



Photo: TOF

Women tend to calliandra trees in Chyullu village, Kitui county. Just like crops, trees require great care in order to grow to maturity. Most trees fail to attain maturity due to lack of care.

Dear farmers,

“A nation that destroys its soils destroys itself.” These words were uttered by a former US President the late Franklin D. Roosevelt at the time when his country was facing great challenges in its agricultural development during the great depression in 1933, just before the Second World War. These words are still relevant to the situation in Kenya today.

The condition of the soils in all the farming areas in the country has degraded to an extent that they can no longer sustain profitable crop production. Kenyan farmers continue to use very destructive practices like heavy uses of agrochemicals, burning crop residue, cutting down trees and over grazing.

As we have repeated many times in this magazine, good soil is the foundation of agriculture. There is no way we can produce adequate food for our country unless we adopt sustainable farming practices and restore soil fertility. For example, the rains are just starting now, but most of the farmers have not put in place any soil conservation measures. So, thousands of tonnes of topsoil will be washed away into rivers and lakes. Topsoil contains important nutrients that the crop will require to grow well and produce good yields.

TOF would like to advise farmers to build terraces across their slopy land and plant trees, which can hold the topsoil and prevent soil erosion. Another useful method is apply no-till practices (or zero-tillage) especially in hilly areas. This method not only cuts down ploughing costs, but also ensures the top soil remains intact with adequate amounts of nutrients such as Nitrogen, Phosphorus and Potassium, which crops like maize will need in large amounts in the coming months.

Apart from practising soil conservation measures, farmers need to ensure that soil fertility is maintained through proper use of farmyard manure such as the application of slurry, plant teas, plant extracts and other organic fertilizers to ensure the growing crops do not suffer from deficiency of nutrients and pests and diseases. Through these measures farmers will be assured of healthy crops and a good harvest at the end of the season.

Take advantage of current rains to plant trees

TOF - Although they have come late, the rains are with us again and farmers are busy planting various crops for the season. However, as we plant our usual crops, it is important that we do not forget other important activities.

The beginning of the rainy season, especially the month of April, is a good time for tree



planting. After planting their crop, farmers should allocate a particular time of the day, such as in the evenings to plant trees and tend to the growing ones through pruning and adding farmyard manure or other organic material to enable them grow well.

It is unfortunate that farmers still have difficulty getting fodder for their animals during the dry season. Many spend thousands of shillings every week to buy hay from those who preserved their fodder planted during the last rainy season. This kind of situation should not continue.

TOF would like to advise farmers to plant fodder crops and trees during this rainy season as a priority. A number of tree varieties can be used as

fodder for animals; trees such as calliandra, leucaena, sesbania, gliricidia or tree lucerne (see TOF No. 114, November 2014 and this edition page 3).

Since most farms have livestock, farmers need to select the type of trees that not only provide them with firewood or for building purposes, but also those that provide protein for their animals. This is a better option especially for those that cannot afford to buy expensive dairy meal and other concentrates.



Photo: ICRAF

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Rabbit keeping is beneficial to farmers

Rabbits provide quality meat and manure. They are also a good source of income for small-scale farmers.

The Organic Farmer | Rabbit keeping is one of the simplest farming activities. But in Kenya, rabbits are regarded as being less important compared to other livestock such as cattle, sheep and goats. Many people keep rabbits as a hobby or as pets. If kept clean and fed well, rabbits take a short time to mature. Their gestation period is about 28 days. There are many rabbit breeds that farmers can keep:

California White: This is white in colour with black ears, nose and tail. It weighs 4kg-5.5kg at 4 months. With good spacing, it is able to produce young ones 4 times in a year, giving around 8 young ones each time.

New Zealand White: This is purely white in colour. It weighs approximately 4kg-6kg. It also kindles (produce young ones) 4 times in a year with good spacing. It can produce between 7 to 15 bunnies each time.

Flemish Giant: Its colour is light grey or black blue. It weighs 6kg when fully grown. When cross-

bred with other breeds, the offspring exceed their parents in terms of reproduction capacity and body size.

Chinchilla: Has grey fur and weighs 6-7kg in 5 months.

Earlop: Can be grey or brown in colour and weighs between 5kg- 7kg.

Angola: This is a grey, purple or black with long fur.

Meat not the only benefit

The most important benefit of rabbits is their meat. Up to now, rabbit meat is not very popular locally although consumption is rising. Rabbit keeping in the country is becoming popular as in any other parts of the world. Currently the Rabbit Breeders Association of Kenya (RABAK) is the main body promoting the production of rabbits in the country.

According to the RABAK chairman Mr. Peter Waiganjo, the demand for rabbits is increasing. Just to give an example of the potential in the market, Waiganjo says that recently, the association delivered a few kilograms of rabbit meat to a hotel in Thika town. The hotel has now placed an order for 30kg of the meat every 2 days.

A similar trend has been reported in many other towns.

Rabbit urine: The urine contains a lot of ammonia and uric acid which can be used as foliar feed (fertilizer).

Rabbit droppings: The droppings are rich in Nitrogen and Phosphorus. Added to the soil, it gives plants resistance against attacks by pests and bacteria.

Proper feed is important

Organically grown rabbits have a higher nutritional value compared to conventionally kept rabbits (rabbits fed with conventionally produced feeds). To rear rabbits organically, one has to select their feed carefully. Rabbits can feed on weeds that goats feed on. On these feeds it is advisable to add Mexican Marigold; this plant contains



Photo: TOF

There is a shortage of good rabbit breeds in the country.

a lot of antibiotics that control parasites. To protect them against intestinal worms, farmers should feed them with Nasturtium (Indian cress). Rabbits rarely get ill if taken care of well and kept in proper housing with sufficient space for rest and movement.

Good and clean housing

Rabbits are very sensitive to diseases if not kept well and clean. The hutch (Rabbit house) should be properly built to provide a comfortable and safe place to stay in. The hutch should be 1 metre above ground to keep off preda-

tors. Naturally, rabbits like dark places. The hutch should be a bit dark but with some little light.

The leeward side (the side sheltered from wind) should be completely shielded. The material used to build should not leave any gaps that will allow wind into the hutch. The floor should be well constructed such that the panels, wood or sticks leave a space of about 1cm to allow the free flow of urine and droppings. Farmers who want to collect the urine or droppings should place a trap (basin) under the hutch (see page 8).



Proper feeding and hygiene improve rabbit productivity

Association comes to the aid of rabbit farmers

RABAK conducts monthly training to interested farmers across the country. Individual farmers pay Ksh 1500 for one-day training session where they learn every aspect of rabbit rearing including value addition. The association is also promoting the consumption of rabbit meat to change people's attitude towards rabbits.

Many farmers had abandoned rabbit farming for lack of market, but increased awareness has raised the demand for rabbit meat. According to RABAK chairman Mr. Peter Waiganjo, many people now want rabbits but there are very few farmers with good breeds

for meat. He says the association is trying to promote rabbit production to meet increasing demand.

Currently, RABAK supplies 500kg of rabbit to Uchumi Supermarkets and also hotels in Thika town. Other supermarkets have also expressed interest in stocking rabbit meat but supply from farmers is not adequate.

Farmers interested in training can contact RABAK using the following address:

Rabbit Breeder Association of Kenya P. O. Box 630-01000, Thika, Tel. 0721 219 092, 0721 643200, 0722 661088.

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



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Plant calliandra for fodder and soil fertility

The last three months have been a nightmare for those farmers who did not conserve fodder for their livestock. But the long rains are expected this month. Be wise: Plant lots of fodder trees for your animals.

Caroline Nyakundi | Many farmers have complained that they had great difficulties in feeding their livestock in the last 3 months. It seems that many are yet to understand that you cannot depend on fresh Napier grass or other green vegetation to feed livestock throughout the year. During the dry season, vegetation dries out and farmers are left with nothing to feed their cows or goats leading to drastic reduction in milk and meat yield.

This needs not be the case and farmers should take advantage of the long rains starting this month to grow a variety of fodder crops, which can survive drought and can be fed to livestock during the dry season. Instead of buying expensive concentrates, there are a variety of leguminous plants that can serve the purpose.

In this issue, we will show you how to grow fodder trees and shrubs, many of which are rich in protein for dairy and beef cattle, chicken and pigs. In the past issues, TOF has published a series of articles on how farmers can grow fodder trees and shrubs like calliandra, leucaena, desmodium, and fodder crops like sweet potato vines and other legumes. 3 kg of tree fodder and other legumes such as sweet potato vines give the same milk yield as 1 kg of dairy meal. Therefore, the farmer can give the cow 12kg of legumes instead of 4kg of dairy meal. Refer to TOF No. 112 September 2014 (pg.8) for more information.

Fodder shrubs are not difficult to grow and should not compete with your crops for space. You can grow shrubs along the boundaries and hedges in your *shamba*. If you have enough space, you can grow the shrubs in lines to form terraces. This helps to reduce soil erosion, protect watersheds and provide farmers with firewood. For bee farmers, there is the added advantage of having nectar for bees, which means



Photo: ICRAF

more honey and money.

Calliandra calothyrsus is one of the useful fodder shrubs you can grow in your farm.

It is a thornless leguminous fodder shrub that originated from Central America. It is an important species that can be used as a substitute for commercial dairy meal. Its main advantages are that it is easy to grow and manage, grows fast, is tolerant to acidic soil and helps fix nitrogen in the soil. Farmers can cut its branches repeatedly to feed to dairy cows and goats, and these grow back very quickly.

Conditions for growth

Calliandra grows to a height of 4 to 6 metres. It requires rainfall that is above 1,000mm per year; the plant is not very drought tol-



erant although it can withstand dry periods. It can also tolerate some shade but grows best in open areas. The plant also grows in a wide range of soils, but for better growth it requires well-drained soils, and does not tolerate water logging.

Planting and management

Calliandra can be planted between upper-storey shrubs on farm boundaries, in hedges

around homesteads, on contour bunds, and in lines between Napier grass. Transplant seedlings from the nursery (when they are 0.2m to 0.3m in height). Plant them in rows of about 0.3m spacing between plants. Use manure and water the seedlings adequately. Calliandra trees are cut back at a height of 2m to between 0.15m and 1m to improve foliage which is used as fodder for livestock.

Pests and disease control

Calliandra is fairly resistant to pests and diseases. However, some fungal pathogens like *Armillaria mellea* can cause root rot in cool and high altitude areas. Affected plants should be uprooted and burnt.

Harvesting

Fodder is ready for harvesting in about 9 – 12 months after planting depending on the region. It is possible to have 4 to 6 harvests per year. Use a *panga* or secateurs (pruning scissors). Letting animals eat the leaves or young branches directly is not recommended as they may destroy the plants.

Leaves and young branches should be cut when they are about 3 feet. After about 12 years, you should replace the plants with new ones.

One disadvantage of this shrub is that it does not produce large amount of seeds. Farmers who wish to collect seeds should do so very carefully since the seeds are naturally dispersed far away from the tree as the pods split suddenly.

Feeding animals

One kilogramme of dry calliandra has the same amount of

digestible protein as about 1 kg of dairy meal. On a fresh weight basis, 3 kg of calliandra is equivalent to about 1 kg of dairy meal and the effects of calliandra and dairy meal have been found to be supplementary, suggesting that the two feeds are nutritionally interchangeable. A farmer would need about 500 shrubs to feed a dairy cow throughout the year at a rate of 2 kg dry matter (6 kg fresh material) a day.

Because it has high levels of tannin (a bitter substance), calliandra should only be fed to ruminants like cows, goats and sheep. It is therefore not easily digested by non-ruminants like pigs, rabbits and chickens.

Other uses

Apart from feeding dairy animals, calliandra is useful in improving the soil nutrient levels and is useful for the reforestation of bare areas that are prone to soil erosion.

Calliandra wood is also good for fuel as it grows quickly, burns well and can be used to produce charcoal. The poles can also be used in supporting climbing beans. In addition, the leaves can be used for mulching and as green manure for other crops since it adds nitrogen to the soil. Its flowers provide nectar for bees, and the honey produced is said to be of good quality.

Points to remember

- Fodder shrubs are best for farmers who keep many dairy animals and buy dairy meal regularly.
- Ensure you have secluded land (not communally owned), which does not have free-ranging animals that will destroy the shrub seedlings.
- Avoid clearing bushes using fire as this will destroy the shrubs.
- Plant calliandra along with other fodder species.

You can purchase Calliandra seed from any farmer or tree nursery near your area; Kenya Forestry Research Institute; VI Agro-Forestry Project P.O. Box 2006, 30200 Kitale, Tel. (054) 20 139 or 30 283. You can download past issues of TOF since 2005 from <http://www.infonet-biovision.org/default/text/-1/orgFarmerGroup> Join discussions and access more information on organic farming and other sustainable farming practices on <http://www.theorganicfarmer.org/>

Proper care of crops during growth is important

To get a good harvest, farmers have to exercise high standards of crop management and adopt sustainable farming practices that minimize crop pests and diseases and maintain soil fertility.

Elkanah O. Isaboke | As we prepare to plant various crops in this long rains, it is important to plan ahead and get equipped with the right information to prevent and tackle challenges associated with weeds, soil nutrient degradation and pests and diseases.

I am therefore going to share with you some of the sustainable practices that can be used to manage your crops:

Pests and disease management

Pests and diseases are responsible for between 20 to 80 per cent of crop losses but sustainable pest and disease management practices can minimize their negative health and environmental effects. Below are some useful tips for farmers:

1. You should monitor and examine your crops closely to accurately diagnose and understand the nature and source of pest and disease problems in your farm.
2. Physical control measures are the first options to consider. They include simple hand-picking, erecting insect barriers, using traps, tillage, mulching, soil solarization and adopting protective structures such as shade net houses and greenhouses.
3. Beneficial insects (called natural enemies) like wasps, ladybirds, spiders and hover fly larvae which feed on plant-eating pests like aphids and caterpillars, eliminate or reduce pests. In this way, they provide adequate pest control with minimal environmental impact. You should therefore conserve and manage habitats for natural enemies of the target pests to thrive by, for example, planting hedges and windbreaks, avoiding use of broad spectrum pesticides and growing flowering plants that provide food for beneficial insects.
4. Instead of using chemical pesticides, use biopesticides, which are made from naturally-occurring pathogens (fungi and bacteria) that kill insects.



Farmers scout for pests in a maize demonstration plot in Kagunduini village in Murang'a County.

5. An integrated pest and disease management strategy can also be adopted, that is the integration of both biological, physical and use of biopesticides. It is, however, recommended that you first consult organic input suppliers and sustainable agriculture extension officers in your area.

6. You should as much as possible adopt other farming practices in addition to pest and disease control such as;

- Use of certified or disease-free seed and nursery stock to prevent the introduction of disease into the farm.
- Use of disease tolerant and resistant crop varieties.
- Adopting crop rotation, intercropping and green manure planting. Grow crops with pest repelling characteristics like African marigold, onions, leeks and garlic.
- Keep planting beds clean. Remove any diseased or infected plant material.
- Clean and sterilize farm tools such as *jembes* and *pangas* immediately after use in infected plots.

Soil fertility management

Healthy soil produces healthy



plants that resist attack from pests and diseases. To improve and maintain soil fertility, dig less, mulch more and apply compost at all times.

• Dig less

Start by digging deeply to break up the hard pan, remove hard layers in the soil profile and apply compost. In subsequent years, disturb the soil as little as possible. The compost can be worked into the soil at the beginning but subsequent applications should be done on the soil surface at the base of the plants.

• Mulch more

Mulching is the process of covering the soil surface with a layer of plant residues to conserve soil moisture, keep it cool, protect it from erosion and develop surface crust, minimize compaction, improve soil structure, enhance infiltration, suppress weeds and add nutrients to the soil through decomposition.

Mulching can be used before and after planting, as well as around young plants. It is especially useful for high-valuable vegetable crops, and for growing crops in dry areas and in places where the soil is easily eroded by heavy rains.

• Apply compost at all times

Compost is nature's fertiliser formed out of decomposition of plant, insect and animal residues and wastes. Its application helps in maintaining the soil structure so that it is easy to work, is resistant to erosion and also supports pest and disease control (see also page 6).

Weed management

Weeds pose a serious risk for small-scale farmers as they

adversely affect agricultural production. The oxford dictionary defines a weed as *a wild plant growing where it is not wanted and in competition with cultivated plants*. It is, therefore, "a plant in the wrong place", meaning that it may be beneficial in another set-up.

Weeds may be unwanted on our farms for a number of reasons. Firstly, they interfere with food production in agriculture. They must be controlled in order to prevent loss or diminished crop yields. Weeds can also be of concern for environmental reasons where some weed species compete for nutrients with crops. They interfere by:

- Competing with the desired plants for the resources that a plant typically needs, namely, direct sunlight, soil nutrients, water, and space for growth.
- Providing hosts and vectors for plant pathogens, giving them greater opportunity to infect and degrade the quality of the desired plants.
- Providing food or shelter for animal pests such as seed-eating birds or eve fruit flies that otherwise have died after the previous crop was harvested.

To control weeds develop the habit of scouting every week to remove or cut them down. Use the right tools and techniques to ease weeding. The bigger your weeds get, the more difficult they are to control.

a) **Hand-pulling** is one of the ways that one can use to control weeds.

b) **Mulching** also helps in weed control - spreading a thick layer of mulch, keeps the light from reaching weeds. Without adequate light, the weeds will die. Mulch reduces the ability of weeds to make enough chlorophyll, which retards their growth. Most of the weeds weaken and die before you even notice them.

c) **Hoeing**: Separate by cutting the stems from the roots just below the soil surface. Hoeing is best done when the weeds are very small seedlings or newly emerged shoots of perennial weeds.

Farmers can get a list of important Biopesticides in TOF No. 108 and on Infonet-Biovision website: <http://www.infonet-biovision.org/default/ct/793/recipesForOrganicPesticides>. In addition, you can use plant extracts, traps and bags to control pests naturally.

Beetroot improves your health and fights diseases

Beetroot is easy to grow. It is a healthy tuber that boosts blood supply, reduces blood pressure, fights cancer and has vital vitamins that help strengthen your body.

Peter Mokaya | Like carrots, beet root is a tuber crop, which can be grown almost anywhere in Kenya, in various soil types. It can grow in areas with plenty of rain or with little and even in drought-like conditions or delayed rains.

When organically grown beetroots taste better and have a higher nutritional content (of vitamins and micronutrients) than those grown conventionally using chemicals. Such crop has no toxic pesticides and synthetic fertilizer residues. Beetroots grown in a wide range local set ups such as kitchen gardens, small home gardens and greenhouses.

Additionally, beetroot has a ready market in urban areas like Nakuru, Eldoret, Nairobi and Mombasa. Its demand is due to its use in vegetable salads in various food outlets such as restaurants and hotels. But apart from growing beetroot to make good income, did you know that they are also very nutritious and healthy for the farmers as well? It is especially beneficial for people who suffer from anaemia (or lack of enough blood).

There are several causes of anaemia and they include blood loss from worm infestation in the intestines, which is common in rural communities as farmers interact with soil and in women of reproductive age group, from loss of blood during monthly periods. In both cases the loss of blood results in reduced oxygen, which results in low energy, which is manifest as a general feeling of tiredness and weakness especially when carrying



out hard menial work. This is not good for farmers, especially as they require adequate energy to work in their farms and attend to their crops and livestock.

In addition to adding blood in your circulation system and reducing anaemia, this tuber food has several other nutritional and health benefits. These include:

Lowering your blood pressure

High blood pressure (HBP) also is common among middle-aged Kenyan population. It is increasingly common in both men and women due to poor eating habits. It is difficult to diagnose HBP without a proper medical examination which includes getting a regular blood pressure check in a medical facility. Due to this lack of clear symptoms, high blood pressure is often referred to as the "silent killer."

Research has shown that drinking beet juice can reduce blood pressure in a matter of hours. Drinking one glass of beet juice can lower systolic blood pressure by an average of 4-5 points. The benefit likely comes from the naturally occurring nitrates in beets, which are converted into nitric oxide in your body. Nitric oxide, in turn, helps to relax and dilate your blood vessels, improving blood flow and lowering blood pressure.

Boosting your stamina

Farmers are gener-

ally healthy people and do not need their stamina boosted but once in a while, due to illness or other reasons, they may need this. Consuming beetroots is one way of boosting your stamina.

Research has shown that those who drank beet juice prior to exercise were able to exercise for up to 16 per cent longer than when they did not take any. This benefit is thought to be related to nitrates turning into nitric oxide, which may reduce the oxygen cost of low-intensity exercise as well as enhanced tolerance to high-intensity exercise. In the case of farmers, who do strenuous manual labor, the recommendation would be a glass of beetroot juice every morning or every other day before starting work on the farm.

Fighting inflammation

Inflammation is swelling and pain resulting from the body's immune system trying to protect one from injury and harm from substances that the body recognizes as harmful or toxic. Beetroot is a good source of *betaine*, a nutrient that helps protect cells, proteins, and enzymes from environmental stress. It is also known to help fight inflammation, protect internal organs, improve vascular risk factors, enhance performance and prevent numerous chronic diseases. Inflammation is the root cause of most chronic diseases.

Anti-cancer Properties

Cancer, like heart diseases, strokes and diabetes is on the increase in Kenya. Beetroot can contribute to reducing cancers or preventing their occurrence in combination with other nutri-

ents.

The powerful phytonutrients that give beets their deep crimson color may help to ward off cancer. Research has shown that beetroot extract reduced multi-organ tumor formations in various animal models when administered in drinking water, for instance. Beetroot extract is being studied for use in treating human pancreatic, breast, and prostate cancers, among other cancers because of its unique qualities.

Rich in valuable nutrients and fibre

Beetroots are high in immune-boosting vitamin C, fibre, and essential minerals like Potassium, which is essential for healthy nerve and muscle function and Manganese, which is good for your bones, liver, kidneys, and pancreas. Beets also contain the B vitamin folate, which helps reduce the risk of birth defects.

Detoxification Support

Traditionally, beets were valued for their support in detoxification and helping to purify your blood and your liver. Many people who may want to detoxify their bodies use various herbal and vegetable juicing methods. Beetroot is good for detoxification or blood purification. The betalin pigments in beets support your body's Phase 2 detoxification process.

Beetroots also contain exceptionally high levels of folate at 148 mcg or 37% the daily required amount (Daily Value), in just a one-cup serving. They also have 6.7mg or 11% Daily Value of vitamin C. Most people do not know that vitamin C is a key vitamin available in beetroot.

TOF recommends and encourages all people, including organic farmers, to look at beetroot not just as a viable crop for earning income, but also a nutritious food that contributes to good health.

Preparation and use

Beetroots, like carrots, can either be eaten raw, which is recommended, juiced or in some instances cooked lightly. Heavy cooking is not recommended as it kills most of the nutrients, including vitamins and useful enzymes.

Dr. Peter Mokaya is the Director of Organic Consumer Alliance (OCA).



Organic farmer amazes neighbours with crop

Through the use of organic fertilizer, timely planting, use of certified seeds and good crop management, Faith Mwelu was able to get a good harvest unlike other farmers who used chemical fertilizers.

By John Mutisya | Ukambani is one of the semi arid regions that is characterized by poor rainfall. For the last two decades, Faith Mwelu, a 35 year old farmer from Mikuyu village, Kathekakai location of Machakos County, has never seen a mature maize plant.

Last season, Faith broke this trend on her 2-acre piece of land on which she has planted maize and beans. She bought planting seeds a month earlier before the rains began. Earlier, she had requested for a supply of organic fertilizer from Environmental Conservation and Health (ECoH) holdings distributed through the Katumani Community Based Organisation resource centre.

Applied organic fertilizer
Faith planted her maize with an



organic fertilizer (YAD Fertilizer) then top dressed the maize at a knee height with a liquid organic fertilizer from the same company (ECoH). She did the same to her 1 acre bean farm. Establishment and growth of the plants were very vigorous despite the little rains experienced during the season.

She told this writer that each maize plant could produce more than 2 cobs while the beans had big seedpods. Many farmers in the area, who have been using synthetic fertilizers, hardly got any harvest. To explain the

robust crop in Faith's farm, some linked supernatural powers to the extraordinary growth they had witnessed in the organic farm.

Her crop yield has increased

Faith, however, explains that use of organic fertilizers, timely planting, use of certified seeds, proper spacing and weeding have contributed to the good crop in her farm.

"Last season, I harvested 6 bags of beans, 3 more than the

previous season in my one acre bean land. I will sell 5 bags, each at Ksh. 6,300. This money will help me meet some domestic needs and settle school fees for my sons," she says.

The maize yield was equally impressive. "I harvested 8 bags of maize from my 2-acre maize field, which is two more than what I got in the previous season," she adds.

Group member emulate her

Faith has shared her secret of success with members of her farmers' group (*Kukena Kwa Sua Women Group*), which has 22 members and her neighbors, who are interested in learning more about organic farming and other sustainable agricultural practices. So far, 11 farmers have been persuaded to try her approach. She is convinced, from experience that organic fertilizers are effective at improving the fertility of the soil.

Farmers can contact Faith Mwelu Bernard on 0729248056

EcoH holdings company-manufacturers of YAD organic fertilizers can be reached through the Director, Dr. Nzuki-0722760500.

Farmers can make compost in 14 days

Elkanah O. Isaboke | Compost making should be a continuous process. Since organic farmers always want to have compost to apply to their crops regularly, they need to shorten the period it takes for the compost to be ready. One of the ways they can do this is to go the following simple steps:

1. Prepare a 1 cubic metre box (from wood or any other material).
2. Collect enough farmyard manure, green material and dry plant material. Chop the plant material into small pieces, the chopping increases the surface area for compost microbes to work on. It also provides an even distribution of air and moisture in the material.
3. Mix this organic matter well with the farmyard manure. Add kitchen waste such as wood ash, fruit and vegetable residue.
4. Add some topsoil. Microorganisms in the soil speed up the decomposition process.
5. Mix the material well and fill it in the box.
6. The material should be moist but not wet.



The 14-day compost can be made in two ways: By use of wooden box (above) or a wire mesh (below). The wiremesh allows free flow of air during the decomposition process.



7. Place a piece of plastic cover over the top of the compost to help trap the heat produced by the pile. Covering the pile with black polyethylene sheet reduces the need for frequent watering and prevents leaching of the nutrients.
8. Drive a stick through the pile until it reaches the bottom of the pile and leave it there.
9. Pull the stick after every 3

days, feel it with the back of your hand, if it is still warm, this means the decomposition is still going on and the compost is not ready. If the stick has a dark white colour, it means the compost is too dry. Add more water until it is moist and cover it again.

10. Turn the compost on the 5th and 10th day to ensure it is adequately mixed. Keep checking the heat with the help of the stick (also called the thermometer stick). More frequent turning results in faster decomposition of the compost.

11. Alternatively instead of using the stick, farmers can dig into the pile and remove a handful of material from the centre.

The material should be warmer and darker than that on the outer edges of the pile. If the process is going on well, the internal temperature should rise within the first 24 hours. If the compost is too dry, there is need to add some more water to moisten the material.

12. After cooling down, the heap should have a nice smell meaning it is ready for use.

Proper breeding produces healthy chickens

I have been rearing Kienyenji chicks but when they hatch in the first two weeks, most of them die. I have observed that their wings drop, their legs have no strength, their sound drops and sometimes they do not produce any sound. What could be the problem? Is there any medication for this problem?

Several factors could be the source of the problem with your chicks. We do not, however, know if you are using an incubator or hens to hatch your chicks. If the hatching rate is more than 80 per cent, this shows that the chickens have no problem, but if it is less than this you need to look at the likely causes, which include the following:

Inbreeding

If using your hens to hatch, chick deaths may be caused by inbreeding- maybe the hens and cockerels are closely related which can lead to weak chicks, which tend to die a short period after hatching. Heavier birds also tend to have a lower hatching rate compared to lighter breeds.

Choice of cockerels

If you are using cockerels, the body condition of cockerels can affect the quality of chicks obtained from such cockerels. Eggs fertilized by weak cockerels will produce weak chicks. Suck cockerels should be replaced with stronger and younger ones. Also, make sure that you have one cockerel for every 8 to 10 hens to ensure optimum fertility levels in your chickens and healthy chicks.

Incubator hygiene

Incubator hygiene is important. Although most incubators are cleaned by their owners, many people find it near impossible to clean the fans, which can harbour dust and bacteria. It would be useful to use an air compressor to blast the dust out of the fan. It may also be worth contacting your incubator manufacturer about the safest method for cleaning your incubator. For this reason, chicken vets prefer using hatchers and not incubators as hatchers are easier to clean. Always use approved disinfectants for cleaning as this will kill bacteria, viruses and fungi.

Temperature

Eggs should be incubated at 60% humidity and 38.4°C in still



air incubators and 37.5 – 37.8°C in forced air incubators. The hatcher should be 36.9- 37.5°C and 60% humidity. If you have maintained these temperature and humidity levels, it is possible that a disease has spread throughout your flock causing a sudden drop in hatchability and survival rate.

High quality feeds for proper growth

Which is the best quality feeds to give layers? What is the recommended daily ration per hen?

It is difficult to give you the best quality feeds in the market or the best formulation. The reason for this is that the quality of any feed depends on the raw material used apart from other parameters such as the balance in nutrients it contains. Each stage of growth in chickens requires a different type of feed such as chick mash, layers mash, broiler starter or finisher rations.

Quality raw material

It is important that farmers buying chicken feeds go for well-known brands, which sell good quality feeds. Should they notice anything unusual in the health of their chickens, they

can lodge complaints with the respectable company to ensure they are sold quality feed at all times.

Beware of fake animal feeds

Farmers should know that there are now many feed manufacturing companies in major towns in Kenya. Feed manufacturers rely on the materials available to make feed rations for each stage of growth in chickens. Sometimes, they may use low quality raw material for feed formulations, which lowers the quality of feeds - such feed will affect the chickens health and even growth.

That is one, reason farmers should be careful where they buy their feeds. Currently the country does not have a regulatory authority to control feed production, which has led to mushrooming of many companies that purport to sell quality feeds many of which are fake. Several times, we have shown farmers who have access to raw materials how to make their own feeds (TOF No. 112, November 2013, TOF and No 111, August 2014). The recommended daily ration for an adult hen is 130g – 140g of feed per day.

Retained placenta!

I have a Friesian cow, which has calved for the second time. In this calving, there was incidence of retained placenta and lack of appetite, which was followed by low milk production (only 5 litres per day). What can I do?

Retained placenta often results in low milk yield especially if it has caused an infection in your dairy cow. The infection can also cause the cow to lose appetite. Since the cow is not eating due to poor appetite, there is no way it can produce milk because it has to feed to produce milk, which is the reason for the reduced milk production.



Causes of retained placenta

Retained placenta can be caused by a number of factors such as the calf being too big for the cow. Lack of adequate feed, especially during the dry season can also be a factor; dairy cows that do not get a balanced feed may develop uterine prolapse (a condition that interferes with the removal of the placenta) during calving down, which can lead to the placenta being retained in the uterus. TOF would advise you to see a vet as soon as possible to remove the placenta and treat the infection if there is any.

Farming Tip

The difference between stingless and honeybee

Despite our frequent coverage of the honeybee and stingless bees, it appears that most farmers are yet to understand the difference between the two types of bees.

Stingless bee



We have received several questions from farmers who want to know the difference between the two types of bees. Below we try to show the difference between the two types of bees.

It is easy to distinguish between stingless bees from the honeybee. Stingless bees are smaller in size (see pictures left and right). While the honeybee can sting to attack their enemies, stingless bees bite instead.

Names for stingless bees

which can help farmers distinguish them from the honeybee are *ikora*, *inasasa*, *iwere*, *vuyuyi* and *vusutsi* (Luhya) *Njore* (Kikuyu) *ngilu* (kamba) *siambiri* (Meru), *kosomek* (Kalenjin).

Honeybee



cm

TOFRadio answers your questions

TOFRadio is broadcast on 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.

Rabbit sausages can earn you that extra income

Musdalafa Lyaga | Rabbit farmers do not have to necessarily smile all the way to the bank, as the adage goes. The farmers can make money right at the farm gate through value addition.

Two farmers from Kiambu, Isaac Muigai and Lilian Kanyingo were recently featured in the local media for their success in their rabbit value addition enterprise. Their company, Pillar Group Limited in Kikuyu, Kiambu County buys rabbits from farmers at Ksh500 each. The firm makes sausages from rabbit meat and sells each at Ksh50, a kebab at Ksh40 and samosa at Ksh 30. Rabbit meat is highly nutritious and low in fat and cholesterol.

Rearing rabbits

Rabbits are easy to keep and require little space to rear. They are easy to feed because they consume little food (mostly plant material) and can be fed by family members. A female rabbit (doe) reproduces very fast (up to 4 times in a year; 7-12 kits or baby rabbits each time) and farmers can sell and earn more quickly.

Farmers may, however, find it hard to sell live rabbits or meat. This is because some customers find rabbit meat expensive while others are just hesitant to eat it because it is an unusual protein source. Farmers can add value to their rabbit meat by making rabbit sausages. Sausages make an enjoyable and tasty meal. They also fetch a better price than live or rabbit meat.

Preparation

1. To slaughter a rabbit, first ensure your knife is sharp. Shock the rabbit by hitting it on the back of the head so that it becomes unconscious. Cut all the blood vessels across the throat so that the animal dies in the shortest time possible. This helps you to get better quality meat. Leave the rabbit to hang up so the blood drains out.
2. Wash the skinned rabbit and separate the meat from the bones. Then press chunks of the rabbit meat into a mincer while



Value addition: Rabbit meat can be made into sausages.

turning it. When making sausages for sale, you want each sausage to have the same consistency and taste. Therefore you must carefully measure each ingredient according to instructions in your recipe.

3. In a bowl, mix spices and salt to flavour following the recipe. Experiment with spices to develop your own recipe to satisfy the taste of your customers.

4. Maize flour has a fine texture and helps to bind the mixture. Use five heaped tea spoonful for each kilogram of minced meat. If you do not have maize flour you can use double the amount of any other regular flour.

5. To make good sausages, the minced meat must be mixed with filler. The best filler to use is rusk (a kind of breadcrumbs). You can buy this in a shop or make your own. For each kilogram of minced meat, you need a quarter kilogram of filler. Instead of rusk you can also use bread crumbs or cooked rice but rusk absorbs more liquid and so will give juicier and tenderer sausages. Mix these dry ingredients thoroughly.

6. Since rabbit meat is very lean, it is advisable to add some little natural fat to the minced meat. Mix the minced meat and fat thoroughly. Fat binds the mixture to the casing so that the casing will not separate from the mixture when the sausage is cooked.

7. Add the dry ingredients to the basin with the minced

meat and fat. Mix thoroughly for an even distribution of all the ingredients. Now add some crushed ice. Crushed ice rather than water is used to keep the mixture cold and as a result the fat binds better to the other ingredients.

8. Put the mixture into the sausage casing. Natural casings come from the intestines of sheep, goats or pigs. These are often kept in salt and must be rinsed with cold water before using them.

9. Pull the casings over the funnel and press the mixture into the mincer. Start turning the handle so that the mixture is put into the casing. You then need to form the sausages by twisting it a couple of times to close it.

10. Store the sausages in the fridge or freezer for about three hours so that the casing binds to the mixture.

The sausages are now ready for sale. There is always a good market for good sausages in restaurants, hotels and supermarkets.

Rabbit Breeds with better yields

Pillar Group Limited recommends hybrid rabbits such as New Zealand White, California White, Chinchilla and the Checkered Giant because they give better yields.

This feature is as a result of joint collaboration between Biovision Farmer Communication Programme and Access Agriculture.

 farmers forum

0717 551 129 / 0738 390 715

Beehives for sale: We make beehives for sale. Interested farmers can make orders on any quantity they require. The following are prices for various hives: Langstroth Ksh 4,500, Kenya Top Bar Hive Ksh 3,800, Stingless bee hives between Ksh 400 and Ksh 1,500 depending on size. Interested farmers can call Stephen on 0734 371 557.

Seedlings: Eucalyptus at Ksh 10, grevillea at Ksh 10, Mwagu at Ksh 10, Calliandra at Ksh 10, pine at Ksh 10, Leucaena at Ksh 15, Muu at Ksh 15, Meru Oak at Ksh 15 and ornamentals at Ksh 15. Contact 0751 915 068.

Fruit seedlings: We have fruit seedlings for sale. Grafted Apple mango at Ksh 150 per seedling, grafted Avocado at Ksh120, grapes at Ksh 300, grafted purple passion at Ksh 300, tree tomato at Ksh 50, pawpaw at Ksh 50, breadfruit at Ksh 500, tangerines at Ksh150, peach at Ksh 300, Pomegranate Ksh 150, strawberry and strawberry at Ksh 150 and strawberry at Ksh60. Call 0714 118 794.

Cypress seedlings for sale: We have 200,000 cypress seedlings for sale, price is negotiable. Call Robert 0705 185 225 Molo sub-county.

Rabbit urine: 100 litres at Ksh 100. Call 0721 482 172, Karatina.

Rabbits for sale: We have 17 mature rabbits for sale, weight 4.5kg to 5.5kg. Price Ksh 3,500 Breeds- Flemish giant, chin-chilla and Dutch. Call Ezra 0726 70 76 71, Juja.

Vacancy announcement: An upcoming fresh produce distributor and food processing company is looking for a warehouse manager to oversee its production operations. The position is based in Nairobi. The successful candidate will be expected to oversee sourcing, cleaning, processing, packaging and distribution of organic produce. A diploma or degree holder with good knowledge in agriculture/food processing and at least 3 years experience in the field is desired. The person should be 35 years of age or above with knowledge on marketing, Human Resource/IT and general management. Attractive salary package offered to the right candidate. Apply to the following address: bridges_organic@yahoo.com, 0722 424 125.