

## The Organic Farmer

The newspaper for sustainable agriculture in Kenya

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Your partnership is invaluable as we seek to increase the monthly copies from 34,000 to 40,000 to meet the ever increasing demand for this publication. Empowering small-scale farmers with ecologically sustainable agricultural information and knowledge is a big step towards the attainment of food security in Africa.

Thank you for your continued partnership!

## Alarm as potato pest infestation rises

**Peter Kamau** | The Potato Cyst Nematode (PCN) infestation levels in Kenya are very high, threatening the future of potato production in the country. The quarantine pest was first discovered in Kenya two years ago in Nyandarua County, and has since spread to all potato growing areas in the country. This is a cause for alarm since it is a serious threat to the potato production in the country in future.

### More than 80 per cent of potato farms are infested

According to the results of a countrywide survey funded by United Nations Food and Agriculture Organisation (FAO) and released last month, the PCN infestation levels have risen to an average of 82 per cent in all potato growing areas in the country. Among major potato producing counties, Nyandarua tops the list with an infestation level of 91 per cent, followed by Elgeyo Marakwet with 87 per cent and Nakuru with 82 per cent. Other counties with high levels of production are Narok with PCN infestation at 88 per cent, West Pokot (100 per cent) Trans Nzoia (100 per cent) and Taita Taveta (100 per cent).

### Seed production units affected

The PCN infestation has spread not only to KALRO basic seed production units but also to seed multiplication farms such as those owned by the Agricultural Development Corporation (ADC) and private seed producers. Investigations by *The Organic Farmer* early this year show that none of the seed producers in the country has certified seed for sale to farmers.

### Imports to blame

Kenya has allowed importation of potato seed tubers in the last 15 years, mainly from Netherlands without following protocols as set



*Globodera rostochiensis*

out in the Seed and Plant Varieties Act Cap 325, which prohibits importation of seed tubers except in the form of *in vitro* plantlets, which should be stored in the Kenya Plant Health Inspectorate Service's quarantine stations for testing to ensure they do not bring in diseases and pests.

About 99 per cent of potato seed in the country is uncertified where farmers buy their planting material from other farmers. One of the most popular seed varieties in the Country is *shangi* variety. The sharing of this variety has been blamed for the rapid spread of diseases and pests such as PCN.

The PCN pest can stay in the soil for up to 30 years. This means that Kenya now faces a serious problem of land on which to produce both seed and ware (commercial) potatoes. The survey revealing the PCN infestation in Kenya was conducted by ICIPE in collaboration with KALRO, KEPHIS, Kenyatta University, The International Institute of Tropical Agriculture (IITA) and the Ministry of Agriculture Livestock and Fisheries.

For more information on potato pests <http://www.infonet-biovision.org/PlantHealth/Crops/Potato>

## Dear farmer,

A number of pests and diseases have hit Kenyan farmers in the last five years, threatening food security in the country. However, the way the government has responded to each of these invasions shows a lack of will and capacity to deal with problems that threaten food security. Agriculture contributes about 25 per cent of the Gross Domestic Product (GDP). Hence, one wonders why the authorities continue to only give empty promises to this important sector.

The first outbreak was the Maize Lethal Necrosis (MLN) which was first reported in the year 2012. As the maize disease ravaged the country, there was a sense of helplessness on what was causing its fast spread until the TOF magazine published an article on the possibility of certified seed being the cause. It was then discovered that KEPHIS was allowing seed with a high level of the disease to pass as certified seed, which was found to be the major cause of its spread. As soon as KEPHIS revised the certification requirement for maize seed, the disease disappeared as fast as it had come. The same can be said of the Potato Cyst Nematode (PCN). For many years, scientists at KALRO and other research institutions have complained of the dangers of importing whole potato tubers into the country without following the laid down seed importation procedures. But these requirements were ignored by the Ministry of Agriculture officials who continued to issue licences for the imports despite protests from regulatory authorities. Kenya now has 51 imported potato seed varieties, which local farmers do not need. Our pleas to have local varieties cleaned and certified for farmers have fallen on deaf ears.

Now results show that the PCN infestation has reached very high levels that threaten the production of potatoes in the country and even the possibility of wiping out its production in Kenya for good. Potatoes are the second most important food crop in the country after maize. This shows the price Kenyan farmers and consumers are likely to pay for the inefficiency and lack of serious attention to this issue by the Government.

While the results of the survey of the PCN levels in the country are quite alarming, Kenyan farmers are already struggling with fighting the African fall armyworm which has invaded maize farms across the country. Our only hope is that the government will come up with urgent measures to control these pests and save the country from high food prices that come with production shortfalls.

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**TOF Radio**  
KBC Thursday 8.45 pm  
Mbaitu FM Friday 8.30 pm

# Earn more through value addition of farm produce

Farmers can increase incomes by enhancing the value of fruits, juices and vegetables through processing and appropriate packaging which ensure long shelf life and continued supply throughout the year.

## Joyce Wambui Mahui |

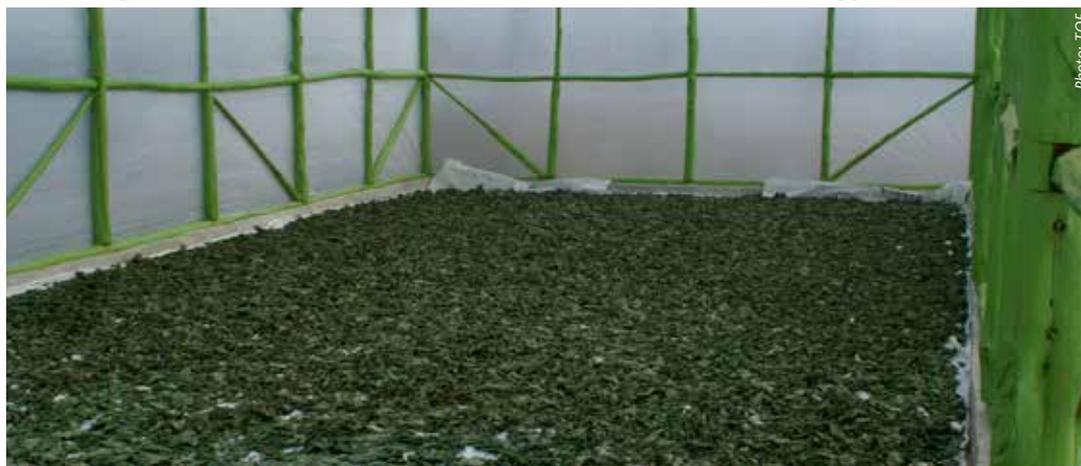
Farmers need to diversify their production focus to include value addition practices in order to increase the shelf life, guaranteed continued income throughout the year and increase the produce appeal through proper packaging. Value addition can improve their farm income because of reduced perishability and gradual sale by the farmers. Value addition is the process of changing the form or presentation of a product through processing, transporting or packaging which preserves the oversupply of product in a season for later use during the period of scarcity.

Value addition is important in that it helps increase the shelf life of a product, increase profitability and value of raw agricultural products while creating employment opportunities through farmers' enterprise. Value addition involves either enhancing the value of a product while retaining the initial quality.

## Enhancing value

It involves developing a product that is differentiated in some way from the commonly known products. This difference can be real or perceived. For example, farmers may start making products such as organic mango juice which they take to the market labelled as organic mango juice.

The label on the product, distinguishes the product from other juices available in the market. Therefore, consumers who appreciate natural juice can buy this product. They can also buy a product in principle for example if it is being produced to help a particular cause e.g. environment



Stinging nettle being dried in a shed built with polyethylene sheet. BELOW: Processed vegetables

or supporting disabled people or women enterprises (most fair trade items are marketed on this basis).

## Attractive and appealing

This involves the value added to a product through processing and marketing. This is important because most farmers get less of their raw agricultural products and the rest goes to the processing, distribution and marketing. Farmers venturing into value addition enable raw material products to fetch more from their products.

Adding value involves activities such as making juice, jam, flour, dried fruits chops of different sizes and shapes and vegetables to make a product more appealing to the consumers. Below are some steps of how to make jam, juice and dry fruits and vegetables:-

## Jam

- Get the fruits of preference such as pineapple or mangoes which are of good quality and quantity and make sure they are clean.
- Ensure that the working environment is clean to avoid contamination.
- Clean the fruits with hot water so as to rid them of any dirt or unwanted contamination and to kill all microorganisms.



- Peel the produce in the case of potatoes and chop it into small pieces putting them in a jar to determine their quantity. Ensure a ratio of 1:2 for sugar to the fruit.
- Put the fruit in a cooking pan on fire, add sugar and mix thoroughly.
- Boil it until it is thick to remove all the water and add some citrus juice from oranges or lemons which act as a preservative.
- Remove from fire and put into jars while still hot and seal to avoid air getting into it.

## Juice

- Inspect if the raw materials available (fruits) are in good quality and quantity.
- Wash the fruits in hot water to remove microorganisms and rinse them thoroughly.
- Peel the fruits and chop them into small pieces.

- Squeeze out the juice, add sugar and sieve it through a white cloth to remove any particles present.
- Pasteurize to 75°C and add citrus from oranges or lemons to act as a preservative.
- Package the juice in plastic PET bottles which are then sterilized, label and store them for marketing.

## How to dry fruits and vegetable

For fruits ensure that they are clean, peel and then chop them into small pieces and then dry under a shade or in a structure that does not allow direct sun rays when drying until fully dried.

## Package the dried fruits and store

For dried vegetables, ensure they are clean and dry them in a structure that does not allow direct sunlight until they are fully dried.

Crush the vegetables by hand after they are dry into smaller pieces and package them for storage. Value addition is an important aspect in the value chain and more farmers should venture into it to increase the income from their agricultural production.

For more information on processing and value addition [http://www.infonet-biovision.org/processing\\_and\\_value\\_addition](http://www.infonet-biovision.org/processing_and_value_addition)

*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 nor Biovision Foundation or BvAT.

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**icipe**

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# ICIPE unveils new biopesticide for tick control

Real Metarhizium 7 can last up to 3 weeks reducing application intervals for the livestock farmers. Natural acaricides are safe for animals, people and the environment. They are also affordable to farmers.

**Beritah Mutune** | ICIPE scientists in partnership with private sector partners, RealIPM Kenya have developed a natural tick control product (acaricide). The acaricide, *Metarhizium anisopliae* 7, has already been tested in Kilgoris and Transmara in Kenya and Hargeisa region in Somaliland. Ticks infest a wide range of animals to suck blood and end up passing disease causing bacteria and virus, leading to great loss among livestock keepers. The new product, has been shown to reduce tick infestation in livestock by 70% to 81%.

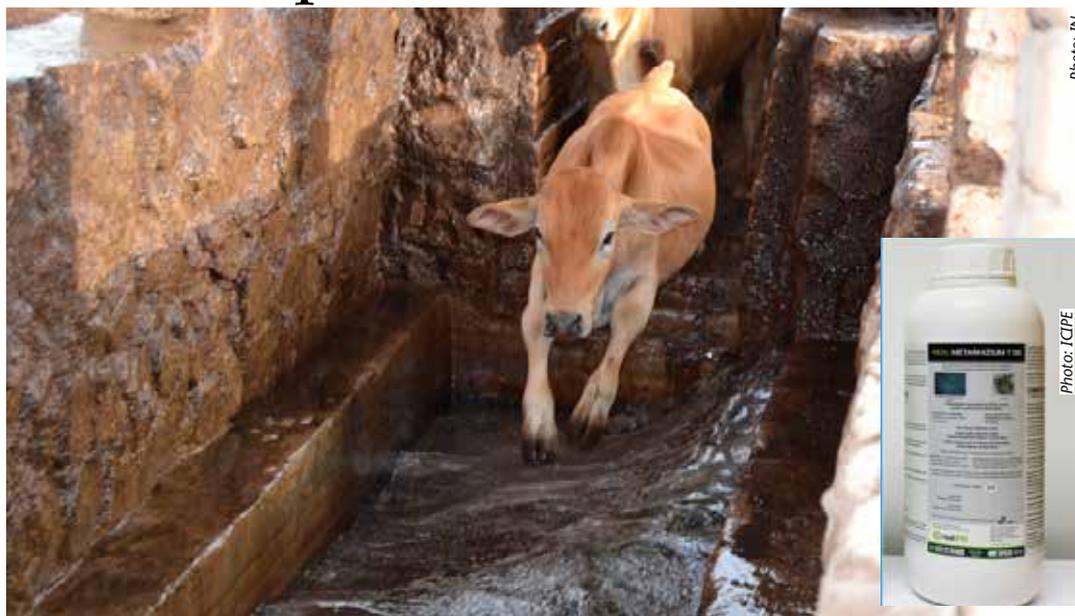
Across Africa, ticks and tick-borne diseases cause an annual loss of more than US 168 million dollars and lead to the death of 1.1 million cattle every year. Ticks cause irritation, restlessness and weight loss to animals. They also cause direct skin injury and blood loss as they suck blood and create wounds in teats that eventually affect milk production.

## Chemical acaricides have side effects

The most common method that farmers use to control ticks is application of chemicals either through spraying or dipping of their animals in cattle dips that have chemical acaricides. However, the use of chemicals has adverse effects on animals and people who use animal products. First, some of the chemical acaricides have been found to interfere with important functions in animal cells that help in the generation of energy and even respiration (the process by which oxygen is transferred to tissues in animal cells). Chemical acaricides have also been found to interfere with normal growth and the animal's nervous system.

## Resistance to chemical acaricides

Most farmers tend to use the same acaricides over a long period and often complain that the ticks do not die even after



A cow plunges into a dip: Ticks have developed resistance to most acaricides. The new acaricide (inset)

frequent dipping. Apart from the adverse effects of chemical acaricides on animal health, ticks tend to develop resistance to them after a short period of use. Acaricide resistant strains of ticks are widespread in East Africa which could be the reason for the ineffectiveness of acaricides.

## Advantages of Real Metarhizium 7

Natural acaricides such as *Metarhizium anisopliae* 7 on the other hand have been found to be the best way to control ticks since they have several advantages over chemical acaricides as detailed below:

- They are selective and they only kill the ticks and do not affect the animal.
- It is highly unlikely for ticks to develop resistance against *M. anisopliae* 7.
- They have no adverse effects on the environment.
- They are cheaper compared to chemical acaricides.
- They do not leave behind any chemical residue that affects other living organisms and even people.
- Farmers can benefit from higher profit margins as they do not need to spend a lot of money in tick control.

The new *M. anisopliae* 7 will soon be available in the market under brand name "Real metarhizium 7".

## How farmers can use the new product?

Real Metarhizium 7 will be available as a suspension (solution)

which farmers can spray their livestock. The natural acaricide can last for more than 1 week; research has shown that the product can last 2 to 3 weeks when applied to livestock in the right way.

For more information about the ticks Project, contact:

**Dr. Subramanian Sevgan, email: [ssubramania@icipe.org](mailto:ssubramania@icipe.org)**

The project was funded by DFID, EU, FAO and Ministry of livestock-Hargeisa-Additional information from Levi Ombura, research assistant, ICIPE Arthropod Unit.



The brown ear tick: The female (left) after feeding on blood. The male (centre) and female before feeding

## Understand ticks to control them well

Farmers need to understand ticks well in order to control them. The Brown Ear Tick for example, is the most dreaded because it carries a parasite known as *Theireria parva* that causes the East Coast Fever (ECF).

Ticks are masters of survival. Livestock keepers, especially burn grass with the aim of reducing tick infestation, but this method does not work because ticks can hide up to 20 cm deep in the soil and they can survive without food for up to 2 years.

Farmers are advised to change the acaricides (tick control-pesticides) they use frequently because ticks develop resistance

within a short period of use. It is important to use the right dosage in the use of acaricides to ensure the ticks do not develop resistance especially for those using synthetic acaricides. For farmers who want to avoid the use of chemical pesticides, there are other natural methods of tick control. These include:

**Plants:** There are two plants that control ticks by repelling them; these include *Gynadropis gynandra* (Thageti: kikuyu, Mukakasi: Kamba, Chisaga: Kisii Akeo: Luo. The other plant is *Ocimum suave* (Bwar: Luo, Mukandu: Kikuyu, Murunde: Taita, Mutaa: Kamba, Sunoni: Masai, chemwoken: Pokot)

# Reformed prisoner lifts community in organic farming

After his life in crime, Leakey Matete has reformed and trained hundreds of farmers in organic farming, gaining acceptance in the community and helping them to start various agricultural enterprises that have increased their sources of income.

**Peter Kamau and Ian Kipruto** | Leakey Matete, who hails from Mambolo village in Musamba Sub-location in Kakamega County is an ex-prisoner. Mr Matete dropped out of secondary school and went to Mombasa where he worked as a club bouncer and a gym attendant.

"After losing the two jobs I came back home and due to the financial hardships I was encountering, I drifted into crime in a bid to support my wife and two children. We would stage many robberies especially in trading centres, schools or attack anyone includ-



Leakey Matete in a crop of desmodium in his demo farm

ing neighbours if we suspected they had money," he says.

## Jailed for five years

He says one of their favourite victims were rural farmers especially during the time farmers received payment for sugarcane

deliveries to local sugar companies. He says that although the community knew he was a robber, they could not do anything for fear of reprisals. However his luck ran out when he was arrested and convicted for rape and jailed for five years

in 2009.

He was taken to Bungoma prison where he remained for three months and was later transferred to Ngeria Farm prison in Eldoret, from where he was expected to complete his prison term. Life at the farm prison started being difficult for Mr. Matete, "we were subjected to hard labour, planting various crops, weeding, harvesting and transporting the same to the prison stores but as you know, prisoners are paid very little for the labour they provide because all the produce belongs to the government," he adds.

## Trained in organic farming

He says the hardships in prison made him lose hope in life. Coincidentally, an organisation called the Resource Oriented Development Initiative (RODI) started working with prisoners at the prison farm. One of the RODI activities was to train prisoners on sustainable agriculture

*Continues on page 7*

## Organisation uses organic farming to integrate ex-inmates into community

Twenty years ago, Eliud Ngunjiri worked as a project officer with Oxfam, Great Britain. One day he visited Kodiaga Prison in Kisumu town as part of an excursion for participants in an International workshop that sought solutions to water problems in communities in Africa. The participants visited a river that flows through the prison from Ramogi hills. "Immediately an idea struck me. I asked the officer-in charge why they had not used the water resource to produce food for the prisoners. The official told me that they lacked resources to exploit the water for agricultural purposes. I told him that there were alternative methods that could be used to produce food without external inputs such as organic farming," he says.

## Decided to help ex-inmates

The prison then sought permission of the prison authorities in Nairobi to allow him to set up a demo farm. When the request was granted Ngunjiri started working with prisoners to grow various crops organically at the prison but soon came to realize that the inmates faced many other problems that needed solu-

tions. It was here that the idea to start RODI was born.

"As we continued working with prisoners, we discovered that many of them were repeat offenders. When we enquired why this was happening, we were told that when they were set free, they had nothing to engage them in gainful activities and they therefore went back to crime. Interaction with hardcore criminals had also contributed to the problem. It was a vicious cycle of poverty, crime and then jail over and over again," he explains.

## Prisoners rehabilitated

He says a major problem faced by prisoners after release from jail is rejection by the society which still views them as criminals although many reform after imprisonment. RODI now ensures that all prisoners under their rehabilitation programme are re-integrated into society through follow-up visits, but this is still a problem because RODI officials are mistaken to be CID officers pursuing the reformed ex-inmates.

"So we take the follow-up visit a step further by ensuring that we introduce the ex-inmates to their churches or even the area chiefs," he adds.



Eliud Ngunjiri shows a prisoner how to plant seeds in a seed bed at Kamiti prison in Nairobi

## Re-integration through restorative justice

The project has also started Restorative Prisoner Rehabilitation Approach, a restorative justice approach where ex-inmates, the community in which they live and the victims or people to whom the crime was committed are brought together as one way of enhancing prisoners' reintegration into the society and to encourage them to avoid repeat offences. The ex-prisoners are also counseled to enhance their sense of self esteem, hope in life self support and self-reliance to enable them to contribute towards community and national

development.

Under the programme, ex-prisoners are given theoretical and practical training in sustainable agriculture, appropriate technology and natural resource management. This is at first done in demo farms within the prisons and later in the ex-inmates homes to speed up reintegration into their communities where they are encouraged to form Community Livelihood Improvement Groups (CLIGS).

Every year, more than 300 ex-inmates are rehabilitated and re-integrated into their communities through RODI's programmes.

# Right diet reduces your chances of getting cancer

Many types of cancer that are killing Kenyans can be avoided if people maintain a balanced diet. With the right diet and physical exercises, one can enjoy a long healthy life.

**Linah Njoroge** | In Kenya, cancer is the third biggest killer disease after infectious diseases and cardiovascular diseases. In the year 2008, there were 28,000 new cases of cancer diagnosed and 22,000 deaths from the disease. These statistics have been on the rise with recent figures showing a total of 38,544 new cases estimated to have been diagnosed in 2012 of which 15,878 were male and 22,666 female. There has been a total of 26,941 deaths that occurred during this period of which 12,376 were male and 14,565 females. This demonstrates that the situation is getting worse year after year. To understand prevention and how to manage this cancer menace in Kenya, we need to understand the risk factors associated with cancer. There are several risk factors that are linked to cancer including the following:

- Tobacco and alcohol.
- Unhealthy diet.
- Lack of physical activity.
- Being overweight.
- Certain viruses and bacteria i.e HPV.
- Certain chemicals and other substances.
- Exposure to sunlight.
- Ionizing radiation.
- family history of cancer.
- Some cancers are hormone related.
- Growing older or ageing.

It is important to understand that cancer is not only



Unhealthy eating exposes people to cancer

one disease. Each one of the cancers has a different way of management. Each classification of cancer will have different causes, attack and cure rates. All these classifications of cancers are influenced by very different factors such as viruses, radiation and even toxic chemical residuals in crops.

The group of cancers that begin in the skin or in the lining of the mouth and other organs are called carcinomas. Those that originate in muscle and bones are called sarcoma and the ones in blood forming organs are called leukemia. Cancer that affects the lymph system is called lymphoma.

About one third of the most common cancers can be prevented by diet, weight and physical activity. Global research shows clearly that diet, nutrition, physical activities and proper weight control reduce cancer risk and survival from the disease. Being overweight increases the risk of 11 types of cancers: Bowel, breast, gall-bladder, kidney, liver, oesophagus, ovary, pancreas, prostate, stomach, and womb. It is clear that lifestyle factors influence our chances of avoiding some of the common forms of cancer.

## Facts

Our bodies produce free radicals in our daily normal body processes. They also have a natural protective system that deactivates and minimizes reaction of free radicals from destroying our body cells.

Our environment contributes to generating unstable compounds of free radicals through elements from environment pollutants, cigarette smoke, automobile exhaust gases, herbicides or radiation, which have poten-

tial to injure or destroy our body cells.

Diet and obesity are known factors that may contribute to risk of certain types of cancer. Adopting a healthier diet and weight may reduce risk of cancer significantly. Dietary changes can prevent about a third of cancer deaths.

Fruits and vegetables are full of antioxidants that are known to have a preventive element in many disease conditions including cancer. Antioxidants are compounds or nutrients that have an ability to deactivate harmful chemicals in our bodies. Eating at least five servings of fresh fruits and vegetables per day can lower risk for certain cancers by 40 percent. These cancers include lung, stomach, colon, mouth and aoesophagus.

**Vitamins and minerals:** The natural protective system is dependent on the vitamins and minerals that we get from the fruits and vegetables that we eat daily. This protective body system is called the immune system. Vitamins and minerals that are crucial in building human's immune system are called antioxidants and they include Vitamin C, vitamin E, carotenoids, and selenium. All these vitamins and minerals can be obtained in adequate amounts if we eat a healthy diet.

**Fibre:** Eating foods that are rich in fibre also contribute to the protective element against certain cancers as they contain important elements called phytochemical bodies, protect our health against other diseases such as arthritis, heart conditions, hypertension among others.

**A varied diet:** All you need to do is eat a balanced diet including foods rich in various vitamins like: vitamin C (papaya, citrus fruits, strawberries, broccoli, etc), vitamin E (dark green leaves like kales, avocado, sweet potatoes, sunflower seeds, butternuts, etc), carotenoids (carrots, kales, sweet potatoes, etc) and selenium (chicken, beef liver, etc). Scientific studies are still being carried out to establish exactly how certain nutrients may contribute to cancer prevention. Enjoy a balanced diet combined with physical exercises and you will greatly reduce risks to cancer.

For more information on healthy food [http://www.infonet-biovision.org/healthy\\_food](http://www.infonet-biovision.org/healthy_food)

Linah Njoroge is a nutritionist



Papaya



Strawberry



Chicken



Broccoli



Avocado



Beef liver



Harmful: Alcohol and tobacco

# TOF empowers women group to go into agribusiness

After reading TOF, Joyce Okwara adopted sustainable agriculture and went into agribusiness. She has also helped start a women group and exposed members to organic farming.

**Ian Kipruto** | Ms Joyce Okwara is a happy woman with a successful agribusiness venture she runs in Sibembe village, Nambale, Busia County. She supplies vegetables to various schools within her home locality. Due to the high demand for her produce, she has gone full time into agribusiness. Ms Okwara says that using ecologically sustainable agricultural practices; she has been able to produce much more compared the output from her previous conventional farming practices.

## TOF exposed her to sustainable agriculture

Ms Okwara started reading *The Organic Farmer* magazine back in 2012. After reading various articles on different themes; she got some insight on how to tackle different challenges she had experienced before with pest control. She says, "The content in the magazine gave me easy to understand guidelines on how to combat the different problems I faced in



Photo: Ian Kipruto

Ms Okwara's mandala garden used to train farmers

my farming activities. I didn't have any basic training from land preparation to harvesting."

Using information from the magazine, she decided to form a farmers' group called the Great Sisters Women Group. "I thought group empowerment was better than an individual farmer," Ms Okwara says happily.

So far, the Great Sisters Women Group has grown to more than 15 active members under the leadership of Ms Okwara. Her farming practices are replicated by all the members of the group. The group aims at creating a food secure society that consumes healthy food for improved nutrition.

## Learned compost making

From the *TOF* magazine, the group learnt lessons on land preparation, compost manure and nursery bed preparation, different land preparation methods depending on the size of land among other farming methods contained in the publication. Ms Okwara's generosity went beyond sharing of farming knowledge learnt from *TOF* magazine. She offered a piece of land as a demonstration plot for the group in her farm. The group decided to embrace the Mandala type of kitchen garden whose vegetable yields surprised the group.

The group later put to use

their knowledge of Farm Yard Manure (FYM) preparation and organic methods of pest and disease control. "Compost manure has huge benefits since it's easy to prepare and the returns are better," Ms Okwara says.

## Selling indigenous vegetables

The farmers' group has reaped a lot of benefits from organic farming. They grow indigenous vegetables, maize and bananas. They have overcome the challenges of erratic rains and have a ready market they grow their vegetables and maize and supply them to schools.

The Group can now provide for their families healthy food. They are able to provide basic needs and other family requirements including paying school fees for their children not only in primary schools but also for those attending secondary schools and institutions of higher learning. Earnings from the sales of indigenous vegetables has enabled Ms Okwara to purchase a steel silo for maize storage, in which she stores maize for future consumption and sale. She has also installed a solar lighting system and bought a television set with funds from the sale of the organic produce. "We would like to continue receiving *The Organic Farmer* magazine since it is highly educative," she concludes.

## Biovision Farmer Communication Programme Advisory Board Members



Members of the Biovision Farmer Communication Programme (BFCP) Board during a meeting in Naivasha last month. From left to right: Ms. Venter Mwongera (Chief Editor, TOF & Mkm magazines), Mr. William Makechi (Farmer), Dr. David Amudavi (Executive Director, BvAT) Mr Henry Neondo (ASNS), Ms. Pauline Mundia (FCP Coordinator), Mr. George Nyamu (KENAFF), Mr. John Njoroge (Director, KIOF), Dr. Jane Njuguna (Deputy Director, KEFRI), Rt Senior Chief Josiah Arende (farmer, Rongo), Ms. Regina Muthama (farmer, Machakos).

# It is possible to divide a bee colony

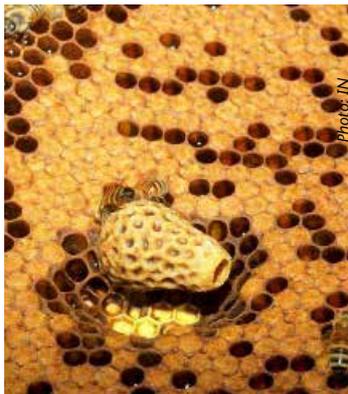
I would like to divide bee colonies in my beehive in order to increase the number of hives in my farm. Kindly show me how to divide the colony successfully. Benard Kemei, Bomet.

Dear Kemei,

Dividing a bee colony usually happens when there is more than one queen in the beehive. When the number of bees increases, bees start building queen cells in order to get a new queen, which might result in swarming (a process where bees fly out in swarm to look for another hive in order to start a new colony).

## Examine the hive carefully

It is important for you as a beekeeper to always examine the hive on a weekly basis during the honey production period to find out if there is any abnormality or progress within the hive. If you open a beehive and find there is more than one queen cell (a queen cell resembles a human finger protruding out of the honey comb as shown in the picture above and below, then it



A queen cell in honey comb

is possible for you to remove the one comb with the queen and its brood for a transfer to a new hive.

## How to create a new colony

The comb with the queen cells should be carefully removed and transferred from the old hive to the new one as follows:

- Remove or break the comb with the queen cell to leave only one queen in the old hive.-
- Transfer the queen cell, one comb with the brood and at least two combs with honey



Worker bees feeding the queen in a honey comb

and pollen (for the queen and bees to feed on in the new hive). You can put the combs in a catcher box or any suitable container to transport the combs to the new hive you want to start.

- Remember to put the brood comb (the one with the queen and young bees) at the middle of the new hive and the honey combs on either side of the brood comb.
- Transfer the brood comb to a new hive, which should be at least one or two kilometres away from the old hive or a good distance away from old site. These bees will now work and the new queen will continue hatching from the new colony.
- Most of the adult bees will remain in the old hive and continue to make honey.
- Avoid dividing the colony during the honey making season because this can reduce the amount of honey produced. Make the division after the honey is already formed and flowing.

## Take advantage of swarming season

Another way you can start a bee colony is to wait until the swarming season when bees can be encouraged to occupy a new hive. Experienced beekeepers can

also catch a swarm of bees during their migration to start a new colony. All they need to do is observe and wait for a big swarm to encourage them to settle in a new hive. To be successful, it is important to take the following measures:

- Smear the new hive you want to start with melted beeswax such that it smells nice to the bees.
- Look for a swarm of bees when they are resting in a cluster on a tree. Wear your bee suit and smoke them gently so as not to disturb them.
- Shake the bees into a catcher box or any other suitable container. If the queen falls into the container, the rest of the bees will follow her. Wait for twenty minutes or so. Try the same process if you are not successful in the first try.
- Once you have the bees, leave the box in a shady place until evening. Make sure that the container does not become hot as this could force the bees to fly away. You can cover the container with a damp cloth to keep it cool. When evening comes, you can take the bees home or shake them into the empty hive. If you have another hive, give the bees a brood comb with eggs from another hive to encourage them to stay. This way, you can end up with more hives to increase your honey production.

For more information on management of bee hive and bees <http://www.infonet-biovision.org/AnimalHealth/Beekeeping>

## cont'd from pg.... 4 Reformed prisoner introduces organic farming

and organic farming for food security and crime prevention.

Prisoners were also given guidance and counseling skills on various issues such as HIV/AIDS, its management and support. The counseling courses were meant to empower them to be responsible citizens when they left prison. Apart from these, prisoners were also introduced to training on appropriate technologies such as yoghurt making, soap making, tailoring and related activities that would make them self-reliant once they rejoined their communities.

"It was through the organisation that I gained some hope that I could be useful to my family and the community," Mr. Matete says.

When he was released on November 2013, he came home to an empty house. His wife

had already gone back to her parents with their two children. His father had also passed on and he was now burdened with the responsibility of taking care of his ageing and sick mother. As if these problems were not enough, the community still viewed him as a criminal and everyone including relatives avoided him. However, RODI came to his aid.

## Set up a demonstration plot

As part of their programme, the organization continues to support prisoners even after their release. For Mr. Matete, RODI helped him to set up a 1/2-acre demonstration plot where he practised various technologies such as soil fertility management, compost making, plant teas, water management, irri-

gation, natural crop protection against diseases and pests. He has also planted various crops such as indigenous vegetables, fruits, herbal such as Moringa oleifera, guava trees, avocados, cassava, beans, tree seedlings, tissue culture bananas, sugarcane, sunflower, and many other crops.

He now uses his demo farm as the training ground for farmers in the region. He has named the demonstration farm Mfalme Resource Centre and Group. His farm is also the main source of seeds and seedlings and cuttings for various crops. In the year 2015 he held his first farmer field day in collaboration with the Ministry of Agriculture which was attended by more than 180 farmers. Last year, he held his second field day that was attended by more

than 200 farmers. He has so far trained more than 300 individual farmers to start various farming enterprises across the county who continue to refer other farmers to him either for seeds and solutions to farming related problems. He has also integrated dairy goat keeping, pig and dairy farming into his farm which he uses for training other farmers and also as a source of income.

Mr. Matete has now gained acceptance amongst neighbours and the community who no longer view him as a criminal but a useful member of the community. Neighbours flock to his farm for solutions to all sorts of farming problems. He plans to expand the farm and increase production and diversify into value addition and use the enterprises to train more farmers.

## TOF Rad answers your questions

TOFRadio is broadcast on KBC on Thursday at 8:45pm and Mbaitu FM on Friday at 8.30pm. 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.

### Improve production to benefit from indigenous chickens

**Musdalafa Lyaga** | Indigenous poultry farming is an important and an easy start-up venture for improved livelihood because it has low capital, requires small parcel of land and less labour to start off. Thus the enterprise can be practised by farmers who do not have many resources at their disposal.

Indigenous chicken meat is tasty, and fetches higher prices in the markets. The ever-growing population increases demand for indigenous chickens which farmers can tap into. The sub sector has been affected by numerous challenges such as high mortality rates due to poor management.

#### Challenges facing farmers

It is of utmost importance for farmers groups to sustainably address challenges facing production and marketing of indigenous chickens. Some of these challenges are: Unreliable supply of poultry feeds, high mortality rate due to diseases like fowl pox, New Castle Disease (NCD), Gumboro and disorganised marketing systems.

#### How to address the above challenges

Acquire more knowledge:- Poultry farmers groups should invest in promoting modern hatchery equipment like egg incubators, better housing, better feeding, better health management, and collective marketing in order to improve production and incomes from poultry farming.

#### Provide good housing

Farmer groups can help their farmers to build suitable poultry housing to safeguard them from predators, thieves, harsh weather that may cause diseases, unnecessary deaths among other challenges that reduce their numbers.

The structure should be well ventilated to allow proper air circulation. In this case, one side of the walls should be constructed using mesh wire.

A farmer can choose to pour sawdust onto the floor of the chicken house or the raised



Indigenous chickens in a shed fetch good prices in the market

system. Deep litter system absorbs moisture and ensures the floor is not too cold for the chicken. On the other hand, the raised system can accommodate a large number of birds and collects chicken droppings under the chicken housing which makes good manure.

#### Maintain hygiene in housing

After providing a clean and hygienic environment, routine cleaning of the chickens' houses ensures good health, proper growth and prevention from the diseases. Preventive measures form the next line of defence against disease. Many individual farmers have suffered heavy losses from high mortality rates of their chickens' due to NCD, fowl pox, Gumboro among other diseases.

Through farmers groups, members undergo continuous training offered by Biovision Farmer Communication Outreach among other training partners. Some of the trainings offered are on preventive measures include vaccination, parasite control and the whole of poultry management package. Farmers who follow the recommended vaccination programmes minimise losses.

#### Control parasites and feed well

Birds which have access to pastures and outdoor areas

will have greater exposure to internal and external parasites. Poultry should be regularly inspected for external parasites and pesticides should be sprinkled in the poultry shed, perches and nests thoroughly to ensure even the cracks and crevices are fumigated.

In many rural set ups, chickens are reared on free range systems and left to look for food on their own. Often, chickens are fed with food left-overs. Deliberate flock feeding is rare and where available, it is not planned for. Watering of chicken is not generally planned for. For proper growth of the chickens, there is need for adequate clean water at all times. Some herbs such as aloe vera herbs help reduce infections when put in drinking water.

Supplementing chicken feed in a free-range system does not have to be an expensive affair. Farmers can selectively and cautiously use waste from their kitchen and even resources like worms from their farms as supplements for their chickens.

For strong and healthy chickens, ensure that they have enough nutrients, salts, minerals and other ingredients mixed in right proportions.

#### Demand is bigger than supply

After taking care of production of quality poultry products, the farmers' groups can source for

**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 cost Ksh 400 and Ksh 1,500 depending on size. Interested farmers can call Stephen on 0734 371 557.

**Stingless bees for sale:** I have stingless bees for sale to interested bee keepers. Contact me on Tel. 0710 155 415.

**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. Call 0714 118 794.

**Avocado seedlings for sale:** I have Hass variety of avocado seedlings at Ksh 150. Interested farmers can get in touch with me on 0720 031 754, 0722 608 855, Eldoret.



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market opportunities for their poultry products. Such places are restaurants, hotels, supermarkets, and schools among other avenues. Poultry products have a huge demand and consumers are willing to pay higher prices to get safe and quality products.

The buyers could buy in large quantities. At a premium price, various outlets would demand consistency in supply, quality and the hygiene of the products.

Poultry farmers who belong to farmer groups are likely to participate in wholesale markets. Similarly, farmers may opt to add value by slaughtering and packing their chickens for sale to consumers in urban centres.