



Ms Everlyn Onganga, the field officer in-charge of the Biovision Farmer Resource Centre in a training session with farmers in Gechochi village in Kisii county.

Dear farmers,

Although there is usually uncertainty about the weather at the beginning of every year, farmers should always be prepared to plant by mid-March. Do not wait until it is too late. Early planting has many advantages. It gives the crops an advantage since there are few weeds, pests and diseases at the beginning of the year and before rains start. Additionally when the first rains come, they capture free nitrogen from the air and drive it into the soil in a process known as "nitrogen flush". This means that if a farmer plants immediately after the first rains, the crop will get extra nitrogen from the atmosphere which helps them grow fast.

Planting early also stimulates fast seed germination. The soil temperature is usually high when the rains begin -and this is beneficial for effective germination to take place. Soil temperature plays a very important role in seed germination. When the temperatures are high, the germination is faster but as the rains continue, the soil temperature reduces leading to slow germination and development of the young plants. Research has shown that farmers who plant late lose about two bags of maize in one acre each week as a result of the declining soil temperatures. So it is advisable for farmers to plant early or even practise dry planting (planting before the rains start) to get more maize yields.

As you prepare to plant, you could cut ploughing costs by practising zero tillage - all one needs to do is to clear the field of weeds and crop residue from the previous crop by slashing. The crop residue is removed and placed at the edges of the farm. Then dig holes and plant maize or any other desired crop. By the third week or fourth week depending on the intensity of weeds, start weeding after which you can return the crop residue and place it as mulch between the maize rows. This method not only cuts ploughing costs and time but it also reduces soil erosion and the washing away of fertilizers by the rains especially on slopy land. These simple sustainable agriculture practices can increase crop yields and income while maintaining soil fertility and conserving the environment.

Beware of fake seeds this planting season

TOF - The planting season is here. During this time, some unscrupulous businessmen and agrovet shops try to make quick money by selling fake seed to unsuspecting farmers.

These businessmen make their own packaging material or illegally acquire genuine packaging bags from seed companies. They then dye (put seed colour) and sell to unsuspecting farmers. If you have noticed poor growth even after good fertilizer application and man-

aging your maize well, then you could be a victim of fake seed dealers.

Farmers can avoid being cheated by buying maize seed only from reputable or well-known agrovet shops in their farming areas or buying seed from seed companies' depots.

Check for KEPHIS tag

Every genuine seed bag has a Kenya Plant Health Inspection Service (KEPHIS) tag inside it showing that the seed has been inspected by KEPHIS. Farmers should check for this tag whenever they open the bag to check that the seed is genuine.

It is also advisable to buy seeds early enough to avoid last minute rush. Farmers who buy their seed late are most likely to get cheated because fake seed floods the market whenever the demand is high, usually during planting time in March and April. Do not buy seed if the seal in the seed bag is tampered with or missing. The dye used on genuine seed does not remain in the hands when handled. The dye in fake seeds comes off easily. (See box right)

Ensure that you do not buy expired seed as this may lead to germination failure and poor growth of your maize crop.



Seed information service

The Kenya Seed Company (KSC) has launched an SMS information service for farmers who want to know if the seed they are buying from the company is genuine, the varieties good for their region. Farmers can get this information through their mobile phones as follows:

To know if the seed is genuine:

Remove the seed tag from the seed bag. There is **Code** in the seed tag- **SMS** the code to **20111**. A message will be sent to you showing if the seed is genuine.

To know which variety is suitable for your region:

Write the word **Variety/ Name of division** and **SMS** to **20336**

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What maize farmers need to know when buying seeds

Every year, farmers fall victim to fake seed traders who buy ordinary maize, dye it and then sell to farmers as genuine seed, making farmers' to incur huge losses.

Joyce Wambui | With the planting season almost here, farmers should be on high alert to avoid buying fake seeds. The seed industry has a turnover exceeding Ksh 5 billion per year. It is, therefore, not surprising that unscrupulous traders have been sneaking fake seeds into the market. Many unsuspecting farmers have been duped to buying such seed thus incurring heavy losses.

Seed company takes steps to protect farmers

Most of the players in the seed industry strive to provide quality seeds that give the best returns to the farmer. Seed companies are already working to protect farmers from falling prey to fake seeds.

The Kenya Seed Company has developed an SMS technology to help farmers detect fake seeds (See page 1). For farmers buying Kenya Seed Co seed, they will now be able to send special codes printed in the package and receive a response indicating if the seeds are genuine or fake.

Other seed companies are investing heavily in branding to make it hard for fake seed traders to imitate their packaging. Rogue traders have been known to imitate the packaging bags of established seed companies which makes it difficult for farmers to tell the difference.

Identifying the right seed during purchase

Before buying maize seed, the farmer should consider the following guidelines to minimize chances of purchasing fake seed:

- Buy your seeds only from



Maize seed undergoes a lot of research during development to make it highly productive

licensed seed stockists or shops. Before buying the seed, it is important to ask to see the license issued to the stockist that authorizes them to sell seed. Alternatively, ensure you buy seeds from reputable and well-known agrovet shops in your nearest trading centres.

- All genuine seeds have company tags and inspection labels from KEPHIS inside the seed bags. It is always important to check for the tag immediately you open the seed bag to check if the seed is genuine.

- Buy your seed early enough. Farmers are more likely to buy fake seed during the rush for

seeds in March and April when most of the popular varieties of seeds are in short supply.

- Always ensure the seed you are buying has not expired.
- Some stockists who buy large quantities may continue selling carry-over stocks remaining from previous years; such seeds do not grow well when planted and may fail to germinate.
- Do not be deceived by prices. Fake seeds most of the times are offered at a cheaper price to entice farmers to buy.
- All seed should be well stored preferably in a cool and dry place.

Choose the right seed variety for your region

To get high maize yields which enhances your income and boosts food security, good knowledge of the right seeds for the various climatic regions is essential.

Many farmers plant the wrong maize seed varieties which adversely affect their yields leading to heavy losses. Farmers should therefore be very careful when choosing maize seed varieties to plant.

Maize seeds are developed to grow well in a specific altitude, rainfall, type of soil and temperature and other climatic

conditions. To meet the needs of farmers in every climatic region, researchers have developed seed varieties that do well in those regions. It is therefore important for farmers to buy seeds that can do well in their geographical regions. It is also important that farmers seek advice from extension officers, agricultural or research institutions before buying any maize seed.

Before adopting any new seed variety, farmers should isolate a small portion of land, plant the variety and observe its characteristics. Check if the variety is prone to lodging (falling due to wind), if the ears open early before maturity, which allows water into the maize cob rotting, the yield and any other negative characteristic. When you have established that the variety is good for your area, plant it the next season. We give this advice to caution farmers against buying new seed varieties (which may not have the desired qualities) as may be claimed by seed companies or seed stockists.

Good management of maize throughout production is important. Low soil fertility, soil acidity, late land preparation and planting, poor weeding and even using the wrong spacing methods can contribute to low maize yields.



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Diversify your farm income through cabbage production

With proper timing farmers can grow and sell cabbages when the market prices are at their highest especially in the months of April, May and June.

Wanjiku Wanyonyi Cabbage is one of the most popular vegetables grown in Kenya by small, medium and large-scale farmers for food and income generation. It is an all-season vegetable that never lacks market. Regardless of the time of the year that you produce it, you will find a heavy demand for it with the only problem being the varying selling prices. Due to its high demand particularly in the urban areas, a shortfall in cabbage production automatically leads to increase in price.

Cabbage is therefore the most ideal type of vegetable for a farmer who wants to make money over short period of time with little production costs. Nutritionally, cabbages are important source of calcium and have moderate amounts of potassium and sodium. They are also a moderate source of vitamin A and C and therefore prevent hypertension and constipation. There are many cabbage varieties, and you can easily find a variety that is perfectly suited to your farm's weather conditions.

Altitude

Cabbage can grow in altitude ranging from 800 to over 2,000 metres.

Rainfall

The crop does well in cooler climates with adequate and well



Proper management of a cabbage crop improves quality, yield and income for the farmer

distributed rains. The vegetable has high water requirement during growth period - from 380 to 500 mm per crop, depending on climate and length of growing season.

Soils

Cabbages can be grown on a wide range of soils but it thrives on soils which are well-drained, moisture-retentive loamy soils, well supplied with organic matter. It does not grow well in highly acidic soil. The ideal soil pH ranges from 5.5 to 6.5.

Land preparations

The cabbage nursery should be sited in an area where the brassica family of crops has not been grown for at least 3 years. During nursery preparation all roots, stone, and weeds should be removed. The land should be ploughed and harrowed during a dry spell so that all the weeds die before transplanting is done. This will give the seedling time to grow before the weeds come up.

Seed quality

The seed selected for planting at the start must be of the finest quality and of the desired type. The plants from which seed is to be taken for planting must be vigorously selected, or rouged (thrown away). Treat seed in hot water to prevent seed-borne diseases and for diseases which have previously appeared. However, the specified temperature and time interval should be strictly followed to maintain seed viability.

Planting

Cabbage seeds are ready for transplanting one month after

sowing. Healthy and vigorous cabbage seedlings should be selected and lifted with a lump of soil around the roots. Transplanting should be done late in the evening. When planting the cabbage, especially for those in cooler areas, ensure that you sow the seeds at least 4 weeks earlier. You should plant these seeds at ¼ inch deep, and 2 inches apart in a well covered and protected space.

When the seedlings have 3 leaves, you can then transplant them in the field. You can also plant them under other tall plants like maize so that they get shade from the hot sun or mulch them and keep the soil evenly moist.

Spacing

A 60cm by 60cm spacing is recommended. The further apart you plant the cabbage, the larger the head will develop. Early maturing varieties require closer spacing of 60cm between the rows and 45cm between the plants while late maturing varieties require wider spacing of 60cm by 60cm. Generally, the wider you space the plants the larger the size of the head that will be obtained.

Seed rates

The amount of seeds required vary with the cabbage variety. However, the seed rate should be about 120g of seeds for every one acre piece of land.

Fertilizer application

In soils low in organic matter, 20 tons/ha of manure or 1-2 handfuls of manure should be applied per planting hole. Organic fertilizer is highly rec-

ommended as it reduces acidity. In acidic soils, DAP fertilizer should be avoided.

The crop should be top dressed with organic foliar fertilizer when seedlings are established and second topdressing applied when the leaves start folding. Have the soil tested for nutrient status where possible before planting.

Weeding

The weeding should be done two to three weeks after transplanting. The crop should be kept free of weeds especially in its younger stages to avoid losses due to competition from weeds, which can also be a source of pests. At times, weeding by hands is preferred to avoid damaging the cabbage's shallow roots. The farmer should ensure that weeding is done frequently.

Harvesting

The crop is harvested when the heads attain their full size and become firm and hard but tender. The color of the head is sometimes used to show maturity. A fully developed head has a light shade of green. The crop for picking should be harvested when the cover leaves curl back and the inner leaves are exposed. If harvesting is delayed, the heads may split and rot. If harvested too early the head may be too soft.

The crop for the fresh market is harvested by hand with a knife or sickle. Most of the stem should be left on the head if the crop is to be stored. Harvested produce should always be removed from direct sunlight and transported to the packing shed as soon as possible. ■



Take care of your soils to improve productivity

Lack of adequate attention to soils can be blamed for the declining soil fertility in the country. It is important that farmers test their soils after every two years to know what nutrients are missing and take measures to correct them.

Olive Mukuna | Have you noticed that your crop yields have been going down no matter how much fertilizer you apply? Many farmers will tell you that their yields have been decreasing over the years despite their efforts at managing their crops well. For example, land which used to produce 25 to 30 bags of maize can hardly give even 10 bags now.

If your crop yields have declined despite the best effort, then the most likely cause is soil infertility. Lack of attention to the soils has led to its deterioration to a point where there are not enough nutrients to sustain crop production. Over the years, soil in Kenya and in larger East African region has been degraded physically due to erosion by water or wind, chemically by use of acidifying fertilizers such as DAP and biologically due to loss of soil



Good soil care: A farmer prepares a field before planting

organic matter and soil's biodiversity.

Farmers should take soil as a very important component in the overall farm management. Soil fertility should be a priority to all farmers if they expect to improve their crop yields and income. If farmers cannot take good care of their soils, then the country will have less food and income from agriculture will decline. Soil infertility leads to reduced crop yields which is to blame for reduced income and poverty. It is therefore important to understand the factors that contribute to soil infertility and provide ways in which farmers can restore soil fertility in their

farms.

Use of inorganic fertilizers

As farmers prepare their land this season, most of them will use chemical fertilizers to improve soil fertility. The use of chemical fertilizers sounds like a cheaper and easier option than using organic methods like compost, plant teas, mineral fertilizers like rock phosphate. What they may not know is that chemical fertilizers do not always bring the expected yield and relying on the wrong fertilizer may just be a waste of money. Chemical fertilizers will help the crop to grow in that particular season

but increase soil acidity in subsequent seasons. Another disadvantage, is that use of these chemical fertilizers such as DAP over a long period of time may result in the build-up of acidity in the soil, yet many crops in Kenya such as maize do not do well in acidic soils. Acidic soils also limit the availability of other nutrients such as phosphorus to the plants.

Minimal or inefficient use of organic inputs

Organic manure such as farmyard manure and compost are often used in small amounts and inefficiently by farmers. Some farmers collect, store and apply farmyard manure poorly such that the manure loses many important nutrients like nitrogen. Manure should be mature or break down well before being applied to the soil. Before use, it should be stored where there is no rainfall or runoff water to avoid leaching of nutrients.

Lack of enough water in the soil

Water is necessary for soil nutrients to be taken up by the plants. Farmers should therefore focus on harvesting and conserving

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Do not plant until you test your soil

To be able to know which nutrients are missing in the soil, farmers should have their soil tested after every one or two years. This is especially so for farmers who practice monocropping (growing the same crop year after year) which is the main practice in many parts of Kenya. Soil tests can only be done in a laboratory to determine what is lacking and to get recommendations on ways to correct the nutrient deficiencies.

It is wrong to apply any fertilizer to a crop without knowing what is lacking in the soil. It costs only Ksh 1,000 to test soil in Kenya Agricultural and Livestock Research Organization (KALRO or formerly KARI) laboratories. A soil test would save farmers a lot of money used to buy fertilizers that the soils do not need in the first place.

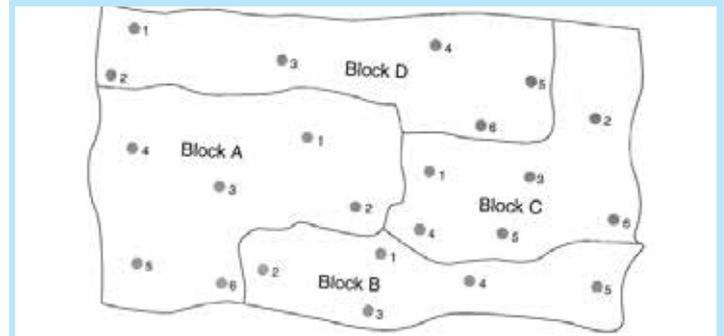
The easiest methods farmers can use to correct soil deficiency include the use of organic matter such as farmyard manure, compost or the recycling of crop residue. Farmers should never



burn crop residue at the time of land preparation. Crop residue not only contains organic matter, but also has nutrients that are released to plants when the residue decomposes. An organic farm relies on the recycling of nutrients to maintain soil fertility, which cuts down the cost of purchasing external inputs for the farmer.

Continuous use of organic matter in a farm balances the pH levels while keeping the soil structure and fertility as it should be. Another method farmers can use to maintain soil fertility is to practice crop rotation; different crops take and add in different nutrients in the soil thus maintaining the soil nutrient balance.

How to do soil sampling



• Mark different parts of your *shamba* using sticks; ensure every part of your farm has been marked.

• Dig a hole in each part of the farm that you have marked and take a sample in both the topsoil and the subsoil (top at 20cm depth and subsoil at 50cm depth).

• Mix the soil samples collected, break crumbs to make sure the soil is fine in texture.

• Dry the soil.

Put about 1kg of the soil sample into a clean plastic bag.

• Label the soil sample clearly

with your name and address. If you have taken soil from different blocks of land in your farm, this should be clearly shown in the label

• Indicate the type of crop you intend to grow to get advice on what nutrients are needed for the crop.

Farmers should take soil samples to any KALRO station near their region. You will be advised on how to make payments. Results are usually ready within two weeks. Also send samples to KALRO-NARL, Nairobi Tel. 020 267 2975, Email: soilabs@yahoo.com

Elikanah Isaboke Ondieki

Eat well to live a longer, healthier life

Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity. Good nutrition should include enough carbohydrates, proteins, fats and oils, vitamins, minerals and water.



Photo:FN

Tyson Wachira | What people eat or are fed is important to their health and performance in general. Human beings get nutrients from what they eat. Nutrients are substances that provide nourishment to the human body for growth and metabolism. You are what you eat. Food is the best medicine for human life. Nutrients found in food determine one's mood, performance and general quality in life. Eating well on a daily basis prevents diet related ailments and is associated with prolonged and healthy life.

Poor diet makes the body weak

Poor diet consists of under or over-eating certain food types, not having balanced meals (for example, having only ugali and sukumawiki without a protein), eating bad fats, sugar and processed foods. Poor food can lead to reduced immunity, increased susceptibility to diseases, impaired physical and mental development and also reduced productivity. Good nutrition is the foundation of good health and one should have an adequate, well balanced diet combined with regular physical activity.

Your daily meals should include carbohydrates, proteins, fats and oils, vitamins, minerals and water. Foods rich in carbohydrates are rice, dried maize, bananas, yams, sweet potatoes and Irish potatoes. Protein-rich foods are meats, eggs, fish, milk and mushrooms. Vitamins and mineral rich foods are mainly fruits, and all green leafy vegetables.

Live a balanced and healthy life

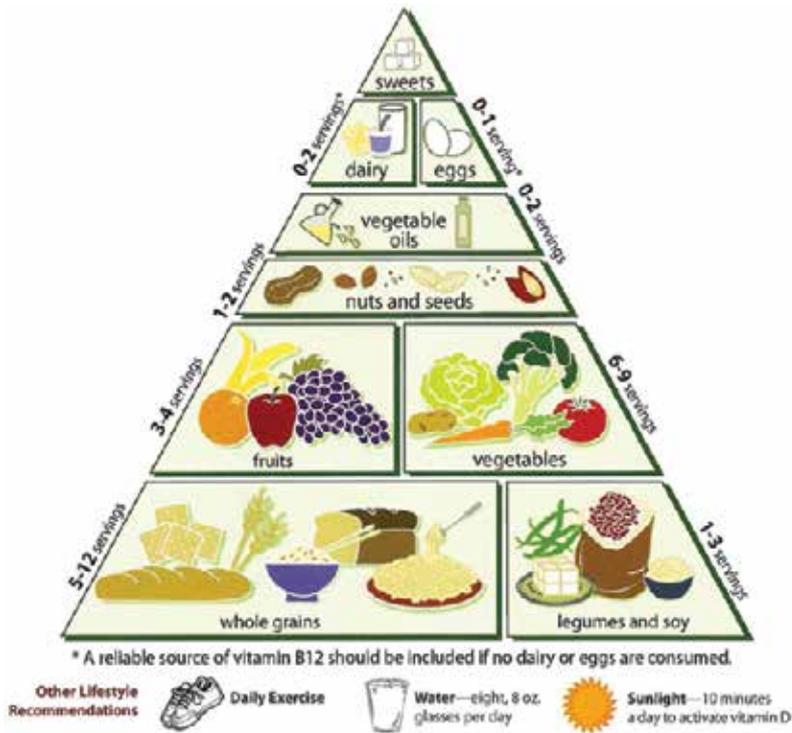
Exercise, fresh air, getting enough sleep, avoiding too much stress, excessive intake of alcohol, tobacco and drugs

enhances good health.

Your meals should always have some raw vegetables like tomatoes, lettuce, onions and dhanias, which have antioxidants – these cleanses toxins

Lunch: The body needs energy but not as much as in the morning.

Supper/ Dinner: This is time to rest, energy requirement is low.



from the body cells. The following are among the best sources of antioxidants; leeks, onions, garlic, pumpkins, mangoes, apricots, carrots, spinach, parsley, green tea, red peppers, broccoli, cabbage, cauliflower, fruits such as watermelon and kiwi fruits.

Here is a simple guide to your meals:

Breakfast: This is when you need more energy to enable you carry out the day's activities. Your body also needs fuel after staying for over 8 hours at night sleeping without food.

Although every person knows how to nourish themselves, the decision on what and when to eat is a complex process which is usually affected by food availability, taste, appetite, finances and time.

Whatever your situation, avoid going for hours in the morning without eating your breakfast because your blood sugar levels become too low and this can affect your ability to undertake your daily activities. It also makes you susceptible to eating 'junk food' like soda and cake to take care of your hunger.

Many diseases are related to nutrition

Healthy eating is important to everyone. The food should give energy, be enjoyed, build and repair muscles, blood, bones, protect the body and keep it free from diseases. Some diet related ailments such as high blood pressure, cancers, diabetes, osteoporosis, anaemia and obesity can be controlled if eating well is given a priority at home.

Older adults are more likely to require diet modification to control diseases than younger adults, but the diet should still reflect the preference of older adults. For the elderly, the diet should fit the person rather than changing the person's eating behavior. No food should be denied to any person on the basis of his/her age or gender.

Food eating schedules is well guided by the food pyramid developed by the US Department of Agriculture (USDA) in the diagram (left). This is an excellent tool to help make healthy food choices. The food pyramid helps one to choose from a variety of foods to get the nutrients one needs, and the suggested serving sizes can help to control the amount of calories, fats, saturated fat, cholesterol, sugar or sodium in the diet. The following daily servings in six categories are highly recommended:

- Grains:** Six or more servings,
- Vegetables:** Five servings
- Fruits:** Two to four servings
- Meat:** Two to three servings daily
- Fats and oils:** Use sparingly.
- Sweets and processed foods:** None

Drink plenty of water at all times

Every human body should be well rehydrated with fresh drinking water, which aids in body's food digestion and metabolism.

Water should not be only taken in when one is thirsty. This is among the best body's toxin removers.

The food pyramid gives priority to food varieties and prominence as the triangle design shows. The lower parts are the composition of carbohydrates followed by fruits and vegetables then nuts and seeds then oils and fats lastly sugars and sweets. ■

Kisii farmer gets more maize through organic farming

After reading the *TOF* magazine and getting training on organic production, Ms Ogega has managed to increase her maize production and restored soil fertility in her farm.

Caroline Kinyulusi | Ms Wilber Bosibori Ogega and her husband, David Onami from Gechochi village in Kisii County have been growing maize without using chemical fertilizers. In the year 2010, they came across a copy of *TOF* magazine in which they learnt that organic inputs can increase crop yields by restoring soil fertility. Last season, Ms Ogega planted *endere* a local variety also known as 'muraguri' which she had preserved from the previous season, using chicken manure on their 1/8 acre plot.

Ms Evelyn Onganga, the field officer in charge of Kisii region Biovision Farmer Resource Centre, reported that she started giving *TOF* magazine copies to the couple some-



Ms Ogega together with her daughters show off their maize crop grown using organic methods

time in 2010. "I taught them how to make compost, plant extracts and home-made chicken feed, among other topics. Previously, I had successfully planted soya beans, tomatoes and cabbage using chicken manure in a demonstration plot behind my house. The farmers saw how healthy and strong the crops were, and this made it easy for them to

believe that chicken manure really works," she says.

Ms Ogega was one of the farmers who chose to practise what they had learnt. For two seasons now, she has planted maize and realized significant increase in yields after using chicken manure. After digging the planting holes, 1 ft (30cm)

from plant to plant; and 2.5 ft (75cm) between rows, she put in the manure, a handful per hole, then added some soil. She then planted one maize seed per hole and covered.

"I had wondered what to do with the chicken manure, because after some time it accumulates in the farm if not disposed of. You know, I had been using chemical fertilizers for many years, but even then I was not satisfied with the results as the maize remained yellow," Ms Ogega explain. She suspected that the soil in her farm was deficient in some nutrients. To deal with this problem, she started doing mulching, mixing crop residues into the soil and using the chicken manure.

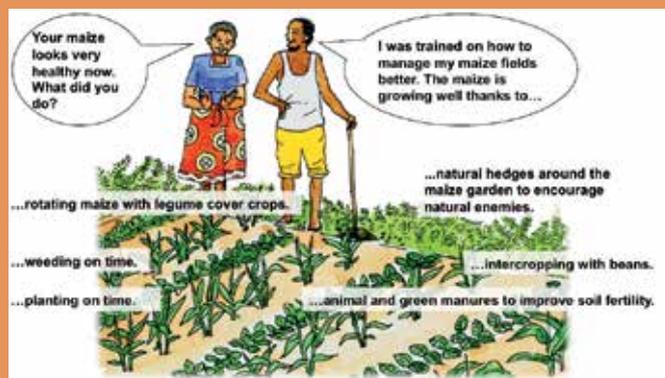
Increased yield

Ms Ogega harvested her crop in January and she got about 2.5 bags, similar to the harvest received the previous season. The maize was not affected by the Maize Lethal Necrosis (MLN) disease that is common in her region.

This was a great improvement compared to what she harvested earlier on when she was relying on chemical fertilizers because then, she would only harvest about ½ a bag or nothing in some seasons. "Some would rot from the top of the cob while the yellow ones would not give anything. My husband is happy now because I do not ask for money to buy fertilizer."

Ms Ogega sells one bag and retains the rest for her family. The extra income received from selling maize (about Ksh 3,750) helps her meet some of her household needs. ■

Proper field establishment and crop management



- > Legumes grown as pre-crops fix N and solubilise P in the soil.
- > Improved fallows and incorporation of organic materials enhance soil fertility and soil structure.
- > Plant maize at the start of the rainy season.
- > Retain water with minimal tillage combined with cover crops or mulching.
- > Avoid drought during flowering; consider drip irrigation, if necessary.

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Take good care of the soil

rainfall water to be used for irrigation in the dry season.

Poor farming practices

Poor tilling (ploughing) causes loss of soil moisture, which the growing plants require in adequate quantities to grow well. Failing to practise crop rotation and intercropping also contributes to loss of soil fertility. This is because mixed cropping ensures that plants that contribute to increased fertility in the soil. For example, legumes such as beans fix nitrogen in the soil



which is used by other crops like maize. Farmers who keep a large number of cattle in a small area also contribute to degradation of the soil.

Social factors

Increasing population in most

parts of Kenya have resulted to subdivision of land into smaller units for people to settle in.

These division has made it harder for some people to produce sufficient food for the market.

In some areas, farmers are not willing to invest in improving their soil fertility. Poor infrastructure in some parts of Kenya and lack of information on production possibilities and access to credit facilities make it hard for some farmers to improve their soils' fertility.

Causes of swelling stomach in chickens

In TOF issue No.117 of February 2015, a farmer had requested to know the cause of stomach swelling in his chickens. From the pictures he provided, our chickens expert diagnosed the problem to be ascites as diagnosed from the bluish colour in its comb and wattles (the red fleshy part that hangs from beak to neck). However, some livestock production officers, from the Kisii County office, were not satisfied with the answer we gave for the problem and requested us to provide farmers with information on other causes of swollen stomach in chickens. Below we give other causes of the problem:



A bloated or swollen abdomen in chickens could be a symptom of several illnesses which directly or indirectly affect a hen's reproductive system- there can be no one cause of a condition such as this unless a qualified veterinarian diagnoses the problem and pinpoints the cause. This means that whenever your chickens show any swelling, it is always important to seek the advice of a qualified vet. Below are some of the other causes of stomach swellings in chickens:

Ascites or water belly

Ascites is basically an accumulation of fluid in the abdominal cavity that is usually associated with the development of tumours in the heart and liver. The fluid causes difficulty in breathing and development of

infecting them and later developing into full blown ascites.

Selective breeding has enabled many hatcheries to reduce genetic traits that cause ascites.

Tumours

Several diseases such as Marek's disease cause tumours and the enlargement of a chicken's internal organs such as the liver, which swells. Tumour diseases tend to stay for long causing weight loss and decreased appetite. To reduce tumours, it is advisable to vaccinate day-old chicks against Marek's disease at the hatchery before they are sold to poultry farmers. Poultry farmers are advised to buy day-old chicks from reputable hatcheries.

Fat deposition

Too much fat in a chicken can cause it to have a distended (swollen stomach). Obesity

in chickens is caused by high energy diets. Chickens in this condition may have a conditions called Fatty Liver Haemorrhagic Syndrome (FLHS) where the liver accumulates fat causing the stomach to swell. To avoid the condition, give your chickens a

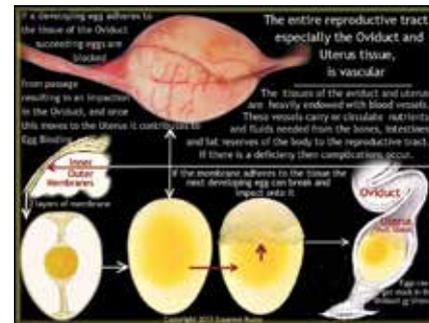


balanced diet that has enough carbohydrates.

Cystic oviduct

In normal chickens, only the left ovary and oviduct (the tube through which the egg passes) are functional but sometimes the

right ovary becomes active and develops a cyst (growth). Large cysts can cause the chicken stomach to swell and press on



the other internal organs. A vet can drain the cysts using a syringe.

Egg-bound oviduct

If the oviduct becomes blocked by an egg or mass of broken eggs, the eggs may be pushed back to the body as the hen continues to lay eggs. Affected hens find it difficult to walk due to accumulation of eggs in the oviduct.

Salpingitis

Salpingitis is the swelling of the oviduct through injuries caused by pecking or *E. coli* bacteria causing the oviduct and stomach to swell. The oviduct becomes infected and releases a foul smell. Chickens affected by salpingitis can remain healthy for a long time but they eventually die when the condition becomes worse.

Poultry farmers are advised to consult a veterinarian whenever their chickens develop any of the above conditions for observation and treatment. ■



bluish colour in combs (crest and wattles of a hen). There is no treatment for ascites. The disease is common in broilers. Dirty and poorly ventilated chicken sheds, stocking density and feeding hygiene are some of the main causes of the disease. Farmers can therefore avoid it if they keep their chicken sheds clean and well ventilated.

Bacteria such as *E. coli*, salmonella and even moulds (*aspergillus*) can increase the disease incidence up to five times in broilers since the bacteria get into the bird's lung air sacs

Farming Tip

A simple method to make dairy meal

Farmers can use a simple method to make dairy meal on the farm without having to buy raw materials that may not be available in the agrovet shops:

Ingredients

1. 5kg of whole maize on the cob
2. 5kg calliandra/sesbania/ lucerne/lucaena
3. 2kg minerals (such as maclik Super®, dairy superphosphate® or Unga High Phosphorus®)

Preparation: Grind the whole maize together with cob into gristed form (*chenga*). Wilt the calliandra, sesbania or lucerne in a shade (not in direct sunlight) and grind it too. Mix all the

ingredients thoroughly preferably using a drum mixer or even a spade and feed the cows. You can increase the quantity of the above ingredients depending on the number of animals you feed.

To determine how much dairy meal each cow should get, you need to know how much milk each cow produces in a day; a cow should get at least 1kg of concentrate for every 1.5litres it produces above 7litres of milk; for example, if your cow produces 10 litres of milk in a day, this means that it has produced an extra 3 litres of milk above the 7 litres.

To know how much concentrate the cow should get, divide 3 litres by 1.5 thus 3litre ÷ 1.5litres

= 2kg, so the cow should be given 2kg of concentrate. Feed this in two portions - 1kg in the morning and 1kg in the evening) if your cow is giving 16 litres, the amount of concentrate it should get can be worked out as follows: 16litres subtract 7 litres = 9 litres divide by 1.5litres = 6kg of concentrate (feed 3kg in the morning and 3kg in the evening). The concentrate is given as a supplement in addition to a cow's daily fodder rations.

Additional information from William Ayako, Scientist KALRO Naivasha

TOF **Radio** answers your questions

TOFRadio programmes schedule will be provided next month following changes in radio stations to air the programmes. 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.

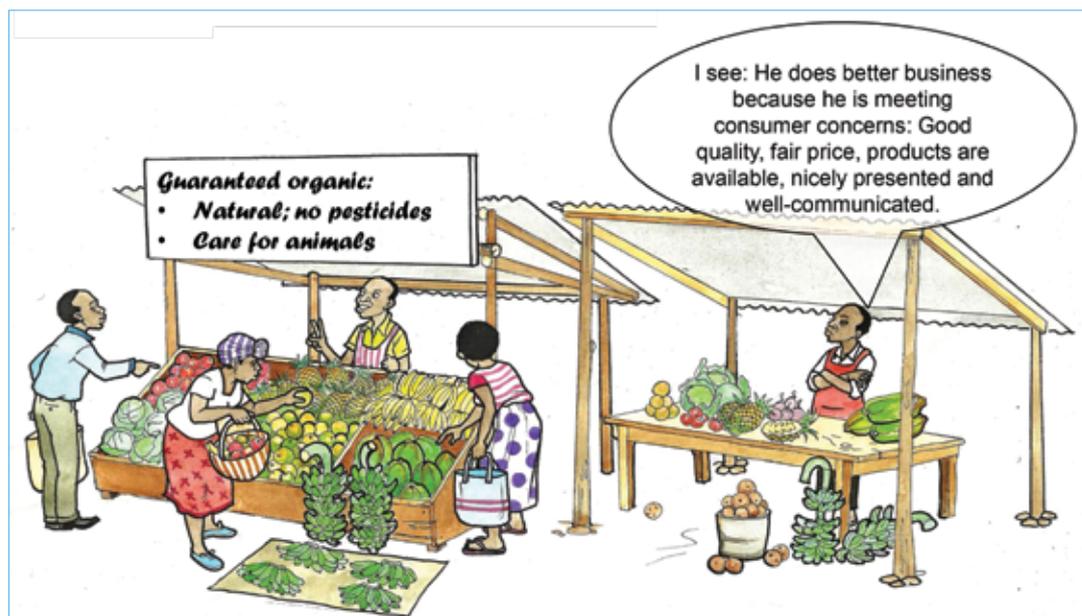
How to get to local organic markets

You have an excellent farm product that nobody else has. What do you need to make your products stand out from those of competitors?

When you start or convert to organic farming, you produce to meet your own needs and sell the surplus. For the market, you need to consider what consumers really want. Discuss with your neighbour, potential customers and advisors what they think is the specific market opportunity for your farm produce. You need to know whether there are possibilities of selling whatever you are producing on the local markets. The organic market in Kenya is growing and you can benefit from the increasing demand for locally grown and affordable farm produce.

Locally, you can sell directly to consumers – your friends, neighbours and acquaintances can provide a ready market. Because people are increasingly aware of their health and the safety of food they eat, try to get a good price for your produce. To do this, you need to stress that your products do not contain any harmful chemicals as a starting point. As your consumers gain interest in your 'unique' produce, continue to educate them on the benefits of food grown organically. You can also establish a farm shop, and this should be well branded, for example, as "Organic Vegetable Shop".

Retail shops, supermarkets and restaurant are another target, and you can get large orders for various organic produce. You, however, need to be well prepared to ensure a consistent supply and good quality produce throughout the year.



Why do consumers buy organic produce?

Most people like organic food because:

- It is free of contaminants like pesticides and herbicides.
- It has a high nutritional value
- It tastes good.
- It is free from additives.
- It looks nice and well-packaged.
- It is clearly labelled.

Customers are interested in the best quality, and you should therefore not compromise on this. Most of the retail buyers are based in the towns and target well-informed consumers in urban areas - these are usually very particular about the produce they buy from retailers.

Some examples of shops that sell organic produce in Nairobi are Kalimoni Greens Organic Shop in Karen, Organic Foods on Ngong road and Zucchini ABC Place.

Nakumatt and Uchumi also buy organic produce but they need assurance of enough quantities. Hotels such as Bridges Organic buy from organic farmers. Dusit D2, Fairmount and Intercontinental, are also interested but need large supplies continuously.

Cooperate with others

Work with your fellow suppliers to get enough quantities to satisfy your customers. Cooperation with other farmers and market partners is beneficial because:

- Together you produce enough quantity in the right quality.
- Together you share risks and benefits in production and marketing.
- In partnership you are more competitive.

Actors of the market chain that you can work with include:

- **Other farmers** – Farmers produce agricultural goods. However, a farmer's role is also as entrepreneur in the organic business.
- **Processors** – A food processor adds value to a farm product by processing it. Examples include drying, milling, mixing or fermenting.
- **Traders** – Matchmaking between farmers, processors, retailers and consumers

 **farmers forum**

0717 551 129 / 0738 390 715

Hay: Boma Rhodes at Ksh 300 and barley hay at Ksh 200. Within Nairobi and Kiambu counties. Contact Peter on 0721 629 913.

Friesian and Ayrshire heifers: In Ol Kalao, Nyandarua. Contact 0732 744 284.

Tractors and implements for hire: We have tractors, and farm machinery for hire. We are one of the largest suppliers of hire tractors and machinery in Kenya. We have a couple of powerful tractors available for hire for any kind of task. We provide our customers with the most reliable equipment and a nationwide service network. For agricultural machinery we have trailers, seed drills, fertilizer spreaders, harrows, ploughs and sprayers. We offer very good rates and discounts for short and long time hire for up to 3 years. Long term is a cost effective way of running a tractor and farm equipment, rather than buying one and we can advise on the best options for you and your business. We stock a vast range of parts for all makes of tractor directly from the UK. Contact us on 0722 848 520.

the main function of traders. Traders can promote farm products and provide access to customers.

- **Retailers** – Shops or markets that sell to end consumers in many cases actively promote the products in the shops and in the media.

Become an entrepreneur

If you want to succeed in organic farming business be proactive. Do not wait for someone to show you where the market is. Develop your business plan, then find the market. Ask, knock on the doors of shops, send messages and call people to let them know what you intend to grow. This will give you an idea of whether your produce is likely to be bought.

Start small! You may start with smaller quantities, for example, to sell on a street market. In a next step, you can scale-up production in order to sell to organic shops in a nearby towns. Later on you may be able to sell to export markets.

For more information about marketing organic produce, read TOF Issue No. 120 May, 2015. You can also contact Kenya Organic Agriculture Network (KOAN). Tel.: 0704 428465, 0787 557908 ■