

# The Organic Farmer

The newspaper for sustainable agriculture in Kenya



Nr. 24 May 2007

## Pigs need care and good feed



Pigs require clean, spacious housing and proper feeding. The current shortage of pigs has led to increased pork prices. A six-month-old pig can fetch an average of Ksh 7000 in the local market. Most farmers keep pigs in unhygienic conditions, which lead to diseases and worm infestation. See page 3

## Plant extracts: safe and cheap

*When farmers use plant extracts in pest control, they save money and protect the environment.*

### The Organic Farmer

As soon as young plants emerge from the soil, various enemies often wait to destroy them. Sometimes these enemies, in the form of pests, are much more powerful than the young, weak plants. There are several organic methods that can be used to control pests on the farm. A wise farmer will always look for the most cost effective way to control pests on their crops. The use of plant extracts is one such method. These natural pest control products are not only easily available, but the farmer will not incur any cost in preparing them. Some of the extracts will also provide essential nutrients to

the soil. Aphids, for example, can be easily controlled by use of soapy water—a very simple control measure that any farmer should be able to apply. This is exactly what we are trying to tell you on pages 4 and 5.

There is only one problem we have noticed with the way in which farmers use plant extracts: A farmer will apply the extract only once and expect the

### TOF on air!

On Thursday evenings, you can hear *The Organic Farmer* in the Kiswahili Service of KBC Radio from 8.30 pm to 8.45 pm. The programme is shared with the Agricultural Information and Resource Centre. Learn more about organic farming by tuning in to this programme.

**Every Thursday, starting from 8.30 pm!**



pest to disappear. Farmers should understand that plant extracts do not work in the same way as chemical pesticides. They have to be applied to the affected crop several times (sometimes up to three times a week) until the pest problem is controlled. When making plant extracts, farmers should also ensure the solution is concentrated highly enough to be effective. A very dilute solution will not give good results. ■

## Dear farmers,

A short while ago, a farmer wrote to us lamenting that farming is so unpredictable that it is just like gambling. This statement is painfully true, at least in terms of weather. The weather pattern is becoming more and more unpredictable with time, not only in Africa but even in Europe, where the snow nowadays falls when the crops are already growing.

For Kenyan and other farmers in Africa, climate change is really becoming a challenge. These days it is very difficult to know whether to plant early or late to avoid crop failure. One thing we have to agree is that there is very little we can do about the weather. There are some steps we can take to avoid incurring heavy losses as a result of rain failure, however. For quite some time now, we have been telling farmers to plan ahead and choose carefully at the beginning of the season what crops they want to grow.

For example, there are some varieties of crops that take a short time to grow. If you are growing maize, for instance, it is always wise to select varieties that suit the climate in your area. Last year we met a farmer in the drier parts of Nakuru who did not harvest anything from his maize crop; when we asked what maize variety he had planted, he said he had opted to plant H614, as it is high yielding. We told him that variety is only suitable for high potential areas in the district and regions such as Trans Nzoia or Uasin Gishu, which receive adequate amounts of rainfall.

Every year the farmer should sit down and plan what he/she intends to grow and where. Due to the frequent changes in weather patterns, a wise farmer should be able to plan and decide the best crops they can grow each season and which have a higher chance of survival should the weather change. For every region in the country, our research institutions have developed varieties that can do well in those particular areas. The farmer only needs to talk to the agricultural extension officials in their area or visit and talk to the research institution to know this. A drip irrigation system can help farmers grow vegetables and fruits during the dry spells. We cannot change the weather, but we can change our farming practices and get good returns.

### in this issue

<b>Cash crop</b>	2
Lack of clean passion fruit seedlings has led to the spread of <i>Fusarium</i> wilt disease.	
<b>Natural fertilizers</b>	6
How to rear earthworms and boost soil fertility in your farm.	

**MY OPINION**

Nature has much to teach us. Nature is expert in zero tillage, in providing plant diversity, in recycling energy and nutrients through sunlight, animal wastes and vegetation, and in balancing prey and predator numbers.

Our intelligence means we can learn from nature and then forge ahead to enhance natural processes for the benefit of all life forms and to make planet earth itself more fruitful.

*Excerpt from the book: Natural pest and disease control, by Henry Elwell and Anita Maas*

**The Organic Farmer**

The Organic Farmer is an independent newspaper for the Kenya farming community. It promotes organic farming and supports discussions on all aspects of sustainable development. The Organic Farmer is published monthly by ICIPE and distributed free to farmers. The reports of The Organic Farmer do not necessarily reflect the views of ICIPE.

The Organic Farmer is sponsored by Biovision, a Swiss-based foundation for the promotion of sustainable development.

www.biovision.ch

**Publisher**

International Centre of Insect Physiology and Ecology (ICIPE)  
P.O. Box 30772, Nairobi, 00100  
KENYA

Tel: +254 20 863 2000

e-mail: icipe@icipe.org

website: www.icipe.org

**Editors**

Peter Kamau, Peter Baumgartner  
Technical Editing: Annalee N. Mengoch

**Secretariat:**

Lucy W. Macharia

**Advisory Board**

Bernhard Loehr, ICIPE  
Nguya Maniania, ICIPE  
Fritz Schulthess, ICIPE  
Charles Kimani, farmer, Wangige  
Joseph Mureithi, Deputy Director, KARI

**Address**

The Organic Farmer  
P.O. Box 14352, Nairobi, 00800  
KENYA

Tel: +254 020 445 03 98

e-mail: info@organickenya.com

**Layout**

In-A-Vision Systems (k)

# Passion fruits in high demand

*Although production of passion fruits has gone up, farmers do not control Fusarium wilt disease and pests.*

**David Macharia, Eldoret**

Passion fruit growing is becoming a popular occupation among many Kenyan farmers. This is due to the increasing demand for passion fruit, both for local processing and export. Unstable prices of traditional cash crops such as tea and coffee also have forced many farmers to start passion growing in order to diversify and increase their income. The major varieties grown in the country are:

- *Passiflora edulis* var *flavicarpa*: It grows in the cooler highland areas, produces yellow fruits and is grown mainly for the supply of fresh fruits.

- *Passiflora edulis* var *purple*: It does well in the coastal strip. It is purple in colour and is mainly used for processing and the fresh fruit market.

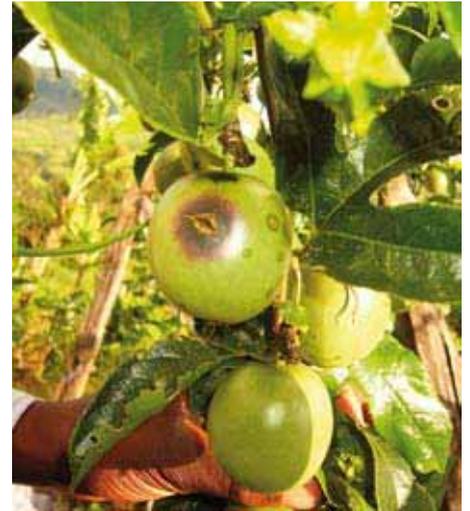
Farmers who have tried passion fruit production in many parts of the country have been unsuccessful due to attack by *Fusarium* wilt fungal disease and aphids. This is because farmers ignored advice from agricultural experts on the use of certified planting material and pest control. Farmers need to acquire seedlings from certified seedling producers to avoid using diseased material and spreading infection in their passion plantations. To reduce the incidence of diseases and pests in the purple variety, grafting with the yellow variety is recommended – using the yellow variety as rootstock (lower section of the graft).

**Climatic requirements**

Passion fruit requires fertile, well-drained soils that are weakly acidic (pH 5.5 to 7). It requires a moist climate with at least 1000 mm of rainfall per year. The purple variety requires about 1600 mm of rainfall. The purple variety prefers moderate temperatures between 18 to 25 °C. The yellow variety can do well in areas with temperatures between 25 to 30 °C.

**Land preparation**

Passion fruit has a deep root system, therefore proper land cultivation is necessary. Deep ploughing and harrowing is needed due to hard pans in the soil. Planting holes of 45 x 45 cm at the spacing of 2 x 3 m for hand cultivation and 3 x 3 m for mechanized cultivation is recommended at least



*Pest-infested passion fruit (Photo TOF)*

3 weeks before transplanting. When digging the planting holes, the topsoil should be kept on one side of the hole while the subsoil is kept on the other. Mix one debe (10 kg) of farmyard manure with the topsoil and refill the hole with mixture. The subsoil is added last.

**Planting**

The soil around the seedling should be made firm but not too firm. The position of the seedlings has to be similar to that in the nursery. After planting, the grafting point should not have any contact with the soil to avoid fungal infection. The seedling should be irrigated to ensure quick rooting and shooting of the plant.

**Trellis system**

A trellis system is a line made to support climbing plants. In passion planting, the system should be erected immediately after planting. Posts are placed at spacings of 6 m in line with the passion fruit, thus alternating one post with the plants (this means that a post is placed after every two plants). Posts should be dug about 40 cm deep before placing them into the soil and should be treated with a suitable chemical to prevent termite attack. The end-posts should be anchored firmly in the ground. Running along the top of the post is a wire. Use an 8 gauge wire for this purpose.

**Maintenance of plantations**

Soon after planting, the young plants are tied to training sticks till they reach the wire at the top. Two vines are allowed to grow, while the weaker ones are removed. When the vines reach the wire, the two are wound carefully around it in opposite directions.

*continued on page 8*

# If kept right, pigs can be good business

The pig industry is threatened by the outbreak of swine fever and poor production methods.

**Peter Kamau**

"More than 48 percent of all pigs kept by small-scale farmers in the country die before they reach weaning stage", says Dr. R. Wahome, a pig specialist and lecturer at the University of Nairobi's Kabete campus. This statement sums up the problem facing the pig industry in the country.

Most farmers do not build the right structures that can offer protection to pigs. Unless provided with adequate space for movement and rest, newly born piglets have little chance of survival, as they get smothered by the sow (mother pig). The construction of the pig shelter has to take into consideration the climatic conditions in an area. For example in cold areas, piglets die from pneumonia. In such areas, it is important that farmers put up structures that help retain heat and protect them from the cold, apart from taking other measures that protect the young from adverse weather conditions. Pig structures can be built using local materials, but farmers have to maintain a high standard of cleanliness. Lack of cleanliness and general neglect by farmers



Piglets drink water from a nozzle (TOF)

is to blame for the high death rates in pigs.

## Quality of feed is important

Feeding is another challenge for farmers. A pig's digestive system is similar to that of a human being. They therefore require high quality feed and not the common feeds available on the farm such as Napier grass and

crop residues. Farmers should be prepared to buy the recommended feeds with the right proportion of nutrients to promote healthy growth in their pigs. A well-fed piglet weighing a half-kilogram (500 g) can attain a weight of 70 – 90 kg in 5 months if provided with a well balanced feed. A lactating sow (mother with young piglets) produces 13 – 16 kg of milk per day (compared to an average cow which produces 7 – 8 kg of milk daily). A sow therefore requires 6 – 7 kg of good quality feed per day to provide her piglets with adequate milk. Proper feeding is therefore important for a farmer to succeed in pig keeping. A pig should also be provided with adequate clean water, as it consumes 2 ½ times the weight of its daily food ration.

## Swine fever a major threat

Currently there is an acute shortage of pigs in the country, especially following the outbreak of swine fever in Eldoret and Nakuru. The disease is mainly spread by wild pigs when they come into contact with free-range pigs. Dr. Wahome says that the disease poses a major threat to pig production. This means that pigs should be confined and provided with space where they can walk around. The place should be well fenced so that they do not come in contact with wild pigs.

Confining pigs would also reduce the problem of worms such as *Trichinella spiralis* and *Taenia solium* (tapeworm) that can cause epilepsy when transmitted from pigs to human beings. Another serious pig disease is scouring or diarrhoea, which can be prevented by maintaining good hygiene. Most Kenyan farmers keep pigs under very unhygienic conditions, which is to blame for diseases and worms.

## Profitable business

Pig keeping can be a profitable business if practised in the right way, because pigs reproduce twice a year and grow fast. A farmer can start with one pig unit which comprises one boar (male pig) and 10 sows (female pigs) and will have 20 pigs at the end of the year.

Because they breed fast, farmers should produce only the number of pigs they are able to sell. Another solution is for the farmer to make a contract with a processing company to ensure there is a ready market for the animals.

## The experience of a pig farmer

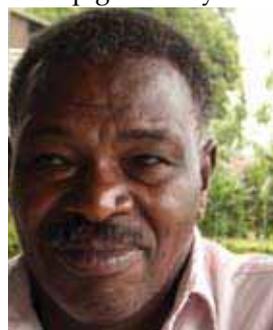
Pig farming is an occupation Samuel Gitonga finds easy, having come from a pig-rearing family in Nyeri. He has gone through all problems that have faced pig farmers when he served as pig manager at the Uplands Bacon Factory that collapsed in the late 1990s, and at the Agricultural Development Corporation (ADC), which was one of the major suppliers of breeding pigs to farmers in the country. Gitonga, who studied for a degree in agriculture at Makerere University, Uganda, says the pig industry in the country started facing problems when the tourism industry went down as a result of the Likoni clashes at the coast in 1997.

"There was a big market before the clashes, but many pig farmers were forced to reduce their production capacity due to lack of market", he says. However, he notes that the demand for pigs has shot up following the revival of the tourism industry and after the outbreak of swine fever a few months ago. Gitonga's piggerly,

located in his 12-acre farm in Lanet on the outskirts of Nakuru town, has 110 pigs at different stages of growth. This ensures he has pigs for delivery all year round to Farmer's Choice, a local pork processing company with whom he has a contract.

Lack of breeding material is another problem facing farmers. Many government institutions that used to supply breeding material stopped production when the industry collapsed. These institutions included the ADC and KARI. "The government holds the key to the revival of the pig industry.

It should go back to its role of supplying pigs for breeding to farmers. They can even import new bloodlines", Gitonga says.



Samuel Gitonga

# Plant extracts fight diseases

*Instead of using harmful chemicals, farmers can fight pests and diseases with fermented plant extracts (FPE).*

## The Organic Farmer

Organic farming is a method of agriculture that works with – rather than against – natural systems. The incidence of pest and disease damage in organic systems is reduced if a farmer uses a number of fundamental practices.

**Crop rotation:** Effective crop rotation boosts fertility and pest and disease

### Watch the stalkborers!

Monitor plant growth throughout the growing season to observe crop conditions and to recognize any attack by maize stalkborers. To monitor, start looking for stalkborer egg masses when the plant is a month old. The egg masses are found on



Stalkborer eggs on a maize leaf

the top surface and underneath the leaves near the midrib (the long vein in the centre of the leaf).

### Curative methods

- Dust ashes evenly on the leaves to dry out and kill the eggs.
- Spray with wood ash mixed with soapy water.
- Pick pyrethrum flowers, dry them in shade, grind into a powder, dust over the eggs.
- Pour 1 litre of boiling water over 50 g pyrethrum flowers, soak for several hours, add a little soap and spray.

### Spraying

Fresh plant extracts for use against pests and diseases can be prepared in the same way as the recipe given on Page 5, without adding EM.1 and molasses. It is important that you add a little soap (not detergent) to the extract and that you dilute the extract. Spray only the plants that are affected; repeat the spraying after 2 days.

control in organic farming. Crop rotation provides a break in the life cycles of the pest by removing 'host' crops for prolonged periods of time. Rotation also helps in building populations of natural pest-predators.

**Biodiversity:** By encouraging and not destroying the insect population in organic crop production, the organic system preserves and enhances biodiversity. Natural enemies of pest species are able to thrive, exerting control on pest populations. Conservation and improvement of natural features of the landscape, such as hedgerows and sown flower strips, will also enable communities of pest-predators to flourish. Grow flowers that attract hoverflies, lacewings and ladybirds, the main predators of aphids.

**Crop health:** The driving force behind agricultural sustainability and environmental preservation comes through a healthy, living soil. Microbes in the soil process organic matter to provide a balance of minerals and nutrients that are utilised by plants to achieve healthy and vigorous crop growth. When this balance is achieved, the healthy plants are able to withstand pest and disease attack.

**Resistant varieties:** It is also good to use crop varieties with natural resistance to particular pests and diseases. The problems can be significantly reduced. *Source: Soil Association, UK* ■



Aphid predator: Ladybird beetles

Aphids are sap-sucking insects that can be found on a very wide range of plants. They will attack all parts of a plant. If numbers of aphids are

### Control aphids

very high, they can actually kill the plant they are living on. Aphids feed by puncturing and tapping into the plant's veins to feed on the sap. This feeding method can spread plant viruses, as the insects fly from plant to plant. Below are some ways for the organic farmer to control these common pests:

- Make sure conditions are favourable for strong, healthy plant growth.
- Make your garden a friendly place for a range of beneficial creatures by avoiding harmful sprays and providing suitable wildlife habitats. There are many creatures that feed on aphids, including birds, insect larvae, earwigs and bats. Grow flowers that attract hoverflies, lacewings and ladybirds.
- Inspect plants regularly and squash any aphids that are seen. Pick off heavily infested shoots and leaves and drop into a bucket of soapy water.
- An insecticidal soap is helpful, and pyrethrum or chilies can also be used (see table on the left). Also, the sprays based on rapeseed oil can be used, as this does not harm bees, ladybirds or lacewings. ■

### Some of the best plants for FPE preparation

Plant/herb	Pest problem
Marigold	Nematodes, cutworms, caterpillars, ants
Red peppers, chilies	Ants, aphids, armyworms, caterpillars
Onion, leeks, garlic	Ants, aphids, armyworms, caterpillars
Stinging nettles	Maize stalkborer, banana weevils, storage pests
Blackjack	Aphids, ants, beetles, cabbages, mites, caterpillars, crickets, whiteflies, termites
Tomato leaf solution	Cabbage butterfly, caterpillars and other insects
<i>Lantana camara</i>	Potato weevil, cassava weevil, grain weevils
Neem	Maize stalkborer, banana weevil, storage pests
Pyrethrum	Most of the pests mentioned above



Aphid predator: Lacewing

# Feeding the soil with vital nutrients

*The better the soil quality, the stronger the plants and the higher the crop yield.*

## The Organic Farmer

If you walked around your shamba at the time when your maize and bean crops are just beginning to grow, chances are high that some parts of the farm have crops which have developed a yellow or pinkish colour on their leaves. That is a warning to you that things are not well. The colours on the leaves show that your crop is missing some very important plant food or nutrients. The most important nutrients needed for proper growth are nitrogen, phosphorus and potassium (see box in next column).

### Healthy plants are resistant

Of course, the farmer has to take action. A wise organic farmer must have a long-term soil fertility management plan for their farm. The better the soil quality, the higher the crop yield a farmer will get. Healthy plants are strong; they are able to withstand pests and resist diseases.

One way to do this is to plant leguminous plants which provide the soil with essential nutrients (see TOF Nr. 20). Some of these plants include *lablab* and *desmodium*. Tree crops such as *sesbania*, *tephrosia* and *crotalaria* (ask for these tree seeds from any KARI station near you) can be interplanted into a young maize crop and allowed to grow as a fallow during the dry season. After harvesting the wood from the tree fallows, nitrogen-rich leaves, pods, and green branches are hoed into the soil before planting maize at the start of the following rainy season. The quantities of nitrogen captured are similar to those applied as fertilizers by commercial maize farmers in developed countries.

Another useful shrub is *Tithonia diversifolia*, which is common in roadsides



*Tithonia diversifolia* shrub

Mineral deficiencies	
<p><b>Lack of Nitrogen (N)</b></p> <p><b>Symptoms</b> on leaves of maize, beans and vegetables: Poor growth. Leaves are pale green. In brassicas (sukumawiki, cabbage, etc) leaves may have tints of yellow, red or purple. Lower leaves are affected first. Flowering and fruiting may be reduced or delayed.</p>	<p><b>Prevention and care</b></p> <p>Build up organic matter levels in the soil. Grow nitrogen-fixing green manures (like <i>lablab</i>, <i>desmodium</i>, <i>leucaena</i>). Apply composted green waste and animal manures; mulch plants; apply nitrogen-rich organic liquid fertilizers.</p>
<p><b>Lack of Phosphorus (P)</b></p> <p><b>Symptoms</b> on leaves of maize, beans and vegetables: Poor growth. Leaves turn bluish – green with purple tints, but not yellow. Fruits stay small and green with acid taste. This deficiency is not easy to diagnose and can be mistaken with drought damage, root damage or nitrogen deficiency.</p>	<p><b>Prevention and care</b></p> <p>Apply Mijingu rock phosphate. Farmers can order directly from Mijingu Phosphate Fertilizer Company in Nairobi, Tel. 0720 81 70 72. A 50 kg bags costs Ksh 1000. The Mijingu company does not have a distribution network in Kenya, so farmers can buy Mavuno fertilizer. It is preferable to DAP, but it is not fully organic.</p>
<p><b>Lack of Potassium (K)</b></p> <p><b>Symptoms</b> on leaves of maize, beans and vegetables: Brown scorching of leaf tips, which may curl up; purple-brown spots may appear on underside of leaves. Poor flowering and fruit set. Plants are prone to frost damage and disease.</p>	<p><b>Prevention and care</b></p> <p>Improve soil structure; use plant-based potash fertilizers, for instance comfrey leaves or comfrey liquid. Apply well rotted compost or manure. Add some wood ash to compost heap (do not add directly to soil as it is very soluble).</p>

and hedges. *Tithonia* is so rich in nutrients that when used for example in a maize field it gives twice the amount of fertilizer a farmer would need when using chemical fertilizers. This organic source of nutrients is more effective than urea when applied at the same nitrogen rate because *tithonia* also adds other plant nutrients, particularly potassium, as well as micronutrients. These include calcium and magnesium. ■

## Recipe for preparing 20 litres of FPE

### You will need

- 1 litre Molasses
- 1 litre EM.1
- 4 kg of plants of different nutritional value, e.g. stinging nettle, neem, African marigold, *tithonia*, comfrey, onions, other sappy green vegetation
- A 20-litre jerrycan (Molasses and EM.1 can be found in every Agrovet shop)

### Preparation

- Mix the molasses with the EM.1 and 5 litres of water.
- Chop up the vegetation into small pieces and add to the jerrycan.

Fill the jerrycan to the top with water and seal with a lid to keep airtight for 14 days.

### Use

After 14 days, filter the solution, dilute it at a ratio of 1 litre FPE to 100 litres water (1:100) and use as a spray.

### Note

Fermented plant extracts used as a foliar feed will feed your plants as well as impart an insecticidal effect if the materials used have insecticidal properties.

# It is easy to build a worm breeder

*Earthworms can and should be respected as helpful providers of high-value foliar feed.*

## The Organic Farmer

We can farm these lucrative creatures by providing them with optimum conditions for their survival, and in return we can extract the valuable nutrients from their casts (*mbolea*) in a very simple and affordable way. This is done by breeding the worms in a contained environment and every so often, running water through this 'wormery'. The intention is to collect the nutrient-rich water as it seeps through the soil and dissolves the worm casts (worm *mbolea*) along the way. This nutrient-rich liquid solution makes the basis for a perfect foliar and liquid plant feed. The worms are hardly more disturbed than during a rain shower, and continue to get on with their lives so long as we continue to feed them and make sure their living conditions are suitable.

To begin with, we must recognise the worms' needs as well as potential hazards.

**Earthworms need:** Moist soils, biodegradable material, air, regular feeding, ambient temperature.

**Hazards to earthworms:** Dry soils, pollutants in soils, waterlogging of soils, rodents, safari ants, birds, high temperatures.

Armed with this information, we can now consider how to create an artificial environment that will take all these issues into consideration and create a comfortable home that will contain the worms, allowing them to breed happily.

### The Housing

Housing for earthworms can be made out of various materials. Since the medium held within the housing will be constantly moist, it is advisable to use a waterproof material to construct the housing. One can use cement and mortar, or more simply a 200-litre

Su Kahumbu shows farmers her earthworm breeding unit at her farm in Tigoni, Limuru (Photo TOF)



well-cleaned plastic drum cut in two. A metal drum may not be suitable as it may contain toxic residues which will kill the worms and, over time, it is sure to rust. A wooden structure may also be used, but unless lined with a strong plastic under-sheet, it will be impossible to collect the worm juice. The structure must allow for drainage in order to collect the juice, and it is advisable to leave this drainage open at all times to avoid waterlogging. This can happen when more water is put into the system than is collected. It can also happen if the wormery is not adequately covered and rainwater collects in the system.

It is important to note when constructing the system that worms are cold composters and cannot survive in a warm compost heap. To prevent the chances of temperatures rising in the worm medium, allow for no more than a 20-cm (8 inch) depth of material. It is also advisable to build the system at an elevation of at least 1.5 metres (3-4 feet) off the ground. This will allow for easy collection of the worm juice and also allow for the creation of barriers for rodents and *siafu* (safari ants).

### Material for the structure:

A 200-litre plastic drum cut lengthways into two small bathtub-like pieces.

4 poles, 2.5 metre (9 foot).

Some nails

One drum makes two units; therefore you can either produce twice as much juice, or sell the second unit, possibly even rent it out; you could also produce excess and sell or trade the juice with fellow farmers.

### Material for the interior:

2 debes of medium-size rocks  
A 1 x 1 ½ metre piece of *gunia* or shade net

2 debes maize stalks

1 debe dry grass

1 debe soil

1 debe *mbolea* (compost)

1 debe green materials, garden waste, weeds, etc.

1 debe dry leaves

Some kitchen waste, egg shells, fruit peelings, etc.

20 litres of clean water

A 20-litre container or something for collecting the juice

A handful of earthworms

(Farmers can buy earthworms from JKUAT Enterprises, P.O. Box 62000-00200, Tel. 067 52 420, 0721 167 244)

### Construction:

1. Drill a hole in the underside of the drum.

2. Cut posts in half and nail together to make 'cross frames'.

3. Support tank upon a pair of X frames (see page 7).

4. Oil the legs of the frame with used diesel oil to prevent insects, especially *siafu*, from getting into the wormery.

### Filling the interior:

1. Lay 8 cm (3 inches) of stones along the bottom of the drum.

2. Now lay the *gunia* or shade netting over the stones and up over the sides of the drum. This net is very necessary as it will act as a 'Kichungi' (sieve). It is very important to have the stones and the net in place. Without them, you will have a very messy system and it will be impossible to collect the worm juice.

*continued on page 7*

## 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

## We need information

We request you for some copies of *The Organic Farmer* and to be put in your mailing list. If possible, send us each copy of the past issues. We are interested in biointensive agriculture and doing the little we know, but need to be equipped with additional knowledge which we can use to practise in our farms. We will appreciate any other information on organic agriculture.

Benson Wasike, P.O. Box 9, Kapsara  
To get past issues, your group will have to send us postage stamps worth Ksh 350. Since we no longer have past issues we have to photocopy them for you and this

costs money. If you send us the stamps, the money we would have used to buy stamps for postage is used to do the photocopying for you.

## More on organic farming

Lildai Development Group is a registered group and we reside in Bomet District. I would like to request for *The Organic Farmer* magazine for my group. The main activity of the group is farming. Right now we are under training under the Farmer Field School programme.

The Chairman,  
Lildai Development Group,  
P.O. Box 608, Sotik

## Send plant extracts issue

I want to be put on your mailing list to get *The Organic Farmer* monthly. I am associated with one of the schools in the Thika area and with several small-holders, all of whom expressed great interest in your September/October issue, which was lent to me by a friend. Everyone has been particularly interested in the plant extracts special in the centre of the magazine. There is an ICIPE shop in Thika town. Perhaps you could send them several copies each month so that the farmers can collect on their own. Some members of the Earthwatch team, who do a lot of work with small farmers on the Kinangop and elsewhere, also expressed great interest in your magazine. Thank you for your very interesting and helpful publication.

Mrs B. Boy, P.O. Box 270, Thika

## Newspaper is useful

We hereby kindly request you for *The Organic Farmer* magazine since we found it helpful to our farmers. Through a nearby group we read one of your issues and it assisted us, most especially the article on DBM. The group has 20 members and would like your assistance. Thank you.

Daniel Kemei, Muungano Self Help Group, P.O. Box 41, Moiben

## Send us newspaper

We are a young organic group by the name Makiki Organic Group. We are registered and we have undergone three basic courses conducted by KIOF. We have been reading your newspaper through friends whose supply seems to be unreliable. We are currently 15 and would be grateful if you could include us in your mailing list. Thank you.

Richard Musembi, Makiki Organic Group, P.O. Box 1292, Kangundo

## Dear Farmers,

If you have any questions or ideas for articles, or if you would like us to publish experiences about your shamba or within your farmers' group, please contact us. We shall get back to you!  
**SMS ONLY**

**Tuma maoni yako! Asante.**



## Breeding earthworms is easy

*continued from page 6*

3. Layer the remaining materials, filling the drum almost to the top, starting with the maize stalks, dry grass, soil, green materials, *mbolea*, and soil. The final layer should be the dry leaves; this will act as mulch against evaporation.

Remember, worms do not like deep compost as it heats up. Try to keep materials at about 20 cm (8 inch) depth only.

Now the worm housing is almost ready. If we were to introduce the worms at this stage, however, they would die, as it is too dry. We must therefore pour water over the interior contents until we have ensured adequate moisture throughout the entire materials. This is also a good test to see if your drainage works properly. On adding water, you should see the excess run out of the drainage hole at the bottom of the tank. If this does not happen, something is wrong



One drum makes two units. The photo shows a tap in the front as a drainage and collection hole. This is not necessary and can be replaced with a hole at the base of the drum.

and the system will cause waterlogging, which will kill the worms. You will then have to reconstruct it from scratch.

### Introducing the worms

Dig four holes about half-way through the moistened materials and introduce a few worms into each hole. Cover the holes.

### Feeding

Feeding the worms is very important. Once or twice a week add a few handfuls of kitchen or garden fruit, food and vegetable waste to the holes in the unit, the same way as you introduced the worms, then cover. Do not put this on top of the mulch as it will attract flies and rodents.

**Extracting the juice:** After about a month, your unit will be ready for its first juice extraction. Pour 20 litres of water gently over the entire system, collecting the run-off in a bucket under the drainage hole. Dilute this liquid 1:10 with water and use as a foliar feed, as a pour-on or through your drip system (be sure to strain off any particles first). For this size of unit, one can collect juice once a month.

### Things to note:

- Make sure your wormery never runs dry.
- Construct a shelter over the system to protect from rain and sunshine. A low *mabati* roof is good.
- Make sure no vegetation is touching the unit, otherwise *siafu* will find their way in.



## tips and bits

from farmers for farmers

### Seed germination on paper towels

In the *TOF* April issue, Su Kahumbu answered a question about the germination of seeds. A reader went to the Internet and found another method for seed germination which he sent to us. Try it and let us know the results!

There is a very low-tech method of germinating seeds using damp paper towels and plastic bags. Moisten one towel and arrange your seed on the paper towel. If the seed is large (peas, beans, maize), apply another moist towel on top and roll the 2 sheets together into a tube. If the seed is small, the sheet can be folded over and then rolled onto itself.

Once rolled, the paper towel should be placed inside a plastic bag to keep it from drying out. Finally, place the plastic bag in a warm spot. Before rolling the sheets, make sure the seeds are not too close to each other. Seeds



Green gram seeds

that don't germinate can begin to mould and this mould will infect nearby seeds if they are too close or touching.

After about 2 days, check the paper towel at least once a day to see if the seeds have started to germinate. If the towels have started to dry out, re-moisten them with a couple of drops of water. Most seeds will germinate within 5 days at room temperature.

Paul Odhiambo, Kisumu

### Horn meal as organic fertilizer

An organic fertilizer *TOF* hasn't introduced to you yet is horn meal, the crushed or cracked horn of cows. It is especially useful as a nitrogen provider, a nutrient which fuels the growth of leaves and shoots and which is as important to the soil as water and light.

Horn meal works as a long-term fertilizer: The nitrogen will only be released into the soil little by little. The smaller the components, the faster the process. It will take six weeks for the meal to completely release the nitrogen into the soil; larger shavings need considerably longer.

If horn meal is applied at the beginning of the planting season, the nitrogen has enough time to fully unfold in the soil. It works for all plants, but is best for vegetables and flowers.

Horn meal is available from the jewellery designer, Ms Marie-Rose Iberl, in Nairobi. She uses horn for producing her designs and gets the meal as a byproduct.

**Contact:** 0733 736 445, 020 4343 430 or maro@wananchi.com. The 2 kg-packet goes for KShs 80, a 20 kg-bag costs KSh 1,200 (prices without transport costs).

also helps reduce disease and pest incidence. All equipment used for



## Market Place



**Installing drip irrigation:** I am an engineer working on hydraulic and water systems. I have experience on installation of drip irrigation systems. I run my own company which can do fitting, installing and teach farmers about drip systems. If I can be of assistance to *TOF* readers, I will be happy to arrange a visit to your farm and do the installation.

David Smith, Tel. 020 2044334, 0727 721 694 or 0734 761 587.

The following conventionally certified fruit tree seedlings are available for sale. Hass and Fuerte varieties of avocado, Mango- Tommy, Kent and Harden varieties. Apples- Ann variety, pawpaws, tree tomato, Swedish apples and indigenous trees. Call Lugano Horticultural Farm Enterprises, P.O. Box 323, Kitale, 30200, Tel. 0733 990 574

**Farm-fresh produce needed:** The Organic Shop at Gigiri is in need of the following products: Garlic, ginger, wheat, oats, barley, passion fruit, grapes, oranges, tea, poultry feed, lamb and beef.

Contact Su Kahumbu: Tel. 0721 100 001, or email: info@organic.co.ke

**Mushrooms wanted:** Any mushrooms for sale? Farmers with any quantities should contact Jomo Kenyatta University of Agriculture and Technology at the following address:

The Business Manager, JKUAT Enterprises, P.O. Box 62000, 00200, Tel. 067- 52420 or 0724 256696, 0736 524 200.

pruning should be disinfected to control the spread of viral diseases.

### Weeding and fertilizer application

In organic farming use of organic fertilizer is recommended. Regular application of compost and Fermented Plant Extracts (FPE, see page 5) increases yields and helps to control diseases and pests. To avoid the build-up of soil-borne diseases and pests, passion fruits should not be grown for more than two years on the same piece of land. To get certified passion fruits seedlings, you can contact:

Benjamin Lugano, Horticultural Farm Enterprises, P.O. Box 323, Kitale 30200, Tel. 0733 990 574

### Growing passion fruits

continued from page 2

Secondary shoots appearing along the wire of the trellising system must be left while any others are pruned.

#### Pruning

Old unproductive shoots and dead-wood must be removed. Secondary shoots also need pruning when they are about to reach ground level. The lateral shoots which bear the fruits should be left to hang down freely from the wire and the entangling tendrils need to be cut off to allow free air and light penetration. Removal