

# The Organic Farmer

The magazine for sustainable agriculture in East Africa



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## Pigs, a worthwhile venture

TOF - Many farmers can make a good income from pig keeping, if they did it the right way. According to research, more than 48 per cent of young pigs owned by local farmers die before they reach the weaning stage



due to poor hygiene. One sow (mother pig) can produce up to 20 piglets in one year: A 70-kg pig fetches Ksh 13'650 in the market. Breeder sows and boars cost an average Ksh 25'000. But there is a big shortage of pigs at the moment.

The main problem with pig keeping in the country is that farmers are unable to maintain a high standard of hygiene

required of pigs. Second, pigs are often not fed properly. A sow with 10 piglets for instance produces 13-16 kg of milk daily, it therefore needs 9.5 kg of feed per day for good milk production. To raise a pig to a weight of 70 kg requires Ksh 9,500 in feed costs apart from labour. However, farmers can reduce feed costs by using local feed sources.

## Prepare early, select right seed

TOF - The planting season is just about to start in a month's time. Three conditions are important: The early land preparation, the early purchase of seed to avoid being cheated with fake seeds and the selection of good seed. This is a very tricky issue that farmers need to be very careful about.

Many farmers do not select their seeds carefully and rely on seed dealers for advice on which varieties to plant. It is important for farmers to know that seeds are developed for specific regions. Most of the seeds, especially those being imported into the country are meant for medium potential areas; when such seeds are planted in areas with high rainfall, they mature early and start rotting, others open their ears (cobs) early, allowing water, pests and even disease-causing pathogens as well as aflatoxins to set in. Aggressive marketing by seed companies has created



more confusion among farmers.

### Inform yourself

Kenya Seed Company has created mobile phone messaging service to help farmers identify seeds from the company suitable for their areas. Just go to message option in your mobile phone. Write the word MAIZE \* Your Division and send it to 3000. You will get a reply showing varieties suitable for your area, their qualities, maturity etc. Alternatively, call the company's help lines: 0716 647 693 or 0733 854 713.

## TOF now increases copies for farmers

We have good news for farmers. In order to meet the increased demand for TOF magazines, we have raised the number of copies from 21,000 copies to 24,000 beginning January 2012. Many farmers are no longer receiving their copies due to non-payment of rental boxes by owners. Many individuals

and institutions were removed from our mailing list last year after they failed to answer our distribution questionnaire. If you are affected, please do not keep quiet. Identify a reliable address and write to us. We have a new number through which farmers can reach us, the number is 020 251 92 33.

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## Dear farmers,

In the last few months, TOF has visited more than 50 farmers' groups that have undergone organic agriculture training in the information centres of The Organic Farmer magazine (i-TOF centres). After extensive discussions, we got interesting insights into the farmers' attitude and behaviour towards organic farming. Nearly all members in these groups use compost; but at the same time, we discovered a strong belief by some, that crops cannot do well without chemical fertilizers! In Ukambani, one farmer had his view. " Our rainy season is short. The chemical fertilizer gives the crop a push, as it acts faster than compost", he said.

As we have already explained in our January 2012 issue, fertilizers can make nutrients immediately available to the plants, but they do not enrich the soil. In the long-term, they actually destroy the soil.

What happens in a situation where a small-scale farmer cannot afford to buy fertilizers as is the case with many of them? No crop can grow well in overexploited soils if grown without fertilizer. The only solution therefore is to restore soil fertility: With farmyard manure and compost. Building soil fertility is a long-term and tedious investment, but at the end, it pays. In this issue, on page 2 and 3, we explain how to detect soil nutrient deficiencies and what a farmer can do to correct them.

Despite this attitude on fertilizers by some farmers, we observed a very positive development among the groups we visited: Almost half of the groups have started some form of agribusiness after undergoing training offered by our extension workers. These business ventures are slowly transforming the lives of many farmers' groups boosting the income of individual farmers; working in groups has many benefits.

Last year, seed dealers took advantage of the seed shortage by selling counterfeit seeds. Farmers were cheated, and recorded a poor harvest. The same may happen this planting season. On page 2 we give you some useful tips. Do not forget that all your work for the year is in vain if the seed you plant is not genuine!

# Plants show it when they lack nutrients

Farmers need to know the nutrients the soil needs and how to provide them for good yields.

## The Organic Farmer

In the January issue of TOF, we emphasized the importance of soil tests, which would give a clear picture of your soil status. We assume that only a minority of small-scale farmers are able to have their soil tested. What can they do instead? They can enrich the soil as much as possible with compost. The well rotten mixture of farmyard manure, organic matter such as leaves, kitchen waste, crop residues etc. will provide the soil with the nourishment needed for growing crops and vegetables. While composting manure stabilizes the nitrogen, the organic matter binds nutrients, promotes biological activity, improves soil structure, regulates soil acidity, enhances water infiltration and drainage, and decreases soil erosion.

Soil composition has a major impact on fertilizer requirements. There is no single fertilizer, whether it is all-natural or chemically derived, which can provide optimal results in all soil types. So farmers need to know the various nutrients the soil needs. They need not worry about non-mineral nutrients such as carbon, hydrogen and oxygen, these are provided through air and water.

### Mineral nutrients

The farmer has to ensure all the major mineral nutrients are provided for a healthy crop growth. Deficiencies can easily be identified by means of visual symptoms. There are 13 mineral nutrients, which come from the soil, are dissolved in water and absorbed through the plant roots. The three most important mineral nutrients are nitrogen (N), phosphorus (P), and potassium (K). The soil has these major nutrients in small quantities at all times because the crops use large amounts for their growth and survival. Unless in exceptional cases, calcium (Ca), magnesium (Mg) and Sulfur (S) are usually enough in the soil, so fertilization is not always needed, especially when using compost with a lot of organic matter.



Nitrogen deficiency in maize

### Nitrogen (N)

Nitrogen plays an important part in all living cells and chlorophyll, the green pigment of the plant that is responsible for photosynthesis (the process of making plant food). Nitrogen facilitates rapid plant growth, increasing seed and fruit production and improving the quality of leaf and forage crops. Most plants take nitrogen from the soil continuously throughout their growing phase and nitrogen demand usually increases as the plant size increases.

A nitrogen-deficient plant is generally small and develops slowly because it lacks the nitrogen necessary to manufacture adequate structural and genetic materials. It is usually pale green or yellowish, because it lacks adequate chlorophyll.

Nitrogen management is probably the greatest challenge in organic farming. It is mainly recycled from two sources:

- Composting recycles and stabilizes at least a part of the nitrogen which is present in all plant material and animal manures (see table below). Nitrogen applied in this way is more stable and less likely to leach or volatilize, but it is also not as readily available to the plant as may be needed.

- Nitrogen-fixing green manure plants or legumes, which are grown during the off-season or can be intercropped with a main crop. They can be cut or grazed to feed animals. Green manure legumes are worked into the soil or left as mulch to decay and to provide most of the nitrogen nutrients required for plant growth.

### Phosphorus (P)

Like nitrogen, phosphorus (P) is an essential part of the process of photosynthesis; it is involved in the formation of all oils, sugars, starches, etc. It helps with the transformation of solar energy into chemical energy, effects rapid growth, and encourages blooming and root growth. Lack of Phosphorus causes retarded overall growth, especially of roots with red or purple leaves as well as weak stems and leaf mottling (showing different colours).

Apart from compost, rock phosphate is the most widely used phosphate source in organic farming. The phosphorus from rock phosphate is

Nitrogen	Phosphorus	Potassium
<ul style="list-style-type: none"> <li>• Leguminous crops that are used as green manures or as mulch provide between 20 to 80 kg N / acre which can be used by subsequent crops.</li> <li>• Blood meal / feather meal 12-15% N. They are applied directly to the crops.</li> <li>• Urine from all species contain pure urea (up to 1% N). It is not a stupid idea to urinate on the compost heap!</li> <li>• Poultry manure 8-20 kg N/t</li> <li>• Pig manure 3-5 kg N/t</li> <li>• goat / sheep manure 2-4 kg N/t</li> <li>• cattle manures 2-3 kg N/t</li> <li>• Compost * 1 kg N/t</li> <li>• Manure teas and plant teas provide easily available nitrogen and can be used as top dressing or foliar feeds</li> </ul>	<ul style="list-style-type: none"> <li>• rock phosphate 20-33%</li> <li>• bone meals 12-25%</li> <li>• poultry manure 10-25 kg/t</li> <li>• pig manure 3-6 kg/t</li> <li>• goat/sheep 2.5-4 kg/t</li> <li>• cattle manure 2-3 kg/t</li> <li>• compost * 4 kg/t</li> </ul>	<ul style="list-style-type: none"> <li>• wood ash 3-7%</li> <li>• goat / sheep manure 12 kg/t</li> <li>• cattle manure 5-12 kg/t</li> <li>• poultry manure 5-12 kg/t</li> <li>• compost * 6 kg/t</li> <li>• pig manure 3-7 kg/t</li> <li>• urine: 1-3 kg/t</li> </ul>
<p>* Content of purely vegetative compost. If compost is prepared with livestock manures, rock phosphate and wood ash, the product will have higher nutrient contents.</p> <p><b>Nutrient contents of manures and composts are highly dependent on handling and storage and on feed quality!</b></p>		

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## Soil nutrients, a farmers' concern

Seven of every ten farmer's questions that TOF gets deal with soil fertility; here are some of them:

What would I say crop nutrition is if I am asked by another farmer?

What elements of nutrients are needed by plants in plenty?

Do organic composts provides these essential elements in the soil?

released more easily in moderately acidic soils, and long-term benefits are higher. Rock phosphate usually contains calcium as well and reduces



*Phosphorus deficiency in tomatoes*

soil acidity when it dissolves in the soil. Phosphorus is released slowly and stays in the soil for many years. Rock phosphate should always be added to compost or manure.

Another good source of phosphorus is bone meal. A farmer can even use animal bones; broken into small pieces and added to the compost heap, they improve the nutrient value of compost.

### Potassium (K)

Potassium is absorbed by plants in larger amounts than any other mineral element except nitrogen. It helps in the building of protein, photosynthesis, fruit quality and reduction of diseases. Typical deficiency symptoms include brown scorching and curling of leaf tips and yellowing) between leaf veins. Purple spots may also appear on the leaf undersides. Plant growth and root are reduced, the plant is more vulnerable to diseases. Potassium deficiency symptoms first appear on older (lower) leaves because potassium is a mobile nutrient, meaning that a plant cannot allocate potassium to younger leaves when they is potassium deficiency.

A good source of potassium (and calcium) is wood ash. It can be mixed with compost. Livestock urine, especially the one found in beddings in the shed, is a good source of potassium.



*Potassium deficiency in vegetables*



## Pig rearing requires utmost care

*Proper feeding, housing and cleanliness are key to successful pig production.*

### *The Organic Farmer*

Pork and other pork products are in high demand. However, only few farmers consider pig rearing as a diversification or as a source of income. It is a fact that pigs have a good growth rate, are efficient feed converters, resistant to many diseases, have a high rate of production and fetch quite a good price in the market: A 70 kg pig can be sold for as much as Ksh 13,650. But it is important that the farmer considers several factors such as breed, feeding, housing, and proper management of the piglets.

Apart from proper housing (with sufficient space) and the hygienic conditions in the shelter (clean floors, covered with beddings such as saw dust or wood shavings or dry grass) and regular deworming, the most important – and the most expensive! – Factor is feeding. A sow with 10 piglets for instance produces 13 – 16 kg milk daily and needs 9.5 kg feed per day.

These basic needs such as housing, feeding and hygiene remain more or less the same in organic as well in conventional pig keeping. The big difference, as we shall see below, lies in the way the pigs are kept.

### Pigs need a clean environment

A good pig farmer needs to first understand how pigs behave in their natural environment, what they need in their diet, how much water and space they need for rest and for exercise. Organic pig management relies more on prevention of diseases than on curative measures.

A farmer has to raise healthy, stress-free pigs so as to make money. The key to this is provision of fresh air, good feeding, a clean environment and rotating the pigs through different plots so disease build up. This also cuts down the cost of expensive drugs that are used for treatment.

### Requirements of sows and piglets

A sow's gestation period is 3 months 3 weeks and 3 days from the date of insemination. A good sow can produce 6-12 piglets per litter. If she produces more than the teats she has, one can give the extra piglets to another lactating sow, but make sure that all the piglets are the same 'size' group or they may be bullied and thus be unable to feed.

Pigs require a shelter and a temporary fence to confine them to the intended area. Three to four sows can be kept together, but each of them needs her own nesting area. Provide enough nesting material (straw) before the sow gives birth! She will want to build her own nest. Sleeping areas should protect pigs from the cold and from wind, as especially the piglets are very susceptible to pneumonia. Piglets should be allowed to stay with their mother for a minimum of one month, preferably for 2.5 months. After this, they can start eating the same feed as that of their mothers, young tender grass and chaff from grain.

### Feeding pigs

Feeds should be offered in a way that all pigs of one group have enough space to feed at the same time; otherwise the strongest ones will eat up everything. Some roughage is important.

Commercial feeds contain cereals, cereal byproducts such as bran or pollard, protein sources such as legumes (e.g. soya beans) or fishmeal. Maize and barley are especially beneficial to pigs. Good feeds contain minerals and vitamin supplements. Organic production does not allow for a species to eat the droppings of another animal (chicken waste for instance), which is practiced, in some countries. – Pigs need access to clean water at all times!

### Keeping pigs healthy

Ensure your pigs are healthy, so that you can avoid expensive treatment when they fall sick. Pigs are raised on

*continued on page 4*

# Rabbits a good protein source for the family

*Rabbit meat is not only delicious, it is a cheap source of protein and is good for health.*

## **The Organic Farmer**

A few years ago, there was a country-wide rush by farmers to go into rabbit production. Word had it that there was a big market for rabbits locally and even for export in countries such as China. And so many a farmer put aside all the other activities and went into rabbit production. Rabbits are fast breeders. So within a short time, farmers had hundreds of rabbits but the promised market did not materialise.

### **Market not well established**

With no market to sell their rabbits many a farmer were forced to abandon their rabbits - a visit to many farms by TOF revealed a very sad state of affairs- in the dark, overcrowded cages were scrawny, emaciated rabbits with

the ground, where they play, feed and sleep. If they have enough space, they will defecate away from their resting place. They also pick up pathogens and worms from the ground. It is therefore essential to keep shelters clean and dry. Remove all manure every day and provide some absorbent material such as straw or sawdust. Pigs must also be dewormed and treated for external parasites. There are many commercial swine deworming remedies available, as well as antibiotics and other veterinarian drugs in case your pigs should get sick.

All commercial animal medications have a withdrawal period. That means that after you give your pig those medications, you must wait for an appropriate period of time to allow the medication to leave the pig's system before you can safely consume the pork.

Garlic is also known to be a natural weapon to fight internal parasites. Garlic can be minced and put directly into the feed. Put as much garlic as you can but not too much to waste it! Generally this will be an ongoing treatment not only to kill the parasites, but to keep them from wanting to come back.

### **Organic pig keeping**

Pigs are natural browsers, they do well when left in the field to graze and forage; according to the standards of organic farming, pigs need a run for exercise. Pigs which are confined in congested areas are more stressed and get fewer essential nutrients compared to free range pigs. If you decide to keep free range pigs, you should offer them penned paddocks measuring about 10 by 10 meters per every 2 pigs, and you should rotate them every 2 months.

If you let your pigs browse, you have

very little feed. Many farmers, desperate after failing to get buyers took little care of the rabbits.

TOF was inundated by calls from farmers seeking to find markets for their rabbits. But our research revealed that much of the talk about the existence of a rabbit market was a mere rumour that had no basis.

### **Change of attitude needed**

In many communities in Kenya rabbit meat is considered inferior to other meat sources. Indeed, only young children are keep and eat rabbit meat. Rabbit meat is very delicious if properly prepared, it is white meat and has no cholesterol-which causes obesity



and heart problems. Rabbit meat can be a good source of cheap protein for the family; this would not only create a ready market for rabbits, it could also help improve the health status of many Kenyans.

### **Create awareness**

A big awareness campaign should be launched to encourage rabbit meat consumption- such a campaign should at first target young people who are more willing to change. Many schools in the country spend millions of shillings every year buying meat for their students- one can only imagine how much money such schools can save if they kept rabbits or contracted farmers around the schools to rear and supply them with rabbit meat.

Another option available to farmers is to rear rabbits for breeding purposes. Rabbit breeding can be a good source of income because buyers want good quality rabbit breeds that are not easy to get.

## Quality feeding is important



Pigs require proper feeding. To attain the right weight, pigs should be well-fed and provided with fresh water at all times. Quality feed is available at Farmers Choice, Unga etc. You can reduce feed costs with alternative feed, such as sweet potatoes, amaranths, lucerne, kale (sukumawiki) etc. It is important that a farmer keeps records on the investments made in the pig project farming such as housing, feeding, medical drugs etc.

### **Information:**

You can get valuable information on pig rearing on the website [www.infonet-](http://www.infonet-)

to take into consideration that they are originally inhabitants of forests, and they do not like too much sunlight. They cannot sweat easily; therefore they need to wallow in mud, rivers, marsh areas etc. to reduce body temperature on hot days. Pigs that grow without access to water to wallow in, get body stress very easily. This will reduce the body's defense and immune system.

One problem of small-scale pig keepers is that they allow pigs to feed from garbage dumps, on human waste and rotten even vegetative materials and other foodstuffs. Apart from the danger of swine fever when

biovision.org ; click animal husbandry, pigs. You will find all what you need to know about pig keeping. Alternatively, instead going to the internet, you can also order the infonet-biovision CD with a huge amount of information about crops and vegetables, pests and diseases, animal husbandry, soil preparation and fertility etc. Farmers Choice as one of the biggest buyers of pigs offers as well some information material. Contact: *Farmers Choice, Operation Director, 020 871 17 22, or Pig Procurement Department, 020 871 11 78, 02 020 871 04 16.*

such pigs come into contact with wild pigs, there is danger of getting dangerous worms such as *taenia solium* (tapeworms) and *trichinella spiralis* that cause epilepsy when transmitted to human beings. This is one reason why it is very difficult for local pig keepers to practise organic pig production. To protect consumers of pig products and maintain pork quality, local companies buying pigs from farmers have very strict conditions for farmers contracted to produce pigs for them. One of these conditions is that the pigs have to be well housed in clean sheds that have adequate space for rest and play.



# Buy quality seed suitable for your region

*It is important to select your seeds carefully before planting. Farmers should buy their seeds early to avoid being cheated.*

## The Organic Farmer



Seed is one of the most important inputs in any crop production operation. If farmers fail to get the right quality of seed during planting season, this will affect the overall crop yield and consequently income. As the planting season approaches, farmers have to start thinking about seeds they intend to plant. It is also wise to select seed that is suitable for their agro-ecological zones.

One of the reasons farmers continue to experience poor yields is that they go by what the seed dealers tell them during seed purchase. A common practice by all seed dealers is to market new seed varieties claiming they give high yields; but they do not tell farmers the conditions under which the seeds should be planted in order to achieve these desired yields.

### Free market causing shortage

The East African region is now a common market, which means that companies and even individual traders in Kenya can sell their products in Tanzania, Uganda, Rwanda and even the Sudan and the Democratic Republic of Congo. Much of the certified seed from Kenya was sold to these markets at almost three times the local prices last year. This led to an acute shortage of certified seed. Many local farmers were forced to plant any available seed. Dealers took advantage of the shortage. They packed commercial maize in genuine seed packages obtained from local seed companies and sold it as genuine seed to unsuspecting farmers.

The only way farmers can get quality

seed is to buy their maize seed early and keep it until the planting time. It is also very important to know the right varieties for their regions. If a farmer wants to plant new seed varieties they should test it first by planting it in a small portion of the *shamba*. They should then observe the characteristics of the seed variety throughout the growing period including the yield to determine if it is a good variety for their climatic zone. Otherwise it is advisable to go for seed varieties they know well.

### Maize production as a business

Already many farmers have discovered that the early maturing varieties can be grown in high potential areas and sold as green maize. Since such maize varieties are subject to rotting when they mature early, the farmers sell it as green maize. At a spacing of 75 cm by 30cm, one acre of land can produce upto 44,000 cobs under good management.

Using the current farm gate price of Ksh 5 for a maize cob, a farmer can make between Ksh150,000 and Ksh 220,000 from one acre. Besides, the maize stalks can be used as animal fodder or be chopped and ploughed back into the soil to improve fertility. If the maize is harvested in July or August, another crop such as beans or



maize can be replanted on the same portion in September or October as a second crop.

### Observe weather

It is beneficial for farmers to plant both early and late maturity varieties to reduce the risk of crop failure. For example, if a farmer has three acres of land, the same can be divided into three portions and planted at different times, say mid-March, April or even May depending on the weather outlook. It is also important to rely on the Meteorological Department's weather updates in order to do correct timing on when to plant.

Early planting time has its advantages. Any crop planted early before the rains benefits from nitrogen and potassium that is already in the soil. However, immediately it rains, all these nutrients are washed down deeper into the soil- a process called nitrogen flush. Farmers who plant after the rains start lose an average of upto three bags a

*continued on page 6*

## Important tips on seed purchase

To avoid buying unsuitable or fake seeds farmers should take the following measures:

- Buy your seeds early before the planting season starts. Farmers who buy their seeds late fall prey to unscrupulous dealers who sell fake or even expired seeds. If you buy your seeds early, ensure you store them in a cool dry place to avoid spoilage.
- Do not rely on agrovet shops for advice on which seed variety to buy. Seed dealers often mislead farmers because their interest is to dispose existing stock. Insist on seed varieties you already know and which you are sure can do well in your area.
- In every major town there are licensed seed stockists. Buy your seed from these stockists as they are more

likely to have genuine seed.

- The Kenya Plant Health Inspection Services (KEPHIS) inspects all seed sold in the country. They inspect every seed consignment and put a tag on every seed package. When farmers open a seed bag, they should check for the KEPHIS tag or label to ensure they have bought genuine seed. Most farmers who get cheated don't check for the KEPHIS tag in the seed package.
- During the planting season, there are many seed hawkers who claim they have genuine seed bought from appointed seed producers. Some of the seed producers sometimes sell seed which has been condemned by KEPHIS. Although they are advised to sell such seed as commercial maize, many of them end up selling it as seed.



*Always check for a KEPHIS tag inside the seed pack, or KEPHIS lot number on the pack.*

# Farmer makes money from plant extracts

After undergoing training through our i-TOF centre, Stephen Ngige went organic and now sells plant extracts.

## The Organic Farmer

Stephen Ngige is a regular reader of *The Organic Farmer* magazine (TOF) and the chairman of Mwimanyi Farmers Group in Gatuto. In August 2009, he learnt about the opening of the i-TOF centre in Gatuto – and immediately booked a one day training session for his group. His colleagues in the group were very eager and ready to receive training on fundamentals of organic farming they had read before in TOF. The first training motivated them so much that they proposed to arrange monthly training sessions.

Since this first training, Mzee Ngige has adopted several practices like compost making, pest management, liquid manure, green manure/cover crops, crop rotation etc. He has also taken to new practices in animal feeding and housing, in line with organic farming requirements. This shift to organic farming has brought him benefits: He gets more and better products while reducing his input costs: He used to spend a lot of money buying chemical fertilizers and pesticides before the i-TOF training.

### Going into business

Consequently, Ngige has managed to control damaging pests in his own coffee plantation; Having learnt that fertile soils strengthen and contribute improved production, he started applying quality compost to improve his soils. With this combination, he has recorded high yields and outputs in terms of cash. This season, Mzee Ngige is expecting to get a bumper harvest, enough not only for home consumption, but also for sale in the local market. For him, the times of low production and low income are long gone.

After getting practical skills and knowledge on how to make natural

### "They laughed at me"

Stephen Ngige sells a litre of fermented plant extract (FPE) at Ksh 150 only. This is enough to fill five manual spray pumps of 20 litres each, using the ratio of 1:100 (one part of concentrated solution to 100 parts water), "Farmers used to laugh at me, claiming I was doing a dirty job. But they have seen that I am reaping the benefits from the work they considered worthless. Now, the same farmers are now my regular customers".

He is proud of receiving many visitors from far and wide, who come with an intention of learning various organic practices that he uses in his farm or to buy FPE. The products have gained popularity among many farmers.

"The production of high quality and chemical free products has been my target", says Stephen Ngige. "To achieve that, one needs to sacrifice their energy and time. You need to work hard at the beginning, but the returns are good."

He is eager to promote organic farming among fellow farmers; whenever they visit his farm, he proudly



shows them the results of the simple, affordable, effective and environmentally friendly techniques of pest control using locally available resources.

"I am glad that the farmers are taking up the message of organic farming, which I heard for the first time in the TOF magazine and learned practically through the i-TOF centre," he says.

pesticides using the available plants in his area, Ngige has decided to go into business: Preparing Fermented Plant Extracts (FPE) for sale to other farmers, "After using plant extracts for some time I realized they were as effective as the chemical ones and pests did not show any resistance; so I started preparing them and selling to other farmers. My colleagues saw the results and within a short period I was in business."

At first, Mzee Ngige sold the FPEs to his fellow farmers in the neighbourhood at a subsidized price. He became well known for his products. Many farmers now flock to his farm, either to buy plant extracts or to learn from him. In the last season, there was an out-

break of white flies in Gatuto whereby many farmers sought help from Ngige. He now has four customers who buy his products at a wholesale price and retail it to other farmers.

### Benefits re-invested

During the white fly outbreak, Mzee Ngige sold 200 bottles of FPE and made Ksh 30'000. With this money, he constructed an organic zero grazing unit and purchased seeds. Later, he installed water pipes in his farm and bought a water pump. Now he plans to install a drip irrigation system to improve his production. And next year he intends to get into chicken rearing business; he believes that diversification is a core principle of sustainable agriculture.

## >>> from page 4: Seeds quality may affect your harvest

week due to low soil temperatures according to research findings.

Maize should be planted at a depth of 2.5 cm to 5 cm to avoid damage by rats and birds. If farmers plant early before the rains (dry planting), they should maintain at a depth of at least 5 cm to prevent the maize from germinating when rains are inadequate.

### Planting bean seed

It is always advisable to intercrop maize with beans. They help to fix nitrogen that is also utilised by the maize. Beans can also be sold before the maize matures while the residue can be ploughed back into the soil to

replenish the soil's organic matter and nutrients. Most farmers plant a second bean crop between the maize rows after the first bean crop is harvested, increasing their income and further adding organic matter to the soil.

Usually, farmers do not buy bean seed. They prefer to plant beans from the previous crop; they should be selected carefully to ensure they remove diseased beans or those that are shriveled. Bean seed should be treated to prevent damage from soil pests and even fungal diseases. Do not plant beans immediately they are harvested. The beans should be properly

dried and stored for a period of up to six months or even one year before they can be used again as seed.

Farmers who want increased production should go for certified bean seeds because such beans are disease-free and are carefully selected to give optimum yields. The seed is also treated to ensure soil pests do not inflict damage before germination. Kenya Seed Company has a range of bean seeds suitable for various agro ecological zones in the country. Farmers should also seek advice from the extension personnel to know the beans suitable for both dry and high potential areas.



## Human waste can be used but ...

The soil here is so depleted and inputs are very costly. Is it safe to recycle human waste into our field, or garden?

Unfortunately, it is not safe unless you know how to avoid the risks included. Here are the most important rules:

- Urine is safe to use in the field as it will not carry germs, but it is harmful to the plants if used directly, without fermentation and undiluted. A good way to recycle urine is adding it to the compost heap (before the last turning for maturing). If urine is collected in a container, it should be stored for three months before it is used in the field; it should be diluted 1:1 with water.

- Solid waste (faeces, or a combination of urine and faeces) takes more time before it can be used safely. Disease causing pathogens or parasite can be present in high numbers. Cholera, typhoid and hepatitis A are the most dangerous, and worm eggs are especially difficult to kill.

The climatic conditions are important for the storage period until use is safe: in a cool climate (12-20°C), about 1.5 years are necessary, while in a warm climate (>25°C), this period can be reduced to 1 year. If you think of enriching your compost with human waste, the same storage periods should be applied. After this time, the unpleasant odour will also have disappeared completely.

In case you want to use the contents



of pit latrines, frequent addition of a layer of soil or ash or both is recommended; this reduces odours and enhances decomposition. Before you use the material, leave it untouched for the above mentioned period of time depending on the temperatures in your region. In the meantime, use another pit. It is good to have two or more pits which you can use in turns.

After application to crops, at least one month should pass before harvesting. In crops that are consumed raw, such as tomatoes or carrots, human wastes should only be applied before planting. There is no danger connected with application to fruit trees.

## Resistance against plant extracts is extremely rare

What should we do to those pests that are resistant to plant extracts?

What you have observed is most probably not resistance to plant extracts. There are several possible reasons if pests survive treatments with plant extracts. Especially home made extracts are difficult to dose as the insecticidal compounds in plants can vary widely. Here are some reasons and some advice:

- The concentration of the extract was not high enough. Make a more concentrated extract next time.

- Some plant extracts like neem or tephrosia do not kill the insects instantly. But they make them sick. The pests stop eating and die slowly, or they will not be able to develop into adult insects (which prevents them from multiplying).

- Plant extracts must be prepared carefully and should be used immediately as they break down quickly in the light.

- They are more efficient when applied in the evening.

- Do not spray when it is about to rain, as the rain will wash away the solution.

- Repeat the application several times about two times a week.



## Break down of compost needs time

How well can a farmer speed up the breakdown of the organic matter and release of its nutrients in the soil?

Many natural processes are very complex and cannot be influenced much. You would also not think of how to speed up crop growth or the gestation period of your animals so that they give birth after shorter time. The cycle of organic matter in plants and soils is extremely complex, and so many factors matter: soil humidity, temperature, time of the season, availability of water and nutrients, soil properties, type of plant matter etc. We also do not see any need to hurry, as composting is a continuous process. The best control you may achieve over the decomposition process is by using a compost / manure heap where you can control at least humidity and composition of the material. In the field, most processes that are happening in the soil are more difficult to manipulate. Farming traditions are nothing else but methods of influencing exactly these processes in a way that is useful to the farmer, based on many centuries of experience. Therefore, the best a farmer can do is to follow the simple rules of good agricultural practice: to



plant early in the season, to use adequate fertilizers, to use organic fertilizers and to recycle organic wastes, to do the weeding as is appropriate, and to assist with irrigation if necessary. These measures will support the cycle of organic matter on the farm. The worst a farmer can do is to collect organic matter and burn it, and not to make use of organic residues and animal manure instead of composting it and bringing it to the field.

### Dry matter in the compost

Animal wastes and greens are the ones seeming to have an impact on the soil. Why then should we put dry matter in the soil and yet they have nothing in the nature?

Dry matter or brown coloured waste

material like straw, dust from coconut husks, dried leaves and dried grasses are rich in carbon. In any composting process these carbon and nitrogen rich material is to be mixed together to make the composting quicker rather than putting green or brown waste separately for composting. Dry matter is also important for the aeration of the compost heap. It is used as bulking agent in the composting process. This bulking agent gives more air space to the compost material. By the way: Sufficient quantity of oxygen should be available inside the compost heap. Normally to allow the fresh air to get inside, the compost heap should be turned upside down, once in fifteen days. **Answers: Theresa Székely**



## Aloe protects chickens from diseases

*The juice of aloe plant, when added to the chickens' drinking water, strengthens their immune system.*

### The Organic Farmer

Paul, a small-scale chicken farmer in Molo has kept chicken for many years, but his chickens have remained free of diseases all this time. The secret to his healthy chickens is *aloe vera*, a common herb that many people use to prevent many ailments. Every day, when he fills the water basins for the chicken, he pounds a cutting of an *aloe vera* leaf and adds it to the water. In an open area behind his chicken house is a garden where two species of aloe are planted - *aloe vera* and *aloe secundiflora* - not only because he likes to have the plant there as for ornamental purposes - they are handy just in case his chickens fall sick: All aloe types except *Aloe vera* belong to the group of protected plants because they are endangered; people are prohibited from harvesting aloe plants growing in the wild for this reason. So they prefer to plant them in their *shambas* and use them for medicinal purposes.

### Remedy against coccidiosis

Apart from the beautiful flowers, the aloe plants are well known for their medicinal value, even for human beings; but of more interest for our readers is the benefit of aloe to chickens. The juice of the fleshy leaves has anti-inflammatory properties: It cures infections and acts somehow like an antibiotic. According to many scientific studies, done by KARI, the University of Zimbabwe and the Samar College of Agriculture and Forestry in the Philippines, the juice of the most common aloe types is very useful especially for chicken farmers. The juice of *aloe vera*, *aloe excelsa* and *aloe secundiflora* protects chickens from coccidiosis and cures it; to some extent it also fights the *Newcastle* disease, but it is, however, important that the farmers vaccinate the chicken against the Newcastle disease. At least, aloe juice prevents chickens from Newcastle disease infections.

### Chickens grow faster

But the most important fact is that aloe juice, when regularly put in the chicken's drinking water, strengthens their immune system. It is a cheap and efficient natural remedy. There are interesting findings from Samar State College on the Philippines. In a long-term trial, the scientists found that chickens, when provided regularly with the juice of *aloe secundiflora*, grew



*Aloe excelsa*



*Aloe secundiflora*



*Aloe vera*

faster and added more weight compared to the chicken whose water was not enriched with aloe juice.

### Useful information

In his overview "Ethnoveterinary Medicine" offers Bernard Wainaina, Director Profarms Enterprises, gives a lot of information about useful plants. Ethnoveterinary Medicine is a branch of veterinary medicine that uses herbal based therapies and for animal diseases.

*The study of B. Wainaina can be downloaded from the internet: <http://www.ifoam.org>, go to search, type ethnoveterinary, and you will find what you need.*

## Selling & buying

**Kenbro chicks for sale:** Once again we bring you the latest batch of Kenbro chicks from Alysaly Poultry. Also available are 1 week, 2 weeks up to 5 weeks. For more details check <http://alysalypoultry.kbo.co.ke/> or simply call us on 0723 619238

**Kenbro chicks and eggs for sale:** I have 2-3 weeks old Kenbro chicks for sale, at Ksh 100 per chick and Ksh 25 for eggs. Contact Francis Kuria 0722 401 139.

**Poultry and fish for sale:** Kili enterprises based in Machakos have day and week old *kienyeji* and kenbro chicks, Turkey and fish fingerlings. Contact Lilian, Kili Enterprises kili.enterprises@gmail.com

**Incubators for sale:** We have both improved paraffin and automatic incubators for sale to interested farmers. The incubators have a capacity of between 120 to 2000 eggs. Free delivery, training and after sales service provided to farmers, interested buyers. Contact Kaki Incubators 0725 552 920, 0738 792 224.

**Ostriches, quails and chickens on sale:** We have three-month old Ostriches for sale to farmers, 2 to 6 month Kenbro chicks and chickens weighing between 1 and 3 ½ kg. Contact Kaki Incubators 0725 552 920, 0738 792 224 email: [genkago@yahoo.com](mailto:genkago@yahoo.com), [www.facebook.com/kakiincubators](http://www.facebook.com/kakiincubators)

**Bamboo for sale:** I have bamboo seedlings for sale at Ksh 30 per seedling, get in touch with me @ [info.mtkenya@gmail.com](mailto:info.mtkenya@gmail.com)

Would you like to sell your farm produce, interact with other farmers and share new ideas on the latest farming technologies or products? Just visit *The Organic Farmer* magazine on facebook at [www.facebook.com/theorganicfarmer](http://www.facebook.com/theorganicfarmer)

Infonet-biovision is an information platform for organic farmers. Whatever you would like to know about the ecological methods for the control of pests and parasite infestations of plants, humans and animals - Infonet-biovision will have an answer. You just go to the Internet, either at home or at a cybercafe and type in: [www.infonet-biovision.org](http://www.infonet-biovision.org) You can order the most updated version on CD. Send us Ksh 200 on 0717 444 405 and then SMS us your address, and we will send you the CD immediately.



### The farmer's question

When should I give the organic remedies to my birds, when they are sick or as a regular practice?