

The Organic Farmer

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The magazine for sustainable agriculture in East Africa

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Photo: TOF

Weed early: Studies have shown that weeds take a large proportion of your crop yield if they are not controlled on time. Page 7

Dear farmers,

Prices of agricultural produce continue to be very low affecting the income of small-scale farmers across Africa. One main reason for the low prices is that farmers sell their produce in raw form. If only farmers managed to add value to their produce, they could earn very good prices, up to four times what they currently earn when they sell their produce unprocessed.

The attitude that farmers cannot be able to add value to what they produce since they lack the necessary technology is a big disincentive that must not be entertained. All stakeholders in the agricultural sector need to mount a big campaign to remove this line of thinking by policy makers and even among our farmers and embark on serious campaign to impart the necessary skills that will enable small-scale farmers to do value addition in all farming areas.

There exists many simple technologies that farmers can be trained on) as a way of ensuring that they are able to add value to their produce before taking them to the market. One such technology is simple drying of fruits and vegetables. This not only allows them to compete with established processors, but also prolongs the shelf life of the farm produce. The farmers can sell these when the market prices are favourable.

Right now a lot of development funds are being channeled to county governments in Kenya. The major economic activity in most counties is farming. This means that apart from provision of other services such as health, education and infrastructure, a considerable part of these budgets can be used to train and equip farmers through well-organized groups or SACCOs in order to improve their productivity and earnings.

The devolved governments can use other players to train and provide farmers with processing equipment for various farm products that can then be well packaged and sold in the local and international markets.

In this and other coming issues, *The Organic Farmer* will provide information on how farmers can do value addition to increase their earnings and contribute more to the country's industrial development through processing of farm products.

Do we really need GMOs in our country

TOF - For many years, there has been a raging debate on whether Genetically Modified Organisms (GMOs) should be allowed the country. Most people including farmers do not understand what GMOs are. Fears about introduction of GMOs may be valid as currently there is no information available on the consequences of their use in the country, whether in the short or long-term.



Photo: IN

GMOs target staple foods

Globally, there have been big and heavily funded campaigns by promoters of GMOs products to push their introduction into national food production systems especially in developing countries such as Kenya. The campaigns target particular valuable crops such as maize, a staple food in many African countries.

While the battle against GMOs seems to have largely been won on the consumer front, any consideration for introduction of GMOs may require a comprehensive consultation among stakeholders.

Draft bill in parliament

Although a government ban on GMOs is still on, we have a draft bill on GMOs in parliament. Given the complexity and sensitivity of this issue, it may not be prudent to solely rely on the institution to make informed decisions regarding the benefits and dangers of GMOs in the country. Mean while, a government task force on GMOs

that was set up in November 2012 has already expressed its reservation on the introduction of GMOs in the country until there is adequate information on the safety of GMO products.

Side effects show later

Given its focus on natural processes, ecological organic farming does not support the production or use of GMOs. Indeed a central principle of organic farming is that any plant or animal for human consumption should be produced in a natural way that safeguards human health. One of the major concerns about GMOs is that their side effects can only be seen in the human body several generations after they have been consumed.

In the coming issues of *The Organic Farmer* we will shed more light on GMOs and the consequences of their introduction into the country to support our standpoint on the issue.

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Value addition earns group more income

Whenever weather conditions allow, farmers plant vegetables in the hope of making profits at the market place. Unfortunately, most fresh vegetables are grown during the rainy season thus fetch lower prices when sold during peak harvest time.

Joyce Wambui | For a long time, farmers and scientists have tried to find ways to extend the shelf life of farm produce. In the month of April, we carried a feature on how rabbit farmers can capture a wider market and extend the shelf life of the highly perishable rabbit meat by making sausages. Vegetable farmers can also profit from value addition of vegetables by drying and selling vegetables throughout the year.

Group dries vegetables

Farmers and vegetable sellers from Lari Constituency in Kiambu County used to find it difficult to sell vegetables especially kales, even a day after harvest because the leaves get spoilt quickly. Fresh leafy kales are also bulky and can easily get damaged during transportation.

Kales and other vegetables such as spinach, carrots and even herbs can easily be dried and used at a later time.

According to Ms. Jane Mugo of The Lari Pioneer Vegetable Processors Group, dried leaves can be soaked and then prepared in the same way as the fresh leaves. She says that success in drying



Group members sorting kales.



Draining excess water



Preparation for drying



The finished product

vegetables starts with selection during harvest.

"When we go to the farm, we harvest leaves which are tender and green in colour. When we find the ones that look yellow we discard them. It doesn't matter what size the leaves are, what really matters is that the kale leaf is of good quality," says Ms. Mugo.

Sorting before drying

It is important not to pick all the green leaves so as to let the plant to grow further. A kale plant can keep growing up to one year depending on the variety and management. After one week, you can harvest again.

After selection of the good quality leaves, unwanted material such as insects, dirt or any other foreign material are removed. Stalks are also removed from the leaves because dried stalks are hard to eat.

Washed in warm water

After removing the stalks from the kale leaves, the leaves are washed twice in clean water until they are completely clean and free of all foreign material.

Since kale leaves can be tough. It is best to tenderise them in lukewarm water before drying. Do not boil the water so as not to lose the nutrients from the kales.

Says Ms. Mugo, "We add some salt to the water because salt helps maintain the green colour of the leaves. If you put the leaves in the warm water without salt, they will lose their colour."

Once the salt has dissolved, the leaves are then placed in the lukewarm water, and stirred for about 5 minutes to ensure they become evenly soft. The leaves are then transferred to cold water after that to refresh them.

Solar drier used for drying

After refreshing the leaves, you can now place the kales on a raised platform of wiremesh to allow excess water to drain and then spread the leaves across a tray so that they can dry evenly. The trays are then placed in the solar drier.

Solar dryers come in various shapes and sizes, but all share the same principle: They capture the heat of the sun to dry the product faster.

"We decided to use solar driers for our vegetables for hygiene purposes. The vegetables dry faster in a solar dryer and at the same time they are kept free of dust, dirt and bird droppings," says Ms Mugo.

Packaged and stored for later marketing

The group members package the dried leaves into small polythene bags and seals them so that the leaves do not absorb moisture again.

Then the packaged kale is put into an airtight container for extra protection and the container stored in a cool, dry room, away from direct sunlight.

The dried kales can easily be stored for more than 6 months before sale.



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 and Biovision.

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The best way to sell your organic produce

Organic crops are safe and healthy for humans. Organic farmers can take advantage of the expanding market to sell their produce and increase their earnings.

Samuel Ndung'u | The organic market in Kenya has been growing steadily. More consumers especially in the major cities of Nairobi, Mombasa and Kisumu have been enquiring on how they can get consistent supplies of organic products. This means that organic farmers have an opportunity of using the growing market and earning income from selling their organic produce.

Planning, production and marketing

As an organic farmer, there are easy steps that you can follow to access and maintain organic markets that will guarantee you higher returns than with conventional farming methods. First, you need to ask yourself three key questions, which will help you to plan your production:

- Which products do I need to produce for the market and for household use?
- What volume will I be able to produce per season?
- Can I be able to produce throughout the year?

If you are able to answer the above questions, you will have already started planning for production, which is an important step towards securing a market for your produce.

We plan so that we can make good decisions on production. For example, you can decide to produce only one or two crops for marketing while other produce can be used to feed your family. It is better for a farmer to concentrate on producing three to four crops that they can grow well for the market than many crops.

Produce a variety of items

When choosing the produce, you should consider whether the climate is suitable for the crop, if there is a ready market and whether the soils are suitable for its production.

Once you select the crop, you need to go the next step in allocating the land from which you will establish each of the crops. You also need to estimate the production period for each crop, and



Proper packaging can make your product sell well.

have a production plan for the whole year. The production plan provides details on when you will set up a seedbed, when you will transplant, when you will start harvesting and the duration for which you will be harvesting each of the crops during the season.

Identifying possible markets

Information on market availability is important in completing the production planning process. This is because it will provide the basis for selecting the crops to be grown, and determining the volume to be produced and the area to be allocated for production.

Importance of market surveys

Although farmers are usually not engaged in conducting formal market surveys to find out this information, there are simple ways that this can be done. These include attending trade fairs, agricultural shows and farmer field days, listening to farming programmes on radio and TV, visiting markets and talking to traders. Organic products are not available in local markets and are usually in short supply. The information about them can be sourced from specialized organic shops like Kalimoni Greens Organic shop, Bridges Organics and other organic food companies in Nairobi.

Examine trends

Farmers should study organic farmers' markets. The trend for organic products is similar to that of conventional products. This means that once the prices for certain conventional products increase, the organic prices also go up.

KOAN can help you to market

Farmers can also seek information about demand from organizations working with organic markets such as Kenya Organic Agriculture Network (KOAN).

Selling

Once you have identified that there is a market and have produced and harvested your crop, the next step is to make the sales. There are different ways of selling organic products:

Target your neighbours

The first avenue is selling to neighbours and the local community. This is the immediate market, which many farmers ignore, but it is very important. Many community members in your locality may be willing to buy your organic products at a good price because they know how they are produced and therefore trust the products.

You, however, need to let the community know you have produce for sale. This can be done by word of mouth, announcing in public gatherings, putting a sign on the farm or organizing visits to your farm.

Setting up group organic shops and markets

If you are in a group, you can establish an organic shop in your community, which can serve as an organic farmers' market. This requires your group to be very well-managed and to have a good book-keeping system.

To sell through these markets, farmers are required to be certified by a certification body or to have an approved Participatory Guarantee System (PGS) if they are in a group. Selling through a farmers' market provides a farmer with an opportunity to interact directly with consumers, which makes marketing of organic produce a good experi-

ence. A farmer also gains skills of how to market their organic produce as well as understanding market requirements in terms of quantity and quality.

Selling directly to organic retail shops and hotels

Another way to sell organic products is to supply directly to formal organic shops, hotels, restaurants and in supermarkets. This requires a farmer to be able to supply consistently throughout the year. If a farmer has access to irrigation water, this will be a good opportunity to sell their products because the volume moved in these markets is high. Currently the available markets in this category are only in Nairobi where large supermarkets such as Nakumatt and Uchumi have expressed the willingness to buy organic produce but they have not managed to get enough quantities. Hotels such as Dusit D2, Fairmount and Intercontinental have expressed the same need. Since 2007, Bridges Organic Health Restaurant and Kalimoni Greens Organic shop have been purchasing organic products from farmers. They will therefore provide a good market avenue.

Making basket deliveries

Farmers can also start basket delivery scheme where they can deliver produce to the home-steads of their consumers. Home basket deliveries require a wide variety of produce and working out logistics for delivery of produce to the consumers. The variety of products is therefore put in basket, which is delivered to a consumer's doorstep, office or other agreed pick up point. The products are therefore priced in terms of the whole basket not individual produce.

Selling to schools and hospitals

Farmers can also use other marketing avenues such as schools and hospitals near them. The schools may be private primary schools, secondary schools or universities. To be able to do this, start by taking samples of organic products to these institutions to create an interest from the consumers/buyers and thereafter participate in their tendering processes. If successful, farmers can organize ways of supplying products from their farms or group.

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Keep diseases away from your cassava crop

Many cassava farmers suffer huge losses due to outbreak of diseases. But proper selection of planting material and good management can prevent common diseases and increase crop yields.

George Maugo | Many cassava farmers in Nyanza and Western regions in Kenya are experiencing challenges in controlling diseases that seriously affect the crop in their farms resulting in low yields. The worst hit regions include; Busia, Teso, Bungoma, Siaya, Bondo, Rachuonyo, Homabay, Megara and Kuria, which for a long time have been known to be the best producers of cassava. The effect has been such great that some farmers have replaced the crop with others such as maize, millet and potatoes.

To evade disease, some farmers have planted and consumed varieties that are not suitable for human use.

How to prevent cassava diseases

Grow healthy cassava seedlings

Studies have shown that the best way to control diseases is to grow a healthy crop of cassava. This is especially so because you do not see the viruses, bacteria and fungi which cause diseases. In order to grow a healthy crop you will need to combine plant production and plant protection practices in growing the crop. These include practices as show below:

Use IPM methods

Integrated Pest Management (IPM) practices for control of cassava diseases can be used at planting. These include proper site selection, soil improvement practices, and selection of appropriate varieties and planting materials. Scientists and extension agents confirm that some cassava varieties can withstand disease attack better than others. In selecting a variety to grow against diseases you should find out if the selected variety has other features you desire.

Get good planting material

Almost all cassava diseases are spread by planting infected stem cuttings. The viruses, bacteria and fungi, which cause various diseases survive on or inside cassava stems and are easily carried to new fields in this way.



Careful selection of planting material can help reduce incidences of Cassava Mosaic Disease.

In selecting planting material, you should avoid cassava plants which show leaf discoloration or chlorosis, leaf blighting and wilting, gum exudates, cankers, fungus or patches and streaks on the stems and defoliation, shoot or shoot tip die-back. Stem cuttings from such plants can

sprout into diseased seedlings or not sprout at all.

In the control of Cassava Mosaic Disease, ensure you select cassava varieties that produce branches as sources of planting material. Most of the stem cuttings from these branches will sprout without the disease. On the other hand, most of the stem cuttings from the main stem will sprout when already infected.

If planting cassava varieties that do not branch, avoid the stem cuttings, especially sections near the base of the stem as planting material for similar reasons as explained above.

Planting

When cutting up cassava stems into stem cuttings for planting, you should select the middle brown-skinned portions of cassava stems. These parts sprout and ensure more vigorous plants than the top green

stem portions. The top green stems dry out quickly and are easily damaged by disease. It is advisable to plant cassava early, at the beginning of the rains. Early planting allows the crop to grow more vigorously and better withstand disease damage later in the dry season than late planting.

Managing the crop

After planting, closely observe the stem cuttings as they sprout. Normally, stem cuttings sprout 3-4 weeks after planting. Label all the plants, which sprout without the disease. At harvest time select these as your planting material to control Cassava Mosaic Disease.

Even if the plants sprouting without Cassava Mosaic Disease are attacked by the disease later on, they will grow into healthier plants than those that grow from stem cuttings sprouting with the disease.

IPM practices after planting

Good farm sanitation helps to reduce the sources of the pathogens that cause cassava diseases in farms. For example, after root harvest you should destroy cassava stems with shoot tip die-back, cankers, fungus patches, streaks or any other disease symptom.

Crop debris of storage roots, leaves, and stems with these symptoms harbour the pathogens and should be destroyed to reduce the sources of disease spread. Farm tools should be cleaned before and after planting to reduce the spread of root rot fungi through tools contaminated with the pathogen. If only a few stem cuttings sprout with disease, it is advisable to remove and replace them.



Important disease control measures in cassava

- Identify the common cassava diseases, their symptoms, and know the conditions under which they will cause severe losses.
- Select sites with dense vegetation, deep loamy soils, and flat or gently sloping land to grow cassava.
- Improve the soils by manuring, mulching, and intercropping to encourage cassava plants to grow vigorously and offset damage by cassava diseases.
- Grow cassava varieties that tolerate the common cassava diseases in your area.
- Plant stem cuttings from healthy plants without leaf chlorosis, shoot tip die-back, cankers, fungus patches, or streaks on the stems.
- After root harvest, destroy discarded cassava stems and storage roots showing any symptoms of disease.
- In the control of Cassava Mosaic Disease, select planting material mainly from stem branches; avoid the base of the stem and main stem portions as sources of stem cuttings.
- Plant cassava mainly at the beginning of the wet season; try and avoid late planting.
- Go round the cassava shamba and remove all plants with signs of disease. This is called rouging. Rouging of cassava plants is best done at 3-4 weeks after planting.



Eating celery has many health benefits

Celery contains a lot of vitamins and minerals, which boost the body's immune system and control diseases such as blood pressure, diabetes, asthma, cancer and rheumatism

Peter Mokaya | There are a wealth of health benefits of celery that many people are not aware of, including the fact that celery is rich in vitamin C, it lowers cholesterol, prevents cancer, manages pain from arthritis, helps weight loss, detoxifies the body, reduces high blood pressure, and promotes overall health in a vast number of ways.

Celery is a plant, consumed as a vegetable, that can be found throughout the world, and as an integral part of certain culture's cuisine. Its origins most likely trace back to the Mediterranean and North African areas. The plant is now cultivated globally, and is a part of every cuisine from all over the world.

Celery is commonly used in soups and salads, but also served with certain dishes just to improve their appearance and taste. Also, it is commonly eaten as a snack, since it is quite filling, but not fattening.

Nutritional and health benefits of celery

Celery contains minerals such as calcium, sodium, copper, magnesium, iron, zinc, potassium. It contains fatty acids and vitamins including vitamin A, C, E, D, B6, B12 and vitamin K. It also contains thiamin, riboflavin, folic

How to prepare celery

Since it is a vegetable, some people may want to cook it or boil; that is good in soups and other vegetables, but you get the best value of both nutrient and health benefits from celery if you eat it raw do not throw away the stalk...it's the best part of celery (just chew the stalk as part of a healthy snack: alternatively, add it to soup or just juice it and drink it).

Salad: Add chopped celery leaves to vegetables or meat of your choice. Add salt and crushed pepper to the salad. For dressing, drizzle lime juice and olive oil.

Fruit salad: Mix sliced apples, nuts such as peanuts raisins etc with chopped celery leaves in a bowl. Mix orange juice with mayonnaise and drizzle it over the mixture.

Soups: Add celery stalks and leaves to soups, gravies etc.



acid and fibre.

Celery is a rich source of flavonoids like zeaxanthin, lutein, and betacarotene, which studies have shown lower inflammation as well as the risk of heart disease, enhances the immune system, and inhibits the growth of abnormal cancer-causing cells. Celery also has compounds that contain antioxidants (compounds that preserve the quality of food).

Health benefits of celery

Reduced blood pressure: Celery contains pthalides, which are organic chemical compounds that can lower the level of stress hormones in your blood. This allows your blood vessels to expand giving your blood more room to move, thereby reducing pressure. When blood pressure is reduced, it puts less stress on the entire cardiovascular system, and reduces the chances of developing heart attack or a stroke.

Reduced cholesterol: Eating celery every day may reduce artery-clogging cholesterol (or "bad" cholesterol). The pthalides, a substance which stimulates the secretion of bile (digestive) juices, reduces cholesterol levels. Less cholesterol means less plaque on the artery walls and a general improvement in heart health. The fibre that is found in celery also works to scrape the cholesterol out of the bloodstream and eliminate it from the body with regular bowel movements, further boosting heart health.

Cardiovascular health: The notable presence of vitamin C, fibre and other organic chemicals in the roots of celery promotes heart health.

Diuretic activity: Celery is rich in both sodium and potassium,

and both of these minerals help to regulate the fluid balance in the body. Potassium also acts as a vasodilator, reducing blood pressure.

Diabetes health: Celery leaves are also eaten for treating diabetic conditions, particularly because they are high in fibre, which has been shown to help manage diabetic symptoms...the fibre also serves as food for the good gut bacteria called "probiotics."

Relief from migraines: The presence of coumarins can provide relief from migraines. The exact mechanism is not completely understood, but research points to a suppression of nitric oxide release in the brain, which can cause headaches and migraine (acute headaches).

Nerve calming properties: Celery contains high calcium and due to this, it is commonly used to calm the nerves. This can be a very useful "snack" before tense meetings....sometimes farmers' meetings may be tense!

Antiseptic: Celery seeds help in the elimination of uric acid because it is commonly used for its diuretic properties, meaning that it stimulates urination. Therefore, celery is good for people with bladder disorders, kidney problems, cystitis, and other similar conditions. Celery seeds also assist in preventing urinary tract infections in women.

Healthy joints: Celery is great for people suffering from arthritis, rheumatism and gout. It has anti-inflammatory properties that help to reduce swelling and pain around the joints. Celery sticks also act as a diuretic, which helps to remove uric acid crystals that build up around the body's joints that can add to the pain and

discomfort of frequent joint use. It can also increase the regrowth of tissue in inflamed joints.

Weight loss: Health benefits of celery include weight management. Regular drinking of celery juice before meals may help you to reduce your weight. This is because celery is very low in calories, but it is very filling because of the fibre content. It can help reduce the tendency to overeat and help you keep the weight down without feeling hungry all the time.

Improved immune system: Celery is rich in vitamin C, which greatly boosts the strength of the immune system. Stimulated by the activity of other antioxidants in celery, it becomes more active and efficient. Because of the high content of vitamin C in celery, eating it regularly can reduce your risk of catching the common cold, as well as protecting you against a variety of other diseases.

Reduces asthma Symptoms: Vitamin-C prevents free radical damage and it also has anti-inflammatory properties that lessen the severity of inflammatory conditions like asthma, arthritis and many other chronic conditions.

Prevents cancer: Celery contains cancer-fighting compounds. Celery also contains coumarins that enhance the activity of certain white blood cells, which can effectively stave off cancer as well. These antioxidant components seek out free radicals floating in the body and damaging organs and neutralize them before they can result in the development of serious conditions like cancer. For example, the apigenin in celery and parsley has been shown to dramatically inhibit breast cancer cells in women.

Other benefits of celery

Celery is stringy and tastes like crunchy water, but it is the swizzle stick that can stir up your sex life! Every stalk of the stuff is packed with androstenone and androsten-hormones that stimulate sexual activity in the human body.

All parts of celery including the seeds, roots and leaves can be eaten. Eating celery regularly helps to prevent diseases of the kidney, pancreas, liver and gall-bladder; neuritis, constipation, asthma, high blood pressure, catarrh, pyorrhoea and dropsy, mental exhaustion, acidosis, anemia, obesity and tuberculosis. It also helps in the overall health and strength of teeth. ■



Farmer reaping the benefits of organic farming

Through reading the TOF magazine and support from field staff from Katoloni CBO, Joseph Mbithi has used sustainable farming practices to improve his crops' yields and income.

Regina Muthama | Joseph Mbithi, a farmer and a leader of Kavyuni Self Help Group Water Project, in Kaiti Constituency in Makueni County, has managed to increase his farms productivity and income by applying information he read in the TOF magazine.

"My life has completely changed and I do not strain to pay school fees and provide food for my family. Through use of information published in TOF magazine and training received from staff based at the Katoloni Mission Community Based Organisation (CBO) in Machakos County, I have learnt how to harvest runoff water during the rainy season and use cover crops and other organic materials for mulching and soil fertility improvement," he says.

Mbithi, has been visiting the



Zai pits help conserve water that is utilised by plants to grow.

Katoloni centre since early 2013. From what he has learnt, he can now make zai pits, watersheds and furrows to harvest rainwater, which he has used to grow various crops. He now applies charcoal remains (Biochar), farmyard manure and green manure from his farm to improve soil fertility and improve soil water retention.

When the Katoloni Biovision staff visited him in February this year, upon invitation by his group, Mbithi proudly showed

the group his farm, on which he now grows mangoes, onions, tomatoes, watermelons, maize, eggplants, chilli, and French beans. When it is dry, the farmer draws water from a dam, 800 metres away from his home using a donkey. The earth dam was constructed by the community under his leadership.

"In spite of poor rainfall in this region, I am sure of getting a good harvest from my 1 acre shamba of water melons. This will give me about Ksh 26,000

this season," he says. In addition to the use of biochar and manure to improve soil fertility, Mbithi also uses organic foliar fertilizers manufactured by Wanda Organic Ltd, an organic fertilizer company.

This combination of organic inputs plus use of fertile silty soil deposited by run-off water has been giving me good results of production even with the little rainfall we receive in this region. *The Organic Farmer* magazine has given me all these important tips, I treasure it like my Bible," he says. In the near future, Mbithi plans to establish an organic demonstration centre on his farm to benefit the community. Katoloni mission staff has agreed to support him including neighbouring groups to start a demonstration farm.

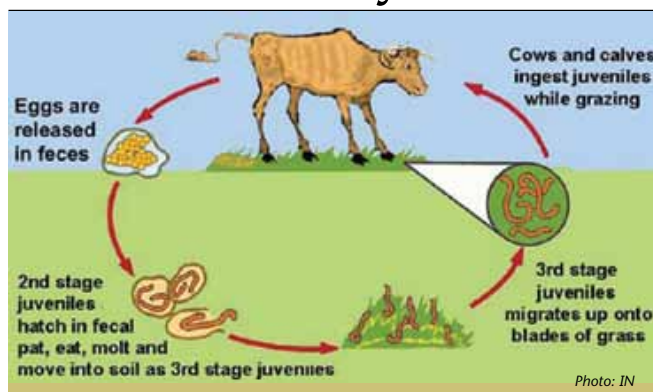
"Joseph is a very resourceful person. We have agreed to collaborate with him, as a point man from Makueni side to work with another leader from Kitui County to train other farmers. This is to ensure that we cover the lower Eastern region of Machakos County," says Victoria Mutinda who is the Biovision Farmer Communication Programme (FCP) trainer in the region.

Make sure to deworm all your animals now

Animals infested with worms lose weight, have poor feed conversion, produce less milk and face the risk of increased infections and even death.

Elkanah Isaboke | With the onset of the rains, farmers should now begin thinking on deworming their animals. All animals that graze are always exposed to parasites and need to be well managed to ensure they are not reinfected. Parasites can cause severe weakness (lost weight gains, poor feed conversion or increased infection) and even death in all animals. A good parasite control programme begins with a good understanding of the most common parasites and the implementation of preventive measures.

Although adult animals are much less susceptible to most parasites, young animals such as calves, kids and lambs are more likely to be infected. Well-fed animals in good condition are better able to resist or tolerate internal parasites, however after the prolonged drought that has hit the entire country, all animals are generally weak



at this time and therefore will require deworming to maintain their health and prevent any worm infestation during the rainy season. Another reason why farmers need to deworm their animals at the beginning of the rains is that most parasites or worms become active and start the growth cycle at the same time the pasture grasses are sprouting.

Preventive measures

- Overpopulation in one area increases the concentrations of parasites.
- Animals should be fed from feeders rather than directly from the ground to avoid con-

tamination as a result of their mouths coming into contact with manure or bedding.

- Manure to be used for spreading may be filled with parasite eggs and larvae. Composting is a good way to clean manure as the larvae and eggs are destroyed.
- Most parasites have developed resistance to most of the dewormers in the market. So farmers should seek advice from veterinary personnel in their areas before buying any deworming drugs.
- When using a dewormer, a farmer should treat all the animals in the herd or group.

Adult roundworms deposit their eggs in the animal's intestine. These eggs pass into the environment through cattle manure. After the eggs hatch and larvae molt, the infective roundworm larvae migrate up the forage and are ingested by grazing cattle. After ingestion, the roundworm matures in about 3 weeks. Adult roundworms do not multiply in the host animal; the eggs must pass into the environment to continue the parasite life cycle. Adult life span is only a few months. Animals will rid themselves of the adult parasites.

Natural deworming methods farmers can use

Several plants have antihelminthic (deworming) properties. Farmers can try the following:

Garlic powder: The most practical way to administer garlic is to add powdered garlic to animal feed.

Wild ginger: Wild ginger or snakeroot (*Asarum canadense*) grows in wooded areas. The dosage per animal is 20 to 30 g of the aerial parts of snakeroot mixed with wet bran. Wild ginger also has antibacterial properties.

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Control aphids by using plant extracts

How can I use biological means to control aphids in vegetables?

Both adult aphids and nymphs pierce plant tissues to feed on plant sap. Their feeding may cause rolling, twisting or bending of leaves. Heavily infested leaves can turn yellow and eventually wilt. Infested flowers and fruits may become deformed. Aphids excrete a sugary, sticky liquid called honeydew that accumulates on leaves and branches. Sooty moulds (a fungal growth) grow on honeydew deposits turning leaves and branches black. Heavy coating with honeydew and sooty moulds may reduce photosynthesis, affecting plant growth and yield.

Honeydew is a favourite food of some ant species. Thus, black ants are commonly found on plants with aphid infesta-



Photo: IN

tions. These ants protect the aphids from natural enemies and are therefore considered indirect pests. Ants may even transport aphids from plant to plant. Many species of aphids are major vectors of plant fungal and viral diseases.

Aphids on vegetables can be controlled in several ways as

shown below:

Plant extracts: You can prepare plants extracts using a combination of several plants such chillies, garlic, African marigold, neem extract, sodom's apple, and pyrethrum. Diatomite powder when regularly applied on vegetables or any other plant infested with aphids pro-

tections your crop. To make plant extracts, chop all the plants mentioned above and put them in a 20-litre container full of water. Cover the container airtight with a polythylene paper and let it stand for 14 days. After 14 days, uncover the container and sieve the solution using a piece of cloth if you intend to use a knapsack sprayer. Dilute the mixture at a ratio of 1 litre to 100 litres of water and spray on the crop infested with aphids.



Take steps to control fusarium wilt disease

How do we overcome banana wilt problem in our farm?

There are two types of banana wilt diseases that cause considerable loss to banana farmers in East Africa. These are the fusar-



ium wilt (also called the Panama disease) and *Xanthomonas* wilt disease is caused by, a fungus called *Fusarium oxysporium* which attacks the banana pseudostem and the root system (corms). The fungus can remain in the soil for up to 30 years,

which makes it one of the most devastating banana diseases.

The disease occurs in 3 races (types with different characteristics)- race 1, 2 and 4. Race 4 is one of the most devastating type of disease, which can even attack the Cavendish banana variety, which is resistant to other races of the disease. The most susceptible varieties of bananas are Gros Michel (Kampala), apple bananas (*sukari ndizi*), Mararu bluggoe (*bokoboko*), and Psian Awak.



Symptoms: Yellowing of the leaves, beginning from the leaf margins



and progressing towards the midribs. Yellowing starts from older leaves to young ones as plant dries up. The stem of the infected banana plant splits along the stem. The outer leaves of the stems separate and come off and fall off.

There is a very bad smell coming from the infected banana stems caused by other fungus that also invade the rotting stems. The stems lose their colour and become reddish brown.

Control measures: Farmers are advised to cut off the affected parts of the banana plant and burn them. Infected soil should not be moved from the area around the plant. Apply hot water around the root base of the banana plant- this reduces the disease by 20 per cent. All the garden tools such as *jembes* and *pangas* should be disinfected using a Jik® solution or pass them over the a fire flame to kill the fungus. Plant disease-free material for example getting tissue culture material from certified sources such as research institutions or KALRO. Plant banana varieties that have shown resistance to the disease such as the Cavendish variety.

In the next issue - *Xanthomonas wilt (BXW)*

► continued from page 6

Cucurbits: Pumpkin seeds contain a deworming compound called cucurbitacin. The seeds may be fed directly to animals.

Lupin: A diet made up entirely of freshly cut, lightly salted lupin is a good dewormer. It is important not to give free access to lupin, otherwise symptoms of poisoning may occur.

Other plants: Blackberries, raspberries, and nettle are also other plant species with deworming properties that should be accessible in pastures. Fennel leaves and seeds are also used as dewormers.

Many farmers may not know it, but those weeds growing together with your maize or any other crop are a big threat to the proper growth of your produce. Like a thief, weeds take away a large proportion of important nutrients that the crop badly needs to grow well. Weeds should be controlled on time and in the right way. Scientific studies have established that weeds take between 15 to 90 per cent of the total crop yield if they are not controlled on time.



Due to lack of labour, many small-scale farmers ignore weeds at their own peril. Poor weed management in many farms, among other factors, lead to low

Farming Tip

Weed control important at this time

crop yield. Apart from taking moisture, overgrown weeds create a canopy above your growing crop and deprive it of light. Crops need adequate light and correct temperatures to make their food during photosynthesis. Weeds also act as a good house for pests, which attack the growing crop and destroy it. Ensure all weeds are properly removed and properly discarded along the edges of the farm or buried to prevent any chances of growing again.

TOFRadio answers your questions

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

What farmers need to know about fish farming

Musdalafa Lyaga | Fish is not only a great addition of high quality protein and other essential nutrients to consumers' diet but also can be a great source of extra income for the farmer. Fish grow quickly and give a quick return on investment. Fingerlings weighing between 5 and 20 grams - are ready for marketing or consumption in 6-8 months and can fetch around Ksh 500-600 per kilo. This selling price is more than 25 times greater than the cost involved in feeding and caring for the fish.

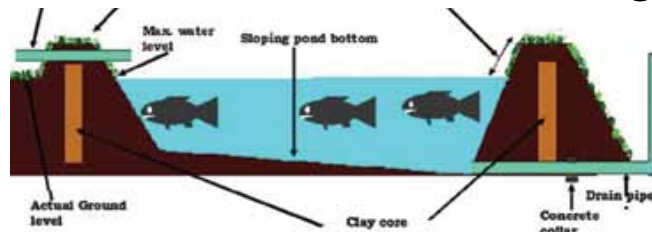


Unlike other types of livestock, fish rarely suffer from diseases. Once established, fish farms are easy to maintain. This leaves the farmer with time for other tasks.

Construction of the pond

Once a good site for the construction of the pond has been identified, measure and mark out the pond size. Bigger ponds of up to 50 metres by 100 metres are easier to manage. The ponds should be at least one and a half metres deep.

With heavy rains, mud washes into the pond. You can plant grass and trees around the pond, to prevent mud from



washing into the pond.

Introducing fingerlings to the pond

It is very important to select the right species of fish for your pond. Your selection should be guided by your market preferences, species that grow faster and are more profitable, availability of food and weather favourable to the fish. Tilapia is the most common fish as it is the most preferred fish by consumers although catfish is also increasingly becoming popular.

Feeding

Providing good quality and nutritious food ensures fast growth thus maximum production. For the first month, the young fingerlings will feed on small floating plants and animals in the water called planktons. Fish feed on algae, worms, and insects.

Fertilizing the pond with either cow, goat, sheep dung or chicken, duck or goose droppings encourages the growth of tiny plants and animals such as algae and planktons that are natural food for your fish.

You can also buy manufactured fishmeal or use supplementary food like grinded maize, sliced kales or chopped sweet potato vines, termites and ants.

Harvesting Fish

Different species of fish reach

marketing weight at different ages. For better price and profit, harvest the fish at right time. When the fish reach the marketing weights, you can collect fish from the pond by using a net or discharging all the water from the pond.

Post-harvest fish farming activities

Fresh fish spoil very quickly, within 12 hours after harvest. To prevent spoilage, there are various methods to process fish.

After harvesting, immediately cut the fish open on the underside and pull out the guts. Then wash the fish with clean water.

Sell or cook and eat fresh fish as soon as possible. Otherwise, you can preserve fish by salting, sun-drying, smoking, freezing or other means.

Marketing

Kenyans love fish, therefore the demand is good all year round such that few fish farmers transport their fish over significant distance to sell them. Rather, they sell most of their fish either at the farmgate or directly at the pond. Usually, fish farmers inform the community about an upcoming harvest, and customers arrive on the selected day.

Some farmers are trying to improve their income by capturing niche markets through value addition by selling already fried fish. In many areas, the potential for increased earnings from fish farming is limited only in the minds of the farmers. Fish farming in Kenya is really a lucrative business idea if well thought out and practised.

Additional Information from Farm Radio International. Watch or download video on Fish farming or other Farmer training videos on www.accessagriculture.org



farmers forum

0717 551 129 / 0738 390 715

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

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

Fruit seedlings: We have fruit seedlings for sale. Grafted Apple mango at Ksh 150 per seedling, grafted Avocado at Ksh 120, 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 Ksh 150, peach at Ksh 300, Pomegranate Ksh 150, strawberry and strawberry at Ksh 150 and strawberry at Ksh 60. Call 0714 118 794.

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

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

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

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

