

Fruit fly damage

Peter Nderitu, a scientist with ICIPE African Fruit Fly Programme, demonstrating how to use a Lynn filed trap baited with methyl eugenol which is used to trap the male fruit fly, to farmers during a farmers' field day at Ugweri in Embu.
According to Dr. Sunday Ekesi, Principal Scientist and Programme Leader, Kenyan farmers lose between 30 - 100 per cent of their fruit due to fruit fly.
ICIPE is working on an innovative combination of environmentally friendly measures (Integrated Pest Management IPM), that include the removal of affected mangoes, monitoring the fly population and using traps.



Photo Carol Kinjua

Prepare early for weather changes

TOF-There is a sudden change in weather that is worrying farmers across the country. Although the Meteorological Department predicted good rains as the usual long rains season in March this year, this did not happen. Many farmers who planted maize in March and April have experienced crop failure. There has been poor germination of maize even in the high potential areas in the North Rift part of Kenya. This has forced the Ministry of Agri-

culture to revise the projections of maize production estimates for the year. We need to prepare for the likelihood of another cycle of drought and food shortage.

Possibility of El Nino

At the same time, changes in atmospheric temperatures in the Pacific Ocean have raised alarm among climate experts, pointing to the possibility of major changes in weather that could lead to El Nino weather phenomenon that may sweep across Africa beginning as early as July.

The forecasts point out that the scale of the El Nino could be larger than what was experienced in July 1997. There were abnormally heavy rainfall and floods that destroyed crops, damaged roads, railways and other infrastructure resulting in huge losses to the country. Another outbreak of Rift Valley Fever as a result of the heavy rains wiped out thousands of cattle in Northern Kenya.

Need to remain prepared

Although these predictions may fortunately not happen, we cannot afford to remain complacent. In 1997, warnings given about an impending El Nino were ignored, and the country incurred huge losses that could have been avoided had the

authorities taken measures in disaster preparedness. We need to plan on how to effectively handle calamities to stop the loss of life and property, in case El Nino strikes again.

Nevertheless the failure of the expected long rains should not discourage farmers. From past experience, the failure of the rains in the first half of the year is often followed by good rains in the second half. Farmers should therefore prepare themselves for the short rains which begin in September or October, which may even stretch to the new year. Should the present weather forecasts come true, the rains could begin as early as July.

Take measures

Farmers need to be prepared in order to adapt to these weather changes. One way of coping is to divide land into different portions for planting at different times in the year.

If the rains fail in one season, you can always have something to plant the next season.

Another strategy is to plant drought tolerant crop varieties of maize. Plant early maturing maize varieties.

Farmers can also diversify and grow other crops that take a short time to mature such as sweet potatoes, beans, millet and sorghum.

Dear farmers,

Lack access to credit is a big challenge for most Kenyan small-scale farmers. In the 1970s and 1980s, the government gave loans to small-scale farmers. After withdrawal of the schemes, however, smallholder farmers have been sidelined. Some of the reasons given by banks is that farming is risky due to unpredictable weather and high default rates. The volatile nature of markets for commodities has further discouraged banks from giving loans to small-scale farmers.

Research shows that in Kenya, less than 2 per cent of all loans given by banks goes to agriculture. This is unfair for a sector that contributes 26 per cent of the country's wealth (GDP) and on which 80 per cent of the population relies for food and income. The mindset of financial institutions that farmers lack securities or credit guarantees and therefore cannot qualify for loans is misplaced.

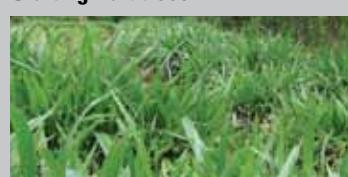
Agriculture as an economic activity is changing rapidly in Kenya with a new crop of young innovative farmers coming on board. The young farmers have adopted new technologies such as drip irrigation to adapt to the weather changes, new high-value crops and even livestock breeds that have increased yields and income. Many are adding value to various farm products. This is an encouraging development that banks can support by availing affordable loan products to spur growth.

Agriculture is a sleeping giant that our policy makers and the private sector should recognize and support as a key driver of Kenya's economy. In this issue, we highlight the success of a credit scheme run by Juhudi Kilimo, a micro-finance institution, whose model can be replicated by banks and other financial institutions to support farmers (page 3).

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Grafting improves fruit trees productivity

Farmers can earn more from their fruit trees, prevent diseases, improve fruit size and even reduce the growing period through grafting.

Samantha Ayienga | Fruit tree grafting has been used to produce different varieties of fruits to increase yields and quality. Farmers can use this method to come up with different varieties that have characteristics they desire for their fruit trees.

Grafting is a technique by which a section of a stem with leaf buds is inserted into the stock of a tree. The older upper part of the graft (the scion) becomes the top of the plant, while the lower and younger portion (rootstock) becomes the root system or part of the trunk.

Although grafting usually refers to joining only two plants, it may be a combination of several plants. A third plant added between two others becomes the trunk or a portion of it. This is called an interstem.

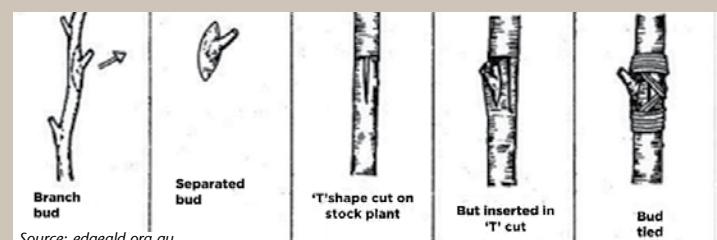
Why graft fruit trees?

Fruit trees cannot be reproduced "true" to the original varieties from the seed. They can only be reproduced by grafting. Grafting is a way to change a large tree from an old to a new variety. It is also a way to produce dwarf plants (or short trees are more productive and are also easy for the farmer to tend).

Advantages of fruit tree grafting

- Grafting enables a farmer to get disease resistant crop by cloning the qualities of a particular fruit variety onto another tree.
- Grafted trees come into production much earlier than trees grown from seeds - they usually bear fruit within 2-3 years, whereas in the case of trees grown from seed you have to wait 5-10 years before harvesting.
- Grafting can be used to reduce the height of a tree (in this case the scion part or section), and therefore, make its height and shape more convenient for harvesting fruit.
- It is used to maintain a healthy, well-developed root system of the fruit trees.
- A farmer can produce unique characteristics using trees that do not combine together naturally.

Types of fruit tree grafting

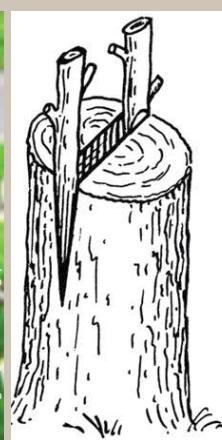


Source: edgeqld.org.au

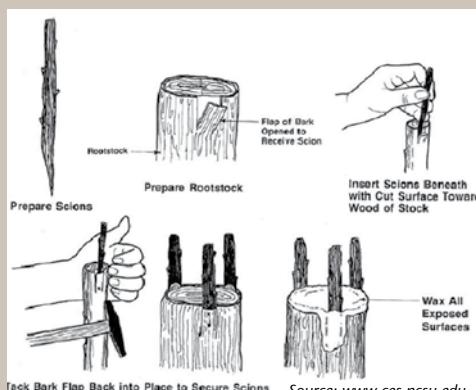
Bud grafting: During bud grafting, a cross-shaped incision is made in the bark of the rootstock. A single bud cut from a twig is inserted into the opening and pushed down between the bark and the inner tree. The wound is then bound up with string dipped in grafting wax. The water-conducting tissues known as the vascular cambium layers are lined up and will fuse together in a few weeks. The top of the stock is removed when the bud starts to grow.

Cleft grafting: Cleft grafting is used to revitalize older trees or to change the fruit variety of an established rootstock. It's usually done when the scion and rootstock are dormant.

The rootstock is first sawed off level. It is then split 2 or 3 inches down with a wedge. Two budding scions are inserted at each end. The graft is bound with string and sealed with wax until the scions start to grow.



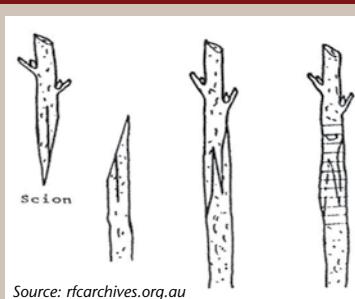
Source: edgeqld.org.au



Source: www.ces.ncsu.edu

Bark grafting: Bark grafting is performed on a rootstock of 4 to 12 inches in diameter. Bark grafting is done before the major sap flow. The rootstock is cut off levelly. Vertical incisions are then made in the bark of the stock to form little flaps. Scions cut with a wedge-shaped bottom are stuck into the flaps. The bark is tacked back into place. Scions are placed every 3 to 4 inches around the perimeter of the rootstock.

Whip and tongue graft: With a whip and tongue graft, a rootstock and scion of equal diameter are sliced off at diagonal angles and interlocking z-shaped grooves are cut into both parts. The cuts are made with a single draw of the knife for a smoothly cut surface. The pieces are fitted together with the cambia layers aligned, wrapped with grafting strip, tied with twine and sealed with wax.



Source: rfarchives.org.au

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 articles in the *The Organic Farmer* do not necessarily reflect the views of ICIPE.

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Credit scheme helping farmers rise and prosper

After saving with Juhudi Kilimo, farmers can get loans to buy dairy cows, irrigation equipment, set up greenhouses and even install biogas digesters.

Peter Kamau | Moses Mwai Douglas, a farmer in Gachigi, location, Kirinyaga County has had a bad experience with banks whenever he has taken a loan to support his tea, coffee, pig and poultry farming. He is subjected to many conditions such as having a title deed, a healthy account and of course, two or three guarantors.

The local Savings and Credit Cooperative (SACCO) was not any better because apart from examining his savings, the SACCO would only give him three times the amount he had saved with them. Besides, Mwai was required to get three guarantors who were also members of his SACCO to endorse him to qualify for a loan.

Introduced to Juhudi Kilimo

But his breakthrough came in the year 2006 when he met an official from Juhudi Kilimo, a micro-finance institution. The official had visited members of Mugakena Farmers Group of which he is a member. He introduced the group members to the organisation's savings and lending terms. After the introduction, the group registered



Moses Mwai has diversified into Arabicum flower production using loans from Juhudi Kilimo. photo: TOF

with Juhudi Kilimo at a fee of Ksh 500. The 50-member group was later trained on how to save their earnings and later benefit from agricultural loans from the organization.

After the meeting, the members started mobilising funds to start saving. Mwai was excited that with savings of only Ksh 7,500, he could qualify for a loan of up to Ksh 50,000. He immediately paid the registration fee of Ksh 500 and started saving with the organization. Within three months, he had managed to save Ksh 7,500, and he applied for Ksh 50,000 loan.

Bought pigs

With this first loan, Mwai bought two pigs, a boar (male pig) a sow (female pig), and input for his tea and coffee. After 4 months, the sow produced 6 piglets, which he sold for Ksh 3,500 each. In another 4 months the sow produced 12 piglets that he sold for Ksh 3,000

per piglet, earning himself Ksh 36,000. Together with his tea and coffee earnings, he cleared the loan.

Encouraged by the ease with which he had repaid the loan, Mwai applied for a second loan of Ksh 100,000 from Juhudi Kilimo. He bought a cow with part of the money and used the rest to diversify his activities into production of vegetables, carrots and tomatoes, which



Mwai has acquired dairy cows. photo: TOF

Micro-lender gives farmers affordable credit

Juhudi Kilimo offers loans to farmers to enable them buy various farm assets such as dairy cows, poultry, greenhouses, chaff cutters, irrigation equipment, water tanks and biogas digesters, thereby enabling farmers to improve productivity and income.

The assets not only help farmers to generate income for themselves, but also help them to repay their loans. They also act as security for the loans that the farmers take to buy various assets. According to Juhudi Kilimo Branch Manager for Thika, Scholastica Kamolo, the scheme is very suitable for farmers who have no form of security to qualify for loans in other financial institutions.

Training in finance

When a farmers' group joins

Juhudi Kilimo credit scheme, each member is required to pay Ksh 500 as registration fee. From this amount, a fee of Ksh 100 is charged for a pass book where all transactions with the lender are recorded. After registration, the group members receive financial literacy training offered by the institution to enable them run any agricultural enterprise efficiently.

When a farmer needs a loan to buy a dairy cow, they will be required to have saved at least 15% per cent of the total amount of money they need for the purchase. Before the loan is disbursed, Juhudi Kilimo officials visit the beneficiaries to assess their ability to manage the asset they want to buy. They also liaise with other technical people within the government such as veterinary officers or live-

stock department personnel if the asset is a dairy cow, mainly to offer technical advise to the farmers.

Guarantors

To get the loan, at least 15 members of the group will be required to guarantee the loan. The members monitor how the dairy cow is managed because under this arrangement the member who has taken the cow does not own it until he has fully repaid the loan. The dairy cow is also insured so that in the event of death or theft, the insurance company with which the cow is insured compensates the farmer with another one.

Lease terms

Once the farmers have repaid the loan, they become the owners of the asset and, they can take

earned him a steady source of income. Within a short period of time he had managed to buy a second dairy cow.

He has diversified activities

Mwai increased his savings with the micro-finance institution and applied for a third loan of Ksh 150,000. The money enabled him to go into chicken rearing. Now he has put a three-in-one housing shed, which has a zero-grazing unit, a chicken house and a pigsty (house for pigs). His two-acre farm, is a neat layout of various crops, tea, coffee, arabicum flowers, maize, beans and passion fruits. Mwai is already planning for a greenhouse where he will grow tomatoes and capsicums commercially.

Mwai has made very good use of compost that he now uses to keep his tea, coffee arabicum flowers, fruits and cereals well nourished, thereby cutting down the cost of chemical fertilizer. He now prefers organic production.

Juhudi Kilimo has changed me

"It is Juhudi Kilimo which has transformed me to be what I am. It has enabled me to meet all my financial needs. I can pay school fees for my 5 children with ease. Tell me which other financial institution can lend you that amount of money if your savings are that low?" he quips.

more loans and continue to build their assets as many times as they can, thus improving their financial status and standard of living. After the loan is given, Juhudi Kilimo officers continue to visit the beneficiaries, monitor the progress and provide advice. Farmers can make loan repayments through their mobile phones.

Easy repayment terms

Kamolo says asset financing is very convenient for farmers because it enables the lender to offer lower interest rates, repayment periods are longer and based on the farmer's ability to repay. The loan recovery rate is as high as 95 per cent.

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Requirements for organic certification

Organic certification is a process that takes up to three years. It is meant to build trust between the producers and consumers of organic agricultural products.

Jack Juma | Going organic is a choice many farmers make for many reasons. For the passionate farmers, organic farming helps in environmental conservation, improving soil fertility by using organic matter, as well as producing healthier food for consumers. For the business-minded farmers, the other benefit of organic farming is providing more income as consumers are willing to pay a premium on healthy organic products. The consumers of organic products on the other hand want to be sure that what they are willing to buy as organic is really organic. They want to associate with the farmers who produce organic products. Thus, certification has become central in enhancing transparency and traceability in organic production and trade.

It helps build trust

Organic certification is a process of creating a trust in organic products where product compliance to standard is determined and assured. Building a trust system can happen at different levels, the first trust builder is the farmer. The farmers knows



why he is in organic production, follows the principles of organic practices as prescribed in organic standards. The second level is where one or more stakeholders for example, consumer community participate in trust building; this process is always referred to as participatory guarantee system (PGS). It is more appropriate for local markets and is gaining recognition worldwide with increased recognition of the role of farmers, consumers and other stakeholders in assuring organic quality. In Kenya, for example Ngong Organic Farmers Association in Kajiado County and YETENA women group in Bungoma County have adopted PGS system.



Organic produce in a market in Nairobi. Organic certification is mainly done to create trust between producers and consumers.

Certification companies

The bulk of organic farms in Kenya are however third party certified, this means a certification company verifies whether a farm is meeting specific organic standards requirements. In Kenya there are two companies certifying for local market, ENCERT LTD and NESVAX CONTROL. There are, however international companies that certify products for export market which include: IMO, Soil Association, Ecocert and CERES.

Third party organic certification is a must for regulated export markets. However, many farmers or farmers groups still find it a difficult process especially because of the paperwork, cost and its top down approach sometimes with foreign inspectors who may not understand local farming systems. Certification in this case is very important in ensuring that farmers have followed the organic standards and thus enable them to access the niche organic market for premium prices.

In general, any business directly involved in food production

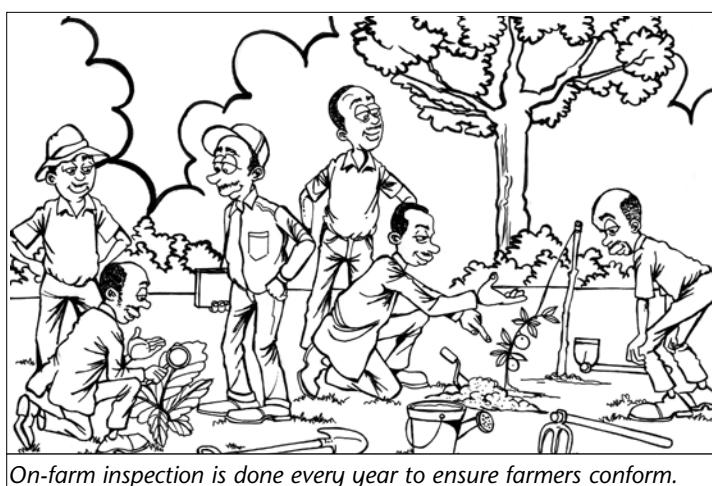
can be certified, including seed production, suppliers, farmers, food processors, retailers and restaurants.

Requirements

Requirements vary from country to country, and generally involve a set of production standards for growing, storage, processing, packaging and transportation or shipping that include: Avoidance of most synthetic, chemical inputs (e.g. fertilizer, pesticides, antibiotics, food additives, etc), Genetically Modified Organisms (GMOs), irradiation, and use of sewage sludge, use of farmland that has been free from chemicals for a number of years (often, three or more); keeping detailed written production and sales records; maintaining strict physical separation of organic products from non-certified products; undergoing periodic on-site inspections (at least once a year).

The certification process

To certify a farm, the farmer is typically required to engage in a number of new activities,



in addition to normal farming operations:

Farm: A farm is an area of land, including various structures, devoted primarily to the practice of producing and managing food, fibres, etc. It is the basic production facility in food production. Farms may be owned and operated by a single individual, family, community or companies.

Farmers interested in having their produce certified must read and understand the organic standards, which cover in specific detail the general requirements, what is and is not allowed for every aspect of farming, including storage, transport and sale. Any farmer whose main target is local or regional market should understand the East Africa Organic Products Standard (EAOPS).

Transport: Transport or transportation is the movement of people and goods from one location to another. Modes of transport include air, rail, road water, cable pipeline and space.

Compliance

Farm facilities and production methods must comply with the standards, which may involve modifying facilities, sourcing and changing suppliers. For group certification, an Internal Control System (ICS) is put in place where farmers in the group monitor each other to ensure that no farmers goes against the standards of organic production. The system ensures compliance with standards that have been put in place. For full compliance with standards, farmers may be required to go through conversion period, which ranges from 1-3 years.

Documentation: Some records are required, detailing farm history and current set-up, and may include results of soil and water tests. Daily farm activities records must also be kept.

Planning: A written annual production plan must be submitted, detailing everything from seed sources, field and crop locations, fertilization and pest control activities, harvest methods, storage locations, among others.

Inspection: Annual on-farm inspections are required, with a physical tour, examination of records, and an oral interview. ■

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Brachiaria: A high quality fodder grass

Originally from Africa and bred in South America, Brachiaria grass is gaining popularity among cattle farmers in Kenya. The grass is credited with helping to revolutionalize the Brazilian beef industry.

John Cheburet | Sustainable fodder production is a constant problem facing dairy and beef farmers in Kenya, particularly in the dry season when traditional fodder grasses, like Napier cannot cope. Hence, there has been continuous search for fodder grasses to ensure farmers have a consistent supply of high quality fodder for their animals, even during the dry season. Brachiaria is a grass native to Africa and other tropical regions. Now, the grass has returned to Africa, including Kenya.

Two varieties of Brachiaria known as Mulato and Mulato II, are tolerant to drought, recover fast after grazing, show high plant vigour, give good quality forage and are tasty to the animals.

About Mulato

Brachiaria cv. Mulato and *Mulato II* are a result of breeding by the International Center for Tropical Agriculture (CIAT). According



A Mulato field at Kiptuno farm in Kiami ya Moto, Nakuru County. Mulato Brachiaria breeder John Miles (Inset).

management, as well as the stage of harvesting.

Farmers who have planted and used this fodder grass are impressed by its performance. Research at KARI-Kakamega and KARI-Marigat indicates that the grass holds huge potential for the dairy and beef industry in Kenya, especially in the drier areas where Napier grass does not do very well and in areas affected by the Napier stunt disease. CIAT, ICIPE and partners are exploring private partnerships to make the seed commercially available in Kenya, at an affordable price for farmers.

Brachiaria finds a home in the Push-pull system

Scientists at ICIPE, led by Prof. Zeyaur R. Khan developed Push-Pull to respond to the problem of stem borers and Striga weed in maize. The push-pull system uses *Desmodium (Desmodium uncinatum)*, planted between rows of maize, to push the stem-borer moths out of the maize field. Napier grass (*Pennisetum purpureum*) is planted around the maize plot to ensure that the stem borers are not able to develop to maturity. After repeated trials with different kinds of legumes ICIPE scientists found that Desmodium is more effective than other legumes in reducing striga and increasing maize yields, because it has the specific phytochemical that prevents Striga from growing longer into the maize plant.

Apart from helping farmers deal with pests, the system provides a source of fodder for cows, goats and sheep, particularly Desmodium as a protein supplement.

Wider adaptation

As the uptake of push-pull continues to increase and spread to different agro-ecologies, particularly drier areas where



to Dr. Brigitte Maass, a forage scientist with CIAT in Kenya, *Brachiaria cv. Mulato* and *cv. Mulato II* are hybrids which have resulted from crosses involving 3 species; *Brachiaria brizantha*, *B. decumbens* and *B. ruziziensis*. The last one is used as a bridge. The result is a hybrid that is

apomictic, meaning that the seeds produced are true breeds (their genes do not change). In reality, they are like clones of mother plant. This is an ideal situation that is not common with many crops and forages because farmers will not lose the vigor of the plant.

Growing Mulato

Mulato grows in well-drained soils of medium to high fertility with pH 5-8. Like Napier grass, it responds well to well-matured manure. It is drought tolerant and has potential to grow well in relatively drier areas of Western Kenya with mean annual rainfall of not less than 700 mm and mean daily temperatures higher than 30°C. Trials conducted by KARI-Marigat show that the grass does well under irrigation in arid and semi arid areas, and under rain-fed conditions in the transitional zones.

Mulato Brachiaria is best propagated by seeds, though it can also be planted from vegetative material. Seed is the most appropriate mode of establishment for farmers who want to plant large plots of the grass. At the moment, since the seed is not yet readily available locally, farmers are advised to use vegetative propagation by cuttings. When using seed, a farmer needs 2.5-3kgs per acre. Seed is sown at the onset of rains in well-tilled seedbeds. An important feature of the Mulato Brachiaria is that its stems are capable of rooting when they come into contact with moist soil especially cause by trampling of animals. Mulato II performs very well not only in grazed systems, but also in cut

and carry system.

Farmers are advised to carry out routine top dressing after every cutting or grazing; using well-matured compost, farm yard manure and rock phosphate. The grass has thick leaves, which makes it difficult for weeds to thrive.

Use of Brachiaria grass

Mulato Brachiaria can be grazed or cut and fed to animals in stalls and feedlots. Where animals graze, the duration depends on the number of animals. Sufficient time must be given to a pasture to grow back after intensive grazing. Rotational grazing will give grass time to regrow. Where farmers cut and carry to feed the animals, the grass is ready for the next cut in about 45-50 days during the rainy season. At this stage, the grass has higher nutrient content, especially protein, than Napier.

Mulato Brachiaria has high production capacity for biomass; therefore, it is a good alternative for making silage and hay for use during the dry season. Its production and nutrient content depend on soil fertility and its

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Margaret Ombul, a maize farmer in Baragulu location in Siaya County who has grown the grass in her farm.

Farmer reaps benefits of organic farming

Developing a profitable organic farm takes more than good seeds and soils. It needs education, business sense, money and time. More and more farmers have overcome the challenges and are making money from selling their produce in organic markets.

Caroline Nyakundi | Twenty five years ago, Michael Ruchu and his family decided to convert from conventional to organic agriculture and have never looked back. Since 1989, they have used both conventional and organic methods to grow and nurture their crops and farm animals on their 2.4-acre farm in Mangu Ward, Kiambu County. Now they find a great difference between the two farming methods.

The former technical engineer initially used chemical fertilizers and pesticides but he joined a farmers group later and was trained by SACDEP, an NGO based in Thika on how to farm sustainably using natural methods that are not expensive or destructive to the environment. Michael keeps a dairy cow, some goats and *kiyeyi* chickens. These provide enough manure for his farm, on which he grows maize, cowpea, sweet and Irish potatoes, *sukumawiki*, tomatoes, bananas, mangoes, pawpaws, avocado, passion fruits and indigenous vegetables.

Conventional methods are more expensive

Before he relied heavily on fertilizers and chemical pesticides but later found this to be too expensive. Armed with skills and knowledge from the training by SACDEP, he decided to start using natural methods that rely solely on the use of compost and plant extracts. This



Michael shows off his avocado tree in his organic farm.

was profitable since he used less money to get inputs.

No stress over farm inputs

Michael no longer uses chemical fertilizers or pesticides. He has manure from his farm animals, and enough space and time to make compost. To deal with pests and diseases, he uses biopesticides, companion cropping and plant extracts. He also practices crop rotation to kill certain crop pests and prevent occurrence of common diseases. When he needs extra help, he hires affordable labour from his neighbourhood.

Good markets, good money

Although Michael stopped passion fruit farming for lack of capital, he still finds the market for organic produce to be good in Kenya, especially with increasing awareness on the dangers of agro chemicals on human health, animals and the environment. He sells most of his organic produce to the organic markets in Nairobi's Karen area and at the American Embassy held every week. The Organic farmer market at Karen

offers farmers an opportunity to supply their organic produce to Thomas Children's home, which has a special feeding programme sponsored by well-wishers. From his monthly sales, he makes about Ksh. 35,000, which is sufficient for his basic needs. He also has surplus for his family and for sale to his neighbours daily.

Grow your experience and learn from others

Although Michael has no formal training in agriculture, experience in farming and learning from other farmers and institutions like Biovision Farmer Communication Programme (FCP) and SACDEP that offer informal training for small scale farmers has provided him with the technical know-how needed in managing various crops, controlling pests and diseases, improving soil fertility as well as post harvest operations.

He cautions those interested in organic farming: "Before leaping into an organic farming career, it's advisable to obtain some relevant knowledge and skills. Remember that inorganic chemicals are not allowed in organic farming as they have

been known to affect the health of humans, plants, animals and the environment. It is important to get some knowledge and skills from colleges like Kenya Institute of Organic Farming (KIOF), or at least spend enough time visiting established organic farms and talking with the farmers to understand how they farm profitably using natural methods," he says.

At the moment, he is seeking additional funds to buy a pump for his borehole and a setup drip irrigation system. This will enable him farm continuously even during the dry season.

Although the much needed resources cost a substantial amount of money, he is positive of finding low interest loans or grants to purchase the items.

Improve skills

Njeri Kinuthia, the Outreach Officer for the Biovision FCP says farmers need to consider organic agriculture as a serious business that need adequate knowledge and skills. Record keeping is important as it guides farmers on how to select farming enterprises and prioritizing those with high profit margins. Farmers also need to understand how to select certified seeds, and how to manage crop rotation properly to easily control pest and diseases. They also need to understand how to replenish their soils by growing a variety of crops on their farms (diversification).

Plans for success

Currently, Michael is preparing to plant organic passion fruits on a large scale, and already has a bed of seeds that will be ready for planting in a few weeks' time. "One of the biggest challenges is getting good organic seeds for planting. I decided to produce seed for my farm, which I can also sell to neighbours. After over 20 years of making mistakes and learning, I have learnt how to produce quality seeds."

He is happy with how the farm is doing and has a few plans to improve it. "I want to continue to grow this business, and will expand with availability of funds. I would like to make the best use of my 2-acre land to produce more by irrigation to sustain production," he adds. ■

from ICIPE.

Growing popularity

Unlike Napier grass, Mulato Brachiaria does not have stinging hairs, making it easy to cut and carry. This is a quality that makes the grass attractive to farmers who use the push-pull technology to control stem borer and Striga and as a way of growing fodder for their animals. ■

Kutoka Uki. 4 & 5 Brachiaria grass



sorghum and finger millet thrive, a drought tolerant trap alternative to Napier grass and intercrop alternative to Desmodium is needed. This is where

Brachiaria finds its place in the push-pull system. Trials conducted by ICIPE and partners show that *Brachiaria cv. Mulato* is tolerant to drought conditions of up to 3 months and temperatures of more than 30°C. To accommodate Brachiaria, slight adjustments are made onto the system. Four rows of Mulato II are planted instead of 3 rows of Napier grass. Farmers involved in the trials get Mulato II seeds

If you are interested in learning organic farming, visit the Kenya Institute of Organic Farming for information on training available or call Mr. Njoroge 0733 799 072.

What to do about retained placenta

My cow has to be assisted by a vet to remove the placenta every time it calves down save for the first two deliveries. What could be the problem?

The problem of retained placenta is common in farm animals. Normally, the placenta should be expelled within 24 hours after the cow calves down. Beyond this, the uterine contractions are reduced, which results in retained placenta. It may therefore take several days before the placenta comes off its attachment to the uterus to allow it to drop.

Dairy cows develop placenta retention after calving at least ten times. If this starts earlier, it is a sign that the animal has a problem. Placenta retention can pose serious problems to the health of a dairy cow because of the following reasons:

- Cows with retained placenta may develop bacterial infection and become ill, which reduces



Photo: TOF

their milk production.

- Milk from cows with retained placenta is unsuitable for human

consumption and should therefore be discarded.

- There is reduced conception rate in a cow that has a placenta retention problem, which is a loss to the dairy farmer especially due to delayed calving. This leads to extended calving intervals and a short lactation period.
- It is unhygienic to milk a cow with an exposed, hanging placenta due to the smell and possible contamination of the milk.

What causes retained placenta?

Retained placenta may be caused by the following:

- Abortions and premature calving- in this condition, the cow may have a normal birth but the separation of the placenta from the uterus is delayed.
- When the cow produces twin calves, the uterus becomes weak, causing a delay in placenta separation.

• Milk fever can cause lack of muscle power and weakness in the animal. This reduces its ability to expel the placenta.

• Difficult calving may also stress the uterus after the calf has been delivered.

• A dirty cattle shed may lead to early infection of the placenta that may cause inflammation and hence delay or reduce chance of the placenta dropping.

• Lack of vitamin E or selenium may lead to reduced muscle power during calving and therefore inability to expel the placenta.

As you explain in your question, it seems that already there is a problem with your dairy cow. The best way would be for you to cull (sell or slaughter it). But this is not advisable if the cow is a good producer. Never assist the cow when it is calving down. Ensure you consult a veterinarian to assist you during such emergencies.

Do not use runoff water to irrigate



The cause of cannibalism in chickens

My chicken was pecked by others after it was injured. Does it mean that my chickens lack some nutrients?

All birds have a tendency for cannibalism – the pecking, tearing and consuming of skin, tissue or organs of other chicken. Cannibalism is a learned behaviour that can quickly spread in the entire chicken flock. If not controlled, it can result in losses of the flock due to injuries and death. Some of reasons for cannibalism and how you can prevent them include:

Crowding: Birds housed in a shed without adequate shed tend to get stressed and develop tendencies for cannibalism. Provide your chickens with adequate space for movement to reduce crowding - $\frac{1}{4}$ square feet for 2-week old, $\frac{1}{2}$ square feet for 3-8 week old, 1 square feet for 8-16 week old, and 1.5 square feet for 16 week and older chickens.

Feed and water: Provide your birds with adequate feed and water at all times. Well-fed birds rarely engage in pecking and cannibalism.

Temperature: Hot temperatures make chickens uncomfortable causing irritation. Such stressed chickens pick the feathers, comb, toes or vent of other birds. Provide them adequate



Photo: TOF

fresh and cool water and proper ventilation.

Excessive light: Long periods of light (more than 16 hours per day) make chicken hostile to one another. Avoid using white bulbs if needed for heat. Use red or infrared bulbs instead.

Nutrient deficiency: Deficiency in nutrients especially methionine and salt can increase chickens craving for feathers and blood. Provide the chickens with a well balanced diet with enough carbohydrates, protein (especially the amino acid methionine) and fibre. Protein requirements of chickens change, so it is important to adjust the ratios as chicks grow.

Parasite: Pests and parasites can cause birds to peck and injure

the skin, resulting in cannibalism.

Other measures you can put in place include isolating sick, weak, small birds or the coloured ones as other birds will attack them as a survival instinct.

If the pecking and cannibalism problem cannot be controlled by these measures, it may be necessary to debeak (nip the beak). Debeaking chicks is not recommended in organic farming. The best remedy is for farmers to create adequate space for all animals. For chickens farmers should create a run where they can move freely. This reduces stress in chickens and minimises cannibalism in the flock.

Is it advisable to irrigate my crops with water collected from the road?

Irrigation water from the roadside is already contaminated as it collects a lot of pathogens and pollutants that may affect crops grown using such water. Many diseases that affect crops can also be transferred to your farm if you use such water for irrigation.

Tests done on runoff water especially that from the roadside have found such water to have bacteria strains such as *E.coli* and salmonella which when used to irrigate crops such as vegetables and fruits can cause diseases such as stomach infection and typhoid.

Crop diseases such as bacterial wilt can easily be transferred from infected farms to other farms when runoff water from such farms is used for irrigation. The best way to use such water is to direct it to trees especially those grown along the farm boundaries and even woodlots.

TOFRadio answers your questions

TOFRadio: 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 correspondences to the radio program. Send your questions and comments via SMS 0715 916 136.

A farming couple turns chickens rearing into business

Musdalafa Lyaga | Chickens remain one of the most common sources of protein and a delicacy in Kenyan homes. One couple, who has been consistent in their managing their chicken farm have made a fortune from the enterprise.

To respond to the numerous questions from TOF audience on how to run a poultry project, the TOF radio team of KBC Kilimo Hai and Kass FM Kabotik ak Kabotisiet visited the Kosgey family and interviewed them for the radio programs and TOF magazine.

Reared chickens traditionally

Mrs. Salome Kosgei of Nakuru County, a 57-year-old farmer, has been looking after chickens since she was young. Initially, she relied on traditional methods of chicken rearing and was contented with the prestige that comes from rearing chickens. She would talk about the high numbers of her chickens despite the low productivity and high mortality that characterized her poultry project. The costs of keeping the chicken were getting alarmingly high and the profit was low, which drained her family's resources.

This changed when she and her husband, Mr. Simeon Kosgey, received a visit from agricultural information extension workers who trained them on modern poultry rearing methods. They realized that they did not just have to keep chickens as a cultural practice but could actually make good money from the enterprise.

Seek information first

"It is important before you engage in any agribusiness to seek relevant and accurate information. Nowadays, there are many sources of information which farmers can take advantage of to succeed in any agribusiness venture," says Mr. Kosgei, who believes that most people at one point or another have owned chickens.

Introduced new breeds

According to Mrs. Kosgei, the family decided to improve on



photo: Musdalafa

their existing breeds by eliminating inbreeding as much as possible. They achieved this by introducing new cocks and hens to the existing stock. Then, they monitored the eggs and chicks to control quality.

"We observed size, weight, resistance to diseases and appetite for feeding among other things as standard practice. The chickens we were not satisfied with were sold off to provide space for the improved breeds," says Mr. Kosgey.

Provide adequate space

Using locally available materials - timber, wire mesh, used iron sheets and nails, he constructed a chicken structure that not only protected the chicken from the elements but was also spacious and well ventilated.

"Like any other farm animal, chickens need enough space to exercise which reduces stress," Mrs Kosgei points out. A congested chicken but also provide enough space and ventilation for proper growth (*page 7*).

Mrs. Kosgei is keen on ensuring cleanliness of the house. She wakes up very early in the morning to clean the coop. This prevents the chickens from sleeping on their droppings, a health hazard to the chickens.

"A dirty chicken coop not only attracts fleas but also various diseases which in the long run are very expensive to treat and can lead to deaths from diseases," says Mrs. Kosgei.

Apart from cleaning the chicken house Mrs. Kosgei also disinfects the chicken house using traditions methods - sprinkling

ash on the floor.

Hygiene and heating

To prevent diseases and enhance productivity of their chicken, the couple stick to a strict chicken vaccination regime. They also keenly observe any changes in the behaviour of the chickens.

She adds: "June is one of the coldest months of the year and a farmer must also ensure that the chickens are all comfortably housed and well-fed. Be sure that the house is as warm as possible and well ventilated. It is important to ensure the eggs for hatching are not exposed too long to the cold."

Observe chickens carefully

When they notice any changes such as dullness, weakness, diarrhoea or tumors they always consult a veterinary. The couple tries as much as possible to avoid self-prescribed over-the-counter drugs for their chickens.

"Diet is also a very important component to the chicken's health. We strive to give our chicken a balanced diet and according to organic farming methods. We also feed the chickens with greens like sukumawiki and cabbages and plenty of water," says Mrs. Kosgei.

A ready market for eggs

The couple point out that good care of the chickens makes them easy to market. Mrs. Kosgei says that she sells eggs at the farm gate at Kshs.10 each and supplies to the major hotels in Nakuru at Ksh 15 per egg.



farmers forum

0717 551 129 / 0738 390 715

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

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

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

Metal silos for sale: We make metal silos for storing cereals. Call 0720 409 161

Fruit and tree seedlings: We have 10,000 grafted avocados, 8,000 tree tomatoes, 1,000 purple passion, 3,000 yellow passion, and tree seedlings-*Prunus Africana*, mukoe, mukeu, pine bachelia, cypress, Eucalyptus (*grandis* variety), casuarina (whistling pine), and many more. Call 0726 934 215.

Land for sale: 6 acres, high potential agricultural land in Nyahururu, near Laikipia university. Call 0723 899 340 or email: charmmathenge@gmail.com

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

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

Fruit tree seedlings: We have fruit tree seedlings for sale. Call 0721 720 242

Dairy goats wanted: Do you have hybrid Togenburg goats, which are registered? I would like to order them. Call Alice Njonjo on 0704 771 130.

Dairy goat for sale: I would like to sell a Galla/indigenous cross breed buck. Contact me on 0710 19 61 72.

"Tending to my chickens is very fulfilling. When I see the miracle of an egg hatch into a chick, which eventually grows up into an adult chicken that attracts a good price, I know my work has not been in vain. And when I collect their eggs and feed my family and have plenty to sell, I truly believe farming is as fulfilling as any other career," says a proud Mrs. Kosgei, who plans to pass on her knowledge and skills to her children.