

The Organic Farmer

The newspaper for sustainable agriculture in Kenya



Nr. 11 March, 2006

Farmers buying fake seed

Traders in maize growing areas are selling condemned seed instead of genuine seed to unsuspecting farmers.

The Organic Farmer

"Many farmers would get much more harvest if they planted the right seeds". This statement from a farmer's letter sent to us shows the importance of seeds in crop production. Although a majority of farmers already know that good seeds play an important role in increased production, they often ignore the advice and go for poor quality seed that is to blame for decreased crop yields in many farms today. Part of the reason farmers buy the counterfeit seeds from dishonest seed traders is to save money.

Producers sell rejected seeds

Indeed, the main culprits in this whole racket are the seed growers themselves; According to Simon Komen, the Kenya Plant Health Inspectorate Service (KEPHIS) regional manager in Kitale, the organization may condemn a farmer's seed maize after inspection. The farmer is then advised to sell the rejected seed as commercial maize. But the majority of the farmers do not do so. Instead they offer the rejected seed as genuine seed maize to unsuspecting farmers at a lower price. Some of the seed growers even offer the parent or basic seed maize (from which hybrid seed maize is propagated) as genuine seed to farmers. Komen says that parent seed maize cannot be used as seed because it is too weak to produce healthy maize. Seed inspection, which is conducted regularly, is done to ensure farmers



Farmers should buy certified seed. (TOF)

get the best seed. KEPHIS also ensures that unscrupulous traders out to make quick money do not exploit them. Every year, KEPHIS makes an inspection of all appointed maize seed stockists, who are then issued with certificates to show that the seed stock is certified. Farmers should request to see the licenses issued to any stockists before purchasing seed maize.

Expired maize seed

Sale of expired maize seed is another problem farmers have to contend with. Most of the stockists sell carry-over stocks of excess seed purchased the previous season to farmers. Unless stored in a cool and dry facility, maize seed exposed to sunlight for a long period of time becomes weak and cannot grow well. Farmers should ensure they buy their seed stock early enough to avoid the last minute rush that forces them to buy poor quality seed when the stocks run out. This is also another reason why farmers should insist on seeing the certificate of test from KEPHIS whenever they buy seed maize. A certified seed stockist will not sell poor quality seed (see page 3).

Dear farmers,

Many parts of the country are still experiencing drought. The pastoralists in Northern Kenya lack pasture and water, which has led to both human and livestock deaths. Even farmers in higher potential agricultural areas in the country are experiencing severe food shortages. *If what has happened in the past is anything to go by, this is not the last time Kenya will be encountering drought.*

Climate scientists are already warning that parts of the African continent, including East Africa, the Horn and southern Africa will face even more severe drought conditions in the next decade. This is thought to be a result of global warming.

The scientists believe that the rising temperatures in the Indian Ocean are responsible for the current drought. Global warming will reduce the amount of rainfall we receive by more than 20 per cent. As most of you already know, of course, not all predictions from our weathermen come to pass. But what we have seen in the last 20 years should be a good lesson. The climatic patterns are changing for the worse, with many parts of the country receiving less rain. Drought spells are also more frequent than before.

In these circumstances, we would advise our farmers to be much more creative in order to cope with the changing climatic conditions. One way we can do this is to start growing more and more drought-resistant crops. Crops such as sorghum and millet require less water and are early maturing. It is difficult to tell why most of our farmers have abandoned these important crops that are crucial to our food security. Most farmers today prefer maize, which requires more rainfall and takes longer to mature.

We are still receiving the questionnaires, which we sent out to you last month. For us editors it is satisfying to realize that farmers appreciate our newspaper. This is what we can tell from a quick look at your answers: Kenyan farmers are hard working, they are proud to be farmers, and are eager to get more information about organic farming. This is exactly what we are trying to do. Thanks a lot!

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MY OPINION

By Paul Kimani

I have been following with much interest, the looting of public funds by some of our leaders mentioned in the Anglo Leasing and Goldenberg scandals. It is not only the fact that they are stealing our money that makes me sick, but the mere fact that they do so shamelessly and without due consideration of the living conditions of millions of Kenyans. Can you imagine how many roads in rural areas in the country could be repaired with just a fraction of this money? Or even how many farmers could be trained on sustainable agriculture with only a small portion of the looted funds?

Paul Kimani, farmer, Kiambu

The Organic Farmer

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**Publisher**

International Centre of Insect Physiology and Ecology (ICIPE)
P.O.Box 30772, 00100 Nairobi
KENYA
Tel. +254 20 863 2000
e-mail: icipe@icipe.org
homepage: <http://www.icipe.org>

Editors

Peter Kamau, Peter Baumgartner

Secretariat

Lucy W. Macharia

Advisory Board

Dr. Bernhard Löhr, ICIPE
Dr. Nguya Maniania, ICIPE
Dr. Fritz Schulthess, ICIPE

Address

The Organic Farmer
P.O.Box 14352, 00800 Nairobi
KENYA
Tel. +254 020 445 03 98
e-mail : info@organickenya.com

Layout

In-A-Vision Systems(k)

Tiny fly controls stemborer

Introduction of a new predator by ICIPE scientists will drastically improve maize yields.

Felix Mbitu Murimi

Insect pests such as the stemborers are very clever. They have always devised ways to overcome the pesticides that are used to control them. As a result, farmers today have to deal with pests that do not respond to the pesticides, which are available in the market.

These pests are more demoralizing because they reduce yield after farmers have invested in farm inputs and hard work. The yield loss to the pests was found to be 10-70%. The stemborer problem is particularly acute in the small-scale, resource-poor agriculture under which maize is typically grown in sub-Saharan Africa.

It is against this background that the International Centre of Insect Physiology and Ecology (ICIPE) started the project 'Biological control of stemborers in subsistence agriculture in Africa'. Its aim was to match the important stemborer species with their natural enemies indigenous to Africa through introducing natural enemies to regions where they do not exist. The need for use of indigenous parasitoids (enemies) arose from the successes of redistribution elsewhere in Africa. A successful example was the coffee mealybug pest that was affecting coffee production in Kenya. For 30 years, it was thought that it was accidentally introduced from Asia until scientists realized that it came from Uganda, where it was under control by indigenous natural enemies. Subsequently the natural enemy was introduced from Uganda into Kenya and permanently controlled the pest.

According to Dr. Fritz Schulthess, who is the head of the Plant Health Division at ICIPE, this biological control is identified as the only means for sustainable control of stemborers, since these pests are able to develop a pesticide resistance. It is also very difficult to control stemborers once they have entered maize stem because most chemicals act on contact. That is why biological control is the best method to eradi-

cate these greedy pests. Biological control, once again, is a natural process whereby a pest is controlled by the use of a predator (a natural enemy). Different types of stemborers found in Africa require different types of predators.

Natural enemy

Telenomus isis is a tiny, small insect of 2 millimeter length. The parasite feeds on the eggs of the stem borer and is well known in West Africa but has never been found in East Africa. Anani Bruce who is an egg parasitoid specialist in the project says that

Telenomus isis can destroy up to 90% of any stem borer egg batch and can drastically reduce the density of eastern African stemborer.

ICIPE recently released *Telenomus isis* from West Africa

in Taita hills and will also release the parasitoid in other parts of Kenya and in other countries in eastern and southern Africa.

According to a survey carried out in various parts of Kenya, the average seasonal stem borer infestation level is about 43% which led to an average 30% reduction in maize yield. Redistribution of parasitoid in all parts of Africa is expected to increase maize production by up to 20% in the next 10 years without any investment by farmers through reducing yield losses to stemborers. With about 24 million hectares under maize production in sub-Saharan Africa and average yield of 1.3 tons, the project is expected to lead to an increase in maize production by 6.2 million tons.

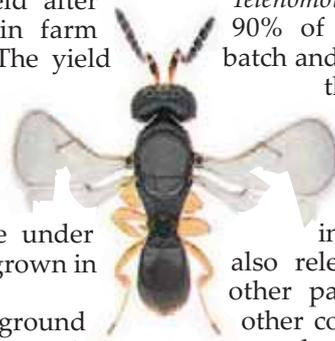
No chemical pesticides

The most important step in ensuring sustainability of biological control agents is the maintenance of favorable environment that allow the interaction of these natural enemies of the stemborer. This includes the conservation of natural enemies by providing refuge vegetations and non-use of poisonous chemicals. That means, sustainability of the biological process of pest control is only possible if the right environment for the survival of the predator is provided. Chemical pesticide use often kills the predator, interfering with this process.

Telenomus isis (Inset) enlarged 100

times.

(Photo ICIPE)



Early planting increases crop yield

Many farmers plant when the rains have already started. This leads to poor seed germination, slow growth and reduced crop yield.

The Organic Farmer

The planting season is a crucial period for the farmer. But it begins long before the burying of the seeds in the soil. The feeding of the soil during land preparation is the first step in planting. The soil is the most important component in farming. How we care for it, determines how much harvest we get at the end of the season. As we have mentioned in earlier issues of this newspaper, soils in Kenya and much of East Africa are poor; they do not contain most of the essential nutrients and organic matter that promotes plant growth. To enrich them, most farmers have resorted to the use of chemical fertilizers over the years.

Chemical fertilizers are harmful

No doubt, the use of chemical fertilizers can lead to an impressive increase in yields. Chemical fertilizers offer large amounts of nutrients to the plant in easily available form. But, they have their limits. According to research, repeated use of chemical fertilizers in most of the maize-growing areas of the country has led to an increase in acidity in the soils; this is largely to blame for the declining maize yields in the affected areas.

About half of the applied nitrogen fertilizer usually gets lost through runoff, leaching, and evaporation into the atmosphere. Under unfavourable conditions (too much rainfall, long dry periods or soils with a low level of organic matter), the efficiency of nitrogen fertilizers may even be lower. Use of chemical fertilizers also leads to oversupply of nitrogen, which causes the softening of the plant's tissues. Such plants are more vulnerable to diseases and pests. Inorganic fertilizers reduce the growth of a beneficial root fungus called mycorrhiza around the plant roots.

A sick person cannot get well just by taking only vitamin tablets. He/she needs healthy food as well. Farmers in the same way overlook important plant food in the organic materials that are readily available from the farm. These include crop residues, compost and farmyard manure. Organic matter is like well-



Covering seed with crumbed soil prevents growth.

(Photo TOF)

balanced food: it contains essential nutrients such as nitrogen, phosphorus and potassium. It improves soil structure, water holding capacity and air circulation. Soil acidity is also regulated, creating the ideal conditions for plant growth. Organic fertilizers are currently available in the market for farmers who may be interested.

Important tips for planting

Most farmers have adequate knowledge on planting methods. Here we give you a few additional tips:

Timing: After tending the soil, it is at the planting stage that many farmers make a serious mistake; most farmers plant too late. To go round this problem, farmers should practise dry planting. In dry planting, the farmer plants before the rains, say in mid-March. What happens is that before the rains start, the soil temperatures are at the required level for proper seed germination.

Once the rains start, the soil temperatures tend to go down gradually. This means that seeds planted at this stage will not germinate well. The germination and growth rate for crops such as maize is greatly affected. According to research undertaken by the Kenya Agricultural Research Institute (KARI), a farmer loses two-and-a-half bags of maize in every acre of maize each week if he plants in the third week after the rains begin, or five bags per acre by planting two weeks late. Farmers therefore need to plant early if they are to cut down on the huge losses that occur as a result of late planting.

Spacing: Another common mistake made at planting time is spacing between plants. Many farmers

wrongly believe that the closer the spacing, the higher the yields. This is wrong, because when crops such as maize are crowded, the plants compete for sunlight, water and nutrients. Since every plant does not get enough of these essential elements, they weaken and cannot produce the desired yield.

When planting maize, the correct spacing between one hole to the next should be 60 cm (2 ft), while spacing between the rows should be 75 cm (2 1/2 ft). The farmer should ensure that only two seeds are planted in each hole when using this spacing method. The farmer has also to apply two handfuls of compost in every planting hole in order to provide the young plants with enough nutrients for growth.

Erosion: Soil erosion is one of the most serious threats to soil fertility. It carries away the most fertile parts of the soil: the topsoil and the finer clay fractions, which are rich in humus and nutrients. It is therefore of vital importance for farmers to protect the soil from erosion. There are two general methods for preventing soil erosion:

- reducing the erosive power of the rain drops by keeping the soil covered (with mulch for instance);
- reducing the speed of the water flowing down the slopes. This can be done easily: plant the seeds along the contour, such that the plant rows run across the slope, rather than up and down.

Another good method is intercropping the maize with beans or legumes. Alternatively, you can plant the maize between rows of napier grass. In this way, the grass prevents erosion and loss of essential nutrients.

Farmer produces certified fruit seedlings

Benjamin Lugano has managed to meet the demand for certified fruit seedlings in Kenya and neighbouring countries.

Peter Kamau, Cherangani

Most farmers lack clean seedlings that are high yielding and disease-free. Poor quality fruit seedlings often can be seen offered by roadside vendors in most parts of the country. Government-run seedling nurseries in prison farms and the Ministry of Agriculture have collapsed. Fourteen years ago Benjamin Lugano identified this problem and decided to convert part of his 7-acre farm in Munyaka, Kaplamai division of Trans Nzoia district into a fruit nursery.

Today, the 42-year old father of six is the main supplier of fruit seedlings to many farmers in the country and across the border in Uganda and in Zanzibar and Pemba in Tanzania. If one looks at the areas where he supplies the seedlings, it is evident there are very few producers of certified fruit seedlings in the East Africa region.

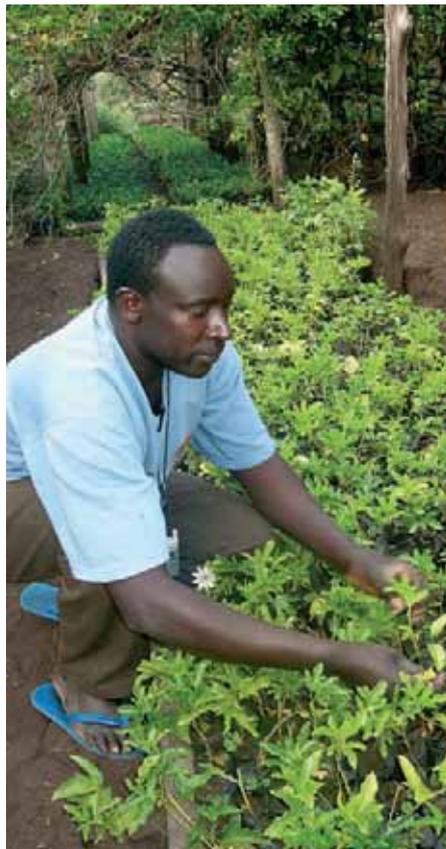
"At first I started with passion fruit growing. This was after realising that the fruits were in great demand in the local and international markets. But I discovered that it was difficult to get clean planting material following the outbreak of diseases such as the fusarium wilt that affects passion fruits", he says.

Recognised for his efforts

At the same time, a viral disease outbreak had devastated the orange crop in Trans Nzoia district and most parts of the country. This forced farmers to stop production of oranges altogether. He had to obtain fruit seedlings from hot areas such as Sigor in West Pokot and Kerio Valley and Kisumu, which were not affected by the disease. The Government recognised his efforts and facilitated his training on seedling production. The Kenya Plant Health Inspection Services (KEPHIS) and the Horticultural Development Authority (HCDA) provided the training. He also acquired additional skills in this field from a Swedish Agro-forestry Project.

Seedlings from Israel

"From these courses I gained a lot of experience on seed selection, grafting, nursery care and management," he says. With the help of KEPHIS and HCDA, he now sources high quality



Benjamin Lugano tends passion fruit seedlings.

Photo (TOF)

passion fruit seedlings from Israel, which he grafts with local varieties. Among the fruit varieties in production at the farm are Fuerte and Hass varieties of avocado. Others are Apple, Tommy and Harden varieties of mango fruit, and pawpaw and tree tomato seedlings.

Seed production needs care

Seedling production is a delicate and sensitive occupation. Lugano says he has to be careful to avoid any possibility of transmitting crop diseases by wrong selection, grafting handling or even transportation of the different cultivars (planting material) during the production process.

"You can imagine what would happen if I sold diseased seedlings to farmers in Uganda or Zanzibar. It could affect the whole horticulture industry in those countries, bringing a great loss to farmers," he says

The seeds are certified

To avoid diseases, the Kenya Agricultural Research Institute (KARI) staff assist him in selection of the root stock (the lower section of the grafted seedling). The root stock has to be obtained from known indigenous varieties which are strong and also resistant to diseases. He often travels

to Butere and Mumias to get these seedlings.

The nurseries are regularly inspected by KEPHIS staff that take soil, water and plant samples to ensure they are not infected by diseases. Every year the farm is inspected and all the seedlings certified as disease-free by both KEPHIS and HCDA.

Lugano uses compost to enrich the soil used in the nurseries. He says this has helped to cut down costs from the use of chemical fertilizers. Another advantage is that the soils do not lose their fertility as fast. To serve farmers in other districts, he has established nurseries in the Agricultural Society of Kenya show-grounds in Eldoret and Kamarin in Keiyo. Farmers can also buy his seedlings at the Agriculture Centre in Kitale town which is run by the Ministry of Agriculture.

High demand for fruits

Apart from seedling production, farmer Lugano has put five acres of his land under passion, avocado, mangoes and tree tomato fruits which he supplies to local and international markets.

"Demand for passion fruits is very high, especially in major towns in East Africa including Nairobi and Kampala. I am surprised many farmers still grow tomatoes and Sukumawiki (kale), whose prices keep on fluctuating every day. They should try passion fruit production to increase their income", he advises.

Lugano has received orders to supply passion fruits and avocados to the European markets but he is unable to do so because he cannot meet the quantities needed. He has now brought together other farmers to form the Kaplamai Cooperative Society, through which they hope to produce enough fruits for export.

Farmers interested in certified fruit seed should get in contact with Lugano at this address: Lugano Horticultural Farm Enterprises, P.O. Box 323, Kitale 30200, Tel. 0733 99 05 7

Agroforestry

This article is the first in a series we intend to carry in the coming issues of *The Organic Farmer*. Planting of fruit and tree crops is one area that most farmers neglect. In the next issue we will look at the role of agroforestry in sustainable agriculture

Soil is the starting point for organic farmers

Life begins in the soil. It is important to know more about our soils and how to care for them.

Su Kahumbu

Our soils have been created over many millions of years, giving rise to all the forms of life we know today. How ironic that man, however, the supposed superior life form at the top of the food chain, has managed to cause the greatest changes to soil in the shortest period of time, backtracking our planet and sending it into a spiral of self destruction.

The massive use of chemical inputs in agriculture has affected not only our soils, but also the biodiversity that exists above the soils. Great stretches of land have been opened up for monocropping (planting a single crop) in conventional agriculture, resulting in the destruction of forests, reduced rainfall in catchment areas, declining soil fertility, poor crop quality, poor animal and human health due to introduction of foreign toxins in the food chain, and finally resulting in drought.

Production of manufactured chemical fertilizers, pesticides, fungicides, herbicides and other agricultural chemicals by large corporations is a



multi-billion dollar industry. Organic agriculture is one way to reverse this spiral towards the destruction of our planet. The production of organic inputs, however, is not yet seen as profitable business and thus is of little interest to big business corporations or government policy makers.

Soil health and thus fertility is the most important starting point for an organic farmer in order to create a sustainable, healthy environment. Once this is achieved, nature takes care of the rest. We must therefore seek to have a greater understanding of this magical "earth food" we call "soil".

Soil, a living organism

As lifeless as it may seem, soil is actually an underground living environment, filled with life and having as much influence on plants as the environment above the ground. Soils are made up of organic matter, mineral particles from weathered rocks, living organisms (plants and animals and microorganisms), water and air. Different soil types are determined by the size and chemical composition of the particles of rocks from which they are formed. Sand, silt and clay are the three types of weathered rock particles that make up soil. All soils, apart from those formed from organic matter (for instance compost, peat) are rock-based and contain a mixture of the rock particles in varying proportions. If the proportions of these three elements are the same, the soil is called loam. A sandy loam is a soil with predominately sandy particles, a silt loam with more silt and a clay loam is one with more clay particles.

Clay soils: As clay particles are tiny, the soils are dense, heavy and sticky. These soils may be rich in nutrients, however plant roots may struggle to reach them. They can also become water-logged.

Sandy soils: Sand particles are quite large, resulting in a soil in which water runs through quickly, carrying away plant nutrients and drying very easily. These soils are easy to cultivate

and warm up quickly, but are low in nutrients.

Silt soils: When wet, silt soils feel silky and soapy. They are nutrient-rich and have a good water-holding capacity, however as the particles are so fine, silt soils compact easily and are hard to cultivate.

Peat soils: Formed organic matter, peat does not decompose fully due to the wet and acid conditions. Rich in organic matter, peat may be acid and infertile, although it also can be fertile. This soil is very dark in colour. Although a good soil for seed beds, it is best for acid-loving plants.

Chalky soils: This soil type is Alkaline and free draining. Its parent rock is limestone. This soil requires a lot of food nutrients and water

Soil structure

Good soil structure means plant roots can penetrate deeply, water drainage is good, the soil is easy to dig, there is no hard "pan" or compact layer in the top soil, the soil has many earthworms and thus worm channels (for ventilation) and the top layers are crumbly when both wet and dry.

Poor structure is when plants are shallowrooted; water sits in pools on the soil or drains immediately; the soil sticks into hard clumps, cracks and is very dry; there are few worms; there is a compacted layer in the top soil; and the surface layer dries out to a crust after rain.

Vital microorganisms

The majority of life forms in the soil as microscopic bacteria, fungi, earthworms, beetles, slugs and insect larvae, are responsible for the breakdown of organic matter into nutrients that are then available to plants. Life in the soil is made up of checks and balances. The soil living pests are balanced by the abundance of soil beneficials, just as we see above the soil. It is obvious then that the more diverse the community above and below the ground, the better balance all over for agriculture and the environment. Keeping this life alive in our soils is

continued on page 7

Organic soil: Six golden rules

1. Feed the soil

It is through good soil management that we will produce healthy crops. Poor quality crops and insect pest problems are signs of poor soil management.

2. Tread carefully

Compact soil contains little air and is difficult for plants to penetrate. It also is a poor environment for soil-living creatures.

3. Dig only when needed

Digging can destroy soil structure. It also brings a new batch of weed seed to the surface.

4. Keep soil surface covered

A live covering of green mulch or dry mulch protects the soil structure.

5. Do not over-fertilise

Over-fertilisation causes more problems than under-fertilisation. Let your crops be your guide.

6. Check pH before liming

Unnecessary liming can result in nutrients being locked-up chemically and less available for plants. In the next issue, look for organic soils improvers

Stop the fly before it lays eggs

"How do we control the pumpkin fly or 'dudu' that stings and lays its eggs in courgette gem squash and butter nut squash?"

Mrs Rosalie Faull, Mugie Ranch Ltd P.O Box 30, 20321 Rumuruti

Rosalie, the bug is a Melon Fly. It can be destroyed with a pyrethrum spray, Flower Ds is allowed, and available from most agro outlets. Be careful however and make sure you spray selectively, so that you do not affect any beneficial insects that may be present. Once the eggs are in the fruit, bending of the fruit is inevitable. You must therefore try to kill the fly before it lays. It will also be useful to grow a wide diversity of crops on your farm to allow for a wide diversity of insects, birds etc. that will create an eco balance whereby you may not need to spray at all. We must learn to accept

what we consider damage, in a few of our crops in order to allow for nature's balance to take hold. You could also allow a few chickens around your farm as they will forage for insects and fertilise the ground as they do so. Be careful to keep them away from your seed beds though. Also, harvest the fruit as soon as you notice the tiny pin prick of damage and utilise the fruit immediately before there is internal damage or subsequent release of the insect. If for home use, just cut out the bad bits and submerge them in hot water before putting into your compost, or feed to chickens.

Packaging is important

I am an organic farmer, I grow vegetables. So, how can we control the transportation of our products? And where can we get market to sell our products?

Esther Ndiku Sinai Organic Group P.O box 1591 Kangundo

Esther, you have a very good point. Organic Standards require organic produce to be packaged and transported in a very specific way so as to prevent substitution or contamination of the product and thus ensure full integrity of the same. Each consignment must be accompanied by appropriate documentation enabling the origin of the product to be traced. Some Organic Standards insist on separate vehicles or a cleaning program to be followed and recorded of vehicles that may carry conventional produce too. Knowing these requirements as producers we must try to bring our products to the market following the regulations. One way would be to link up with other organic producers when

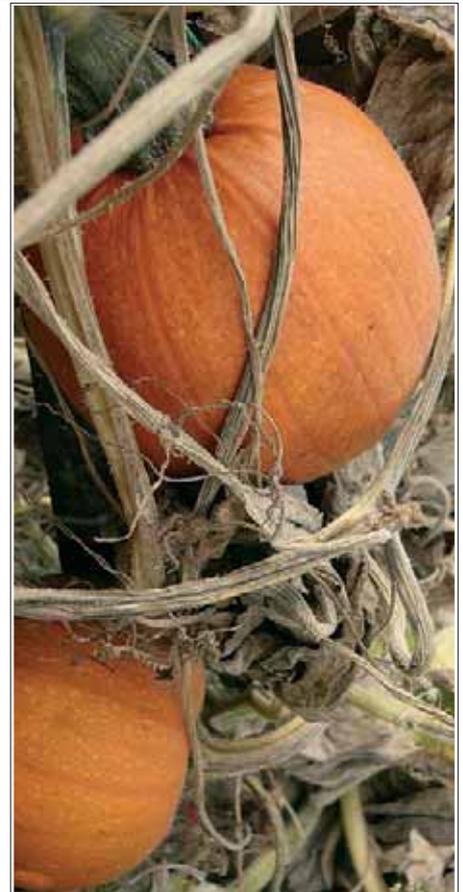
it comes to transporting. Finding markets for our products is a constant question being forwarded to *The Organic Farmer*. Retailers of organic produce need assurance of organic certification. To move into the commercial organic arena, we must learn the global use of the word "Organic". Organic Standards, (the documented requirements) must be understood and followed. To ensure full integrity, products sold as organic must show Certification. Consumers will then be willing to pay more for these products. Retailers will have to stock them.

Termites refine manure

"When I apply the manure on my vegetables, the termites invade the crop and cause damage. How can I control the termites?" asks Ann Wamuyu of Cherangany, Kitale.

Ann, your problem will be solved if you compost correctly. Termites cannot survive the temperatures of a proper compost pile. At the end of composting, microorganisms will have converted the fresh manure into nutrients available for plant uptake. The use of EM will speed up the composting time. And you will also find that by using a healthy compost, your crops will give better yields.

Any material with a high carbon content, and in this case water too, is a feast for termites at this time due to the drought. All creatures need water, the termites may be getting this from the plants and in so doing causing damage. However, their presence is due to the fresh non-composted manure.



My pumpkin does not bear fruits

John Mulwa of Box 323 Muniyaka in Kitale has a healthy pumpkin vine in his kitchen garden. Every season the pumpkin flowers but the fruits only develop to thumb size and do not grow any further. He asks: "I have tried fertilizers, thinning the vine and tending it but there is no improvement. What can I do?"

John, it seems your pumpkin flowers are not getting pollinated. This could be due to the lack of insect that performs this miracle. Next time the plant is flowering, try hand pollinating the female flowers with pollen from the male flowers. The male flowers are those without evidence of the small fruit behind them and are generally on a longer stalk than the female flowers. You will not have solved the problem, which seems to be one of no-pollinators.

Try to encourage as much insect diversity on your farm by growing a wider range of plants, accepting a few pests and reducing your costs and time spent on spraying. We believe all insects are good and necessary, if we allow nature to create a balance on our farms. Our contribution is to ensure a good healthy soil, let nature take care of the rest.

Su Kahumbu answers your questions



Write to

The Organic Farmer

P.O. Box 14352

00800 Nairobi Kenya

Tel: 020 445 03 98, 0721 541 590

e-mail: info@organickenya.com



Letters to the editor

Soil is the starting point... *continued from page 5*

essential. Using chemical pesticides, fertilizers, herbicides and other chemicals, results in damage to these microorganisms, thus creating imbalances. It is unfortunate that the solutions to these imbalances result in worse imbalances. When land is totally destroyed and considered worthless it is abandoned. And then immediately slowly but surely nature starts to repair the damage.

Some of the microorganisms living in the soil include bacteria, which can take nitrogen from the air; these bacteria live in nodules on the roots of leguminous convert it into soluble forms that plants can use. Beneficial mycorrhizal fungi also are attached to the roots of plants. They help the plant absorb more water and nutrients and in return the plant provides food for the fungi. These fungi are very sensitive to fungicides and prefer soil that is high in organic content.

Plant nutrients

Plants require both macro and micronutrients. The common macronutrients are:

- Nitrogen (N) – fuels the growth of leaves and shoots
- Magnesium (Mg)- important in the production of chlorophyll
- Phosphorus (P)- important for root growth
- Potassium (K)- vital to flowering and fruiting, also hardens growth, increasing resistance to pests, diseases and frost.

Organic agriculture ensures a more or less healthy balanced diet for our crops. Therefore, the organic farmer generally does not need to be concerned about the precise levels of plant foods in their soils. Following nature's example, rather than feed plants directly, we aim to recycle the plant and animal wastes and feed these to the soils. Microorganisms in the soil then break down the organic material into nutrients that become available to plants. The soil structure is also improved through this process. Bulky organic feed containing a wide range of essential plant foods and trace elements is best for the soils. They may be incorporated directly into the soil, or composted or used as mulch (see *The Organic Farmer*, April and May 2005).

Keep up the good work

First and foremost I congratulate you for your continued effort to educate us on farming tips. I read *The Organic Farmer* the first time when I came across the Nr. 7 November 2005 issue. I went through the magazine and found it so enriching to us farmers. I read much on Napier cultivation and found it interesting and discovered the disease "napier stunt". I also learned much about soya beans, that soya is very nutritious, especially when mixed with sorghum, maize flour to make highly nutritious ugali and porridge. Please, we are an organized group of 30 members and would like to learn more about farming from *The Organic Farmer*. Give us more on crop rotation, dairy goat farming, organic fertilizers and generally on how to improve our farming methods. Again, keep up the good work!

Wilson Kamau, Kakimari Self Group, P.O Box 203, Rongai, Nakuru

ICIPE is helping farmers

I am grateful to ICIPE and *The Organic Farmer*. The two institutions are really working hard to support farmers countrywide. It should be well noted that we are facing so many problems in farming. Some of these are poor markets, expensive labour, sustaining production and use of chemicals. I would request the two bodies to hold regular workshops in our region in order to educate farmers on modern methods of agriculture.

Joseph K. Kinyanjui, PO Box 125, South Kinangop

Useful for our field school

On behalf of "Life class" Nyasi farm, I request you to send us copies of *The Organic Farmer*. Beneficial discussions were witnessed in our last class when we received a copy of the newspaper from a friend; that day's attendance was fair because we had 22 farmers attending. Please assist this group by sending us the newsletter. Thank you.

John Sprite, Kiminini division, P.O Box 1781, Kitale

We face pest problems

We thank you for starting a newsletter for Kenyan farmers. We are a self-help farmers' group in Toito Loca-

Dear Farmers,

As part of our efforts to serve the organic farming community effectively, we would like to create a database of organic farmers in the country. We are interested in:

- Your names,
- Addresses, Location,
- Farm acreage,
- Are you an organic farmer?

To make it easy for you, we have a special telephone number: given above. All the farmers can provide these information through short messaging service (SMS). *Come on Farmers, Tuma jibu. Asante.*

SMS ONLY

tion, Kuresoi Division of Nakuru District. We read a friend's copy and took much interest in it. This is because we grow cereal crops and horticulture. In our area, the common crops are potatoes, beans, and cabbages. We have many problems due to fungal and bacterial diseases and insect pests. We request you to send us monthly copies to assist us in our farming. Thank you. Absolom Chebochola, Tegunot Farmers Group, P.O Box 356, Molo

We need it for Library

I am a Kenyan citizen aged 46, apart from being a farmer at Stoo Mbili, Njoro, I am also the Adult education officer in charge of Lare Division of Nakuru District. One of the objectives of the Department of Adult education is to increase the levels of literacy in the division through the provision of basic reading skills and at the same time creating a reading culture among the rural farming communities by encouraging learning as a life long process. To achieve this we have instituted a small resource centre where farmers borrow reading materials. It is for this reason that we request from you reading materials for the center and especially *The Organic Farmer* newspaper, which addresses problems facing farmers in the division. We will appreciate. Thank you.

Stephen Mugi Wagathanga, Appointed Time 98, P.O Box 760, Njoro



Bird flu threatens poultry farmers

After bird flu outbreaks in Nigeria and Egypt Kenyan farmers are concerned about the disease. Here are some precautionary measures.

Dr. Anna N. Wambui

Bird flu or avian influenza is an infection caused by avian (bird) influenza (flu) viruses. These flu viruses occur naturally among birds. Wild birds worldwide carry the viruses in their intestines, but usually do not get sick from them. However, avian influenza is very contagious among birds and can kill domesticated birds, including chickens, ducks and turkeys.

There are 15 types of bird, or avian flu. The most contagious strains, which are usually fatal in birds are H5 and H7. The type currently causing concern is the deadly strain H5N1, which can kill people. Migratory wild fowl, notably wild ducks, are natural carriers of the viruses, but are unlikely to actually develop an infection. The risk is that they pass it on to domestic birds, which are much more susceptible to the virus.

How does it spread among birds?

Domestic birds can get the infection when they roam freely, share water with wild birds or take water that might be contaminated by infected droppings. Contaminated equipment, vehicles, feeds, cages, or clothing, especially shoes can carry the virus from farm to farm. Wet markets where live chickens and other birds are sold under crowded and sometimes unsanitary conditions help spread the bird flu infection.

What are the signs of bird flu in chickens?

Infection causes a wide spectrum of symptoms in birds, ranging from mild illness to a highly contagious and rapidly fatal disease resulting in severe epidemics. The normal signs are decrease in activity, drastic decline in egg production, facial swellings with swollen and bluish-violet colored combs and wattles. The birds gasp for breath, their muscles are weak and sometimes paralysed. They have diarrhoea and will all die within 48 hours.

Pre-cautionary measures

Farmers should stop use of chicken manure in feeding cattle. Most farmers feed the chicken manures to cows because chicken only digest 70 per cent of the feed; all commercial



Bird flu is killing millions of chickens and even people. (Photo Agencies)

birds should be kept in chicken houses. Do not let chickens roam freely.

In case of an outbreak, farmers should not sell live chicken as they do in open air markets. It is also important to avoid keeping chickens, ducks and pigs together in one area, cage or pen. Poultry keepers should practise proper hand washing and cleaning and use disinfection procedures in poultry houses. When infection occurs all healthy and infected birds in the affected area should be killed and burned to stop the disease from spreading to other farms. Dead birds can also be buried at least three metres deep and lime or soda applied on them to kill the virus.

Current Kenyan status

Kenyan farmers should be informed that Bird flu has not occurred here yet. However, preventive measures have been taken. A national task force has been formed to prepare for a rapid response in case an outbreak occurs. Farmers who notice any dead birds in their locality or see any of the symptoms mentioned above in their birds should not touch them; Children should not be allowed to play barefoot near the poultry shed. They should not touch any of the affected birds or even their eggs. They should immediately notify the task force through the bird flu hotline given below.

Bird flu can affect people

Although avian influenza in general does not affect people, the H5N1 subtype has a 50% mortality rate, it affects man. It is a severe respiratory illness accompanied by fever. The sickness can be confused with other respiratory illnesses.

The patient experiences increased body temperature, cough, sore throat, eye infection, pneumonia, acute respiratory syndrome, vomit-



ing and diarrhoea. Doctors should enquire whether the patient had travelled to affected areas in the last ten days. Blood and body liquid samples can be used to test for the virus. The Kenya Medical Research Institute Laboratories are able to do this here in Kenya.

Can be treated if discovered early

Studies done in laboratories suggest that the prescription medicines approved for human influenza viruses should work in treating avian influenza infection in humans. So antibiotics, antipyretics, oxygen supply and respiratory support are supportive drugs. Although there is a vaccine to prevent the disease in poultry, it is not yet available in Kenya. So far there is no human vaccine for H5N1 control.

The most important step in the control of the disease is prevention. That is the reason why farmers and emergency personnel are advised to wear masks, gowns, gloves and other protective clothing while working on farms with outbreaks.

Bird flu hotline

Farmers who come across dead birds or see any birds with symptoms similar to the ones mentioned above should immediately get in touch with the National Task Force on Bird Flu through the following hotline and wait for help:

Bird Flu Hotline Tel. 0722 726 682