 per cent capped. They should only use acceptable smoking materials that do not kill bees such as dry wood and grasses. Those harvesting should not kill bees, brood or eggs during harvesting or any other time. They should avoid mutilation or clipping of the queen's wings.

Storage: Storage should be done in a clean place, free from

contamination. Containers for honey storage should only be the ones recommended by organic inspectors.

Hive management: All necessary records should be kept for field activities including location of hives, new hives introduced, sources of wood material used in hive construction, pests and predator control methods used. Each beehive should be made of natural material that is not poisonous to the bees. Every beekeeper should practice good hive management through regular inspection, cleaning and repair.

Pest and disease control: Beekeepers should use natural pest and disease control methods only (e.g use of neem powder or oil to control pests. Beekeepers with hives on trees should use an iron sheet cage to control the honey badger). *pk*



Beekeepers should only use recommended materials (dry grass and dry wood) to smoke bees.



farmers forum

0717 551 129 / 0738 390 715

Value added products for sale: We sell organic value added products including moringa powder, carrot flour, beetroot flour, amaranth flour, dried vegetables, garlic flour, stinging nettle flour and ginger. We also offer training on value addition and income generation skills to individuals or farmers groups. Contact the director of SUFOD (P.O. Box 39251-00623) on sufodj@yahoo.com or 0724 456 420.

Flour for sale: We have 500kg of sweet potato flour and 400kg of banana flour to sell at Ksh 500 per kg. Contact Naftaly Waruhiu on naftaly.waruhiu@gmail.com or nwaruhiu2007@yahoo.com or 0727 203 477 or 0732 820 895.

Chicken and rabbits for sale: Contact Annah on 0721 899 841.

Seedlings for sale: GTZ is selling the following tree seedlings at the South Coast: 630 *atropa curcas*, 250 croton, 360 *Moringa Oleifera*, 720 *Acacia Spectabilis*, 810 *Acacia Polyacantha*. 130 rough lemons seedlings, 180 passion fruits, 24 un-grafted mangoes and 150 paw-paws. Contact Gunter Ullrich on gunter@gtwu.de or 0725 946 033.

Briquetting machine for sale: I make and sell charcoal briquetting machines. The machine is electrical and its output is up to 500kg per day. Contact Moses Gachanja on 0722281127.

Chopping machine for sale: Nakuru Simba Machines is a versatile machine that chops grass fodder, grinds maize cobs and mills maize into flour. Contact Naftali Araap-sawe on 0705 270 549.

In-calf heifer for sale: contact Stephen Ananda on 0720 639 985.

Potato seed for sale: Are you a potato farmer looking for high quality seed potato for this planting season? Desiree seed potato are available at Ksh65/kg. The seed produces 10-16tons/acre with good farming practice. Contact Soko Shambani on info@mfarmerkenya.org or 0720 471 969.

Arrow roots, watermelons, sweet potatoes, cassava for sale: contact Muriithi Manu on 0723 398 375.

Powder and flour for sale: beetroot powder Ksh 2,500, pumpkin flour Ksh 750 and cassava flour Ksh 80. The prices are per kg. Contact Peter Kamau Muturi on 0720 846 107.

Hay for sale: 1000 bales of hay available for sale Ksh 150 per bale in Gilgil. Contact 0722 94 64 53.

To see the most recent advertisements or to place an advert, you can simply go to our online Farmers Forum section in our website.
www.theorganicfarmer.org/farmers-forum

Turkey wanted: I'm in Kapsabet area. I am in need of a male turkey and any gender of ducks. Contact David Kiprok Kogo on 0715 036 248.

Rabbit farmers across Kenya wanted: We offer good prices. Our target are 100 farmers in every county who have at least 60 does as breeding stock. Farmers, especially in the Rift Valley and Western regions, take note. We buy rabbits for meat at Ksh 400 per kg. We also supply quality breeds to our farmers. Contact Bonie Kioko Komu, Director at Mazibu Farm Ltd on 0722 669 615.

Chicken feed in Kitengela wanted: I am looking for somebody to supply me with home made chick mash, growers mash, layers mash and any other affordable feeds for *ki-nyeji kukus*. Contact Wains Empire on wains.empire@gmail.com or designbuiltturnkeyprojects@gmail.com or 0722 223 685.

Market for rabbits wanted: Where can rabbit keepers get assistances in selling their rabbits? Contact Kaigonde Rabbit Keepers S.H.G from Nyeri Tetu Division on 0724 332 445.

what others are doing

In this section we provide our farmers with additional information about what other institutions in the field of agriculture (production, marketing etc).



icow.co.ke
spore.cta.int
gaia-movement.org
organiclifestyles.tamu.edu
yagrein.blogspot.com
livestockkenya.com



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