

# The Organic Farmer

The newspaper for sustainable agriculture in Kenya Nr. 7 November 2005

## Disease threatens Napier Grass

In the last decade, cultivation of Napier grass has boomed in East Africa, as small-scale farmers have shifted to zero grazing. With the expansion of this fodder crop, however, has come a new disease called 'Napier Stunt'. The disease causes healthy thick Napier grass leaves to turn thin, yellow and weak; a special indication of the disease are the short internodes as the picture shows.



The disease has been present in eastern Africa for about 30 years but it has become more noticeable in the last few years. If nothing is done, this disease will seriously affect the livestock industry in eastern Africa, including Ethiopia. In parts of eastern Uganda and western Kenya, market prices for fodder grass have doubled in the last

year; the farmers have been forced to buy grass to compensate for declining production. While a healthy acre of Napier grass should provide enough feed to sustain four productive cows, plots affected by the disease may support only one or two animals, greatly reducing milk yields and income for Kenyan farmers. [See page 5.](#)

### Insemination too costly

Small-scale farmers trying to improve their livestock breeds are faced with a big challenge. The private providers of Artificial Insemination services charge between Ksh 600 to Ksh 1000. Most farmers cannot afford to pay this amount. Preservation equipment for semen handling has to be imported. Kenya used to make its own nitrogen for preservation, but the plant broke down after donor support was withdrawn. Plant rehabilitation is important to make the service affordable. (TOF)

### Dear farmers,

*While travelling around the country in the last few weeks, we have had many fruitful discussions with farmers in various regions. Similarly, we have received letters, telephone calls and short messages, all commending and encouraging us to continue producing the newspaper.*

*We have seen many farmers who are taking our advice seriously. However, we still feel that farmers can do more. Take the problem of marketing, for example. After receiving many questions three months ago from farmers on where they could sell their organic produce, we created a column called "THE MARKET PLACE", where farmers with any produce to offer could advertise their products. One of the buyers, Su Kabumbu, even put an advert in our newspaper asking farmers to contact her if they had anything to sell. Up to now not a single farmer has done so. Recently, farmers have written to us again with queries on where they could sell their products! Of course, we know that Kenyan farmers face enormous hurdles as they try to find a market for their produce. However, they can make better use of the column in our newspaper to look for buyers.*

*Most Kenyan farmers are hard working people. But to be a successful farmer in today's world, one has to be aware of the changing market demands. The problem is that there is a generation of farmers who do not accept change; to them, farming will remain a loss-making enterprise as it has always been. On the other hand, it is encouraging to see an upcoming generation of young farmers in many parts of the country. They have adopted the latest farming methods, and raise several different crops. They grow what the markets needs every season. If you read the story on page 4 in this issue, you will understand what we are talking about. A lot of things will change if farmers will be a little bit more forward-looking. We as editors will continue to support your efforts in making organic farming the most sustainable method of agriculture in the country.*



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**MY OPINION**

By Michael Wafula

Many of us farmers do not take the health of our animals seriously. Everywhere you go you find people grazing their animals by the roadside. Most of these farmers have enough land, on which they can plant fodder crops such as Napier grass. But they choose to spare the land for other uses. If the quality of the grass is poor, so the quality of milk produced will be poor. Fellow farmers, let us feed our animals properly, they will pay back by producing more milk for our consumption and even sale.

*Michael Wafula is a farmer in Kitale*

*The Organic Farmer*

Nr. 7, November 2005

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## Organic farmer's "wild" friend

*Tithonia, or wild sunflower, is easy to grow and is rich in phosphorus and nitrogen.*

By Daniel Wanjama

*Tithonia diversifolia*, a nice wild shrub with yellow flowers, is found almost all over Kenya. It is often used as a hedge plant and grows wild in roadsides near rivers and on waste ground. Over the years some rural communities of Kenya have known *Tithonia* as a remedy for stomach ailments; farmers used it on fences or on ridges to check surface runoffs.

**Alternative to chemical fertilizer**

They were however unaware of its potential to enhance soil fertility. Research scientists explain that the *Tithonia* plant contains 80 per cent more phosphorus than legumes. It also contains enough nitrogen and potassium to promote crop growth. So *Tithonia* is an alternative to chemical fertilizers. 5 tonnes of the green foliage incorporated into 1 hectare of land is equivalent to applying the following rates of inorganic fertilizer: 159kg Nitrogen, 10kg Phosphorus, 161kg Potassium, 18kg Calcium, 22kg Magnesium.

The most popular application is in the making of compost where it is used with dry plant material. It feeds microorganism with phosphorus and nitrogen. But you can also use it directly by slashing young plants and incorporating the green foliage in the soil at any cultivation stage.

In western parts of Kenya it is used against termites, and scientists discovered that powder and extract of *Tithonia* is a repellent and has been found to be an effective biopesticide against cow pea seed beetle.

**Plant tea**

*Tithonia* is also used in making plant tea (plant extract) for top dressing. Chop *Tithonia* vegetative parts and soak them in the water at a ratio of 1 part in 4 parts of water. Let it stand in a tightly covered container for at least 7 days. Apply it within the 5 days diluting it with equal amount of water and spread at the root base of the desired plant.

**Why use *Tithonia*?**

- It is used in compost making because it is rich in phosphorus and nitrogen.
- *Tithonia* plant grows very fast enough to supply quantity



materials through out the season.

- *Tithonia* has the ability to regrow after cutting, which ensure continuous supply of vegetations.
- It is a wild plant, which requires little or no attention from the farmer.
- *Tithonia* decompose fast because it has succulent tissues.
- *Tithonia* plant is easy to handle and cut.
- Propagates vegetatively through stem cutting, which makes it establishment easier.
- It is also used as fodder for goats.
- When used for making hedges *tithonia* flowers attracts beneficial insects e.g. wasps and bees which are important in crop pollination.
- The plant also forms a thick hedge.
- It allows other crops near the hedge to grow without interference. The flowers also look nice in the garden.

*Dear Farmers,*

Paul Ndung'u, a small scale farmer from Molo, gave us the idea for this article on *Tithonia*. He has a beautiful *Tithonia* hedge around his shamba. He uses *Tithonia* hedges to separate the various crops such as maize, cabbages, tomatoes, peas and beans in the shamba. They do not only help to break the wind, they also reduce the spread of pests from one crop to the other. Of course, Ndung'u also uses the *Tithonia* leaves to enrich the soil.

If you know of any other plant that has the same useful purpose as the *Tithonia*, write to us and let us share your experience with other farmers in the country.

(TOF)

# How to identify early and late blight

*In organic production systems, prevention is the best way to control the two diseases*

By The Organic Farmer

Early and late blight diseases give farmers a lot of headache, as we discovered in our many discussions with farmers when we visited them in the last few weeks. Many other farmers have also called us with questions on how they can protect their crops from these diseases. Although we provided some information on this subject in the July issue, we have decided to revisit the topic to make it easier for farmers to diagnose these diseases and take preventive measures. Careful observation of the plant is the best way farmers can tell which of the two fungal diseases is affecting their crops so that they can deal with them. Below are some control methods farmers can use.

## Early blight

In our July issue Su Kahumbu gave an account of her own struggles with the early blight. She has managed to control the disease by spraying the tomatoes with milk (diluted with water at the ratio of 1:10). To strengthen the plants, she has used seaweed foliar feed together with EM2 (Effective Microorganisms). The German Information Service OISAT ([www.oisat.org](http://www.oisat.org)) recommends use of Marigold extract for the same purpose (see box on page 6). What can a small-scale organic farmer do to avoid losing their crop? If the milk solution does not help, one can apply copper, as you can see below.

## Late blight

Even worse than early blight are the consequences of late blight. This is the most devastating of the two diseases affecting both organic and conventional potato and tomato production. It is spread by wind and rain.

Many well known agricultural research institutions in Europe have done a lot of research on early and late blight. However, they have not found any effective treatment so far - except the use of copper. Up to now there are no successful organic control methods available when a crop is already infected with early and late blight. The use of organic



### Early blight

Caused by a fungus called *Alternaria solani*

Symptoms on leaves include:

- Small brownish black spots, mainly on older leaves.
- Yellowing of tissues surrounding the lesions.
- Concentric rings in dark brownish portions of the lesions.
- Dropping of leaves.

Symptoms on stems include:

- Small, dark, and slightly sunken wounds (lesions).
- Pronounced concentric rings in enlarged (mature) lesions with light coloured centres.

control methods has only worked in laboratories but has failed in field trials. That is why nearly all European countries allow the application of copper in biological agriculture. But copper is harmful to human beings, animals and even soils. The European Union has reduced the use of copper to 3-4 kg/ha, but plans to replace it altogether in future. The Kenya Bureau of Standards knows about the problem of late blight and allows copper use in organic production (Draft Kenya Standard, Annex B, Kebs April 2005). In Kenya, farmers are advised to use copper oxychloride 50WP at the rate of 2-3 kg/ha in 1000 litres of water sprayed on tomatoes and 3-6 kg/ha in 1000 litres of water. Please read the labels carefully. It is available in agro-veterinary shops.

### Take preventive measures

As we have explained earlier, control of late blight, once it has affected the crop, is very difficult. But farmers can take a number of measures to prevent it or to ensure it does not spread to the other healthy plants. First of all, farmers need to know that supporting tomato plants with sticks is very important. The sticks prevent the leaves from coming into contact with the disease-causing fungus, which is mainly deposited by wind

and running water on top soils or on the lower surface of the plant. Some varieties of tomatoes do not require propping with sticks and these are the ones most prone to infection. Growers using these varieties should find ways of raising the plants from the ground to prevent the disease.

They should observe the following guidelines:

- When watering the plants, do not water the leaves. Water the base of the plant or direct the watering hose diagonally to the ground to reach the roots. If the leaves are infected, wetting them facilitates the spread of the disease to the soil (which could also infect potato tubers).
- Remove and burn infected areas and plants as soon as infection is detected.
- Avoid growing potatoes or tomatoes in the same field year after year. New tomato fields should be far away from old fields to stop transferring the disease to new crops.
- Always grow tomatoes or potatoes in fields where other crops, which cannot be affected by early or late blight, were planted in the previous season. This crop rotation helps to reduce the disease from plant residues.
- Use clean and disinfected seeds.



### Late blight

Caused by a fungus called *Phytophthora infestans*

Symptoms on leaves and stems include:

- Irregular spots with a water-soaked appearance.
- Enlargement of the spots into pale green to brown lesions that may cover large areas.
- Whitish to grey moldy growth on the underside of leaves under moist conditions.
- Browning, shrivelling and death of affected leaves.

Symptoms on fruits include:

- Irregular, dark, water-soaked lesions with a greasy appearance.

# Diversification changes farmer's fortune

*He took technical advice seriously and today he is one of the most successful farmers in Kisii district*

**By Peter Kamau, Kisii**

For 36-year-old Ronald Nyagaka, farming in the hilly highlands of Kiogoro division of Kisii district had been a continuous nightmare of loss-making ventures. Despite striving hard, crop yields in his three-acre farm dwindled while prices kept falling.

He grew maize for successive years on a large portion of the farm, but the prices were discouraging. When he ventured into tomato farming, disaster struck. This was three years ago when his entire tomato crop was wiped out by a "strange disease".

## He heeded advice

But unlike fellow villagers who would have explained it away as the work of an evil spell, Ronald sought advice from the local Ministry of Agriculture office in Kisii town, 6 km away. It is then that he developed a working relationship with the agricultural extension personnel. Nyagaka is now a beneficiary of the second phase of the National Agriculture and Livestock Extension Programme (NALEP II), a project funded by the Swedish International Development Agency which is trying to revive agricultural extension services to Kenyan farmers.

"We visited his farm and diagnosed the problem to be bacterial wilt. We advised him to practise crop rotation and diversification to check diseases and boost his earnings", says Atieno Achieng, the divisional agricultural extension officer.

The hardworking father of four heeded the advice from the official and went to work immediately. The results were tremendous and now



*Feeding the fish* (Photo TOF)



*Nyagaka tends the tomato crop at his farm in Chinche* (Photo TOF)

Nyagaka is the envy of many a farmer in the neighbourhood and afar.

## Many different crops

His farm, perched on a steep hillside, now holds a healthy crop of bulb onions, sukumawiki (kale), tissue culture bananas, improved orange-fresh sweet potatoes, passion fruits, traditional vegetables, avocados, sugarcane and many other crops at various stages of growth.

On the lower slopes is a portion with 1000 well-tended tea bushes. An abandoned brick quarry at the river frontage, which has been a mosquito breeding ground, is now converted into a fish farm stocked with 1,665 tilapia fingerlings. On the lower part of the tea plot are seven beehives, which provide honey for sale.

## Upgraded indigenous chicken

To avoid the heavy capital investment in modern poultry keeping, Nyagaka has learned new skills of improving the quality of indigenous chickens. He has identified good layers and brooders in his indigenous stock that he is upgrading through crossbreeding and quality feeding with organic green material, cereals and chicken mash. The brooders are housed in earthen notches made in the family kitchen walls to keep them warm and safe from thieves and predators such as dogs and wild cats.

## Shrewd and hardworking

Nyagaka is today one of the most successful farmers in the densely populated Chinche village. His success is primarily because of two reasons: First, he plants many different types of crops, such that when the price is not good for one product, he can sell the other. Secondly his farming is market-driven. Through meticulous timing and knowledge of what the market

needs, he produces fruits and vegetables when they are off-season (mainly through irrigation) and sell them at premium prices. These he sells in Kisii and surrounding towns when the demand is high.

"From the sale of various farm products I make an average of Ksh 200,000 every year. Farming can be so profitable but it needs commitment and hard work," he says. He has built a permanent house, a modern zero grazing shed for cattle, pays school fees and is supporting his extended family.

Two years ago he joined a few neighbours in setting up the Chinche Self Help Group. The group with 32 members to date started off as a merry-go round where each would contribute Ksh 50 monthly, money that would assist them pay school fees, settle medical bills or buy household items. It is now registered with the Department of Social Services. That is why it is recognised as a focus group by the Ministry of Agriculture under the NALEP II programme.

## A model for other farmers

Members of the group are learning new farming methods from Nyagaka. Farmers from many parts of the district also visit the farm to learn from him.

After reading the story on dairy goat keeping in the September issue of *The Organic Farmer*, the group plans to start a similar project.

Through the NALEP II programme, the farmer's group receives training on a regular basis on new agricultural methods, exchange visits and field days. The project plans to transform the group into an interactive learning site where farmers from other parts of the district will be trained in sustainable agriculture.

# Farmers can control spread of Napier disease

Scientists from East Africa and UK are trying to find ways to control the disease 'Napier-Stunt'.

By Felix Mbitu Murimi

The disease called 'Napier Stunt' was first observed in Kenya in 2002, although it is thought to have been present for much longer. According to ICIPE-Scientist Dr. Zeyaur Khan is has spread now to Ethiopia and Tanzania. Until a year ago, the cause of the disease, which turns healthy thick leaves into thin, yellow and weak leaves, was unknown. Agricultural staff thought that the cause might be either a fungus, nematode damage or a nutrient deficiency. However they were not sure and therefore were unable to offer advice to farmers. The breakthrough came in 2004. Professor Phil Jones of the Global Plant Clinic, based at Rothamsted Research in the UK, identified the cause to be a phytoplasma. Phytoplasmas are similar to bacteria and live in the phloem of infected plants. (Phloems are the tubers inside the plant stem.)

The disease 'Napier-Stunt' could be spread in two ways. Over longer distances the primary means of spread is farmers themselves. Napier



'Napier-Stunt': Yellow leaves and lack of roots (Photos courtesy Dr. Zeyaur Khan, ICIPE)

is vegetatively propagated, so farmers take either a slice of cane, or split a clump, in order to plant on. Kenyan farmers obtain their planting material from neighbours. If unaware of the dangers, they can inadvertently introduce a diseased plant into their fields. Over shorter distances, such as between plants within a field, the disease could be primarily spread by plantsucking insects such as plant hoppers. These insects feed on the sugar-rich sap in Napier phloem, and can transfer the bacteria (phytoplasma) in their saliva to other plants.

Now that the cause of the disease has been recognised, promoting control measures among farmers has become a priority. Digging up infected plants and replacing them with healthy canes is the basic strategy. The soil around infected plants cannot harbour the disease, so replanting in the same place is possible. The leaves of diseased plants can be safely fed to livestock - the phytoplasma (or the bacteria) does not persist in their manure. However the roots should be burned or buried, so they will not affect other plants.

## Napier is an important fodder crop

Napier or Elephant grass (*Pennisetum purpureum*), is a native clumping grass of tropical Africa that grows 3 to 5 metres tall and is mainly propagated from cuttings of 3 to 4 nodes in length. It is widely used as a fodder crop and is also planted for environmental protection, to stabilise soils and act as a windbreak. In Kenya, it has been used in a novel 'push-pull' pest management system for cereal stemborers.

Napier grass is a forage plant of considerable importance in several parts of the world. It is one of the most valuable forage, silage and silage crops in the wet tropics. This very vigorous grass provides a great bulk of feed and is commonly used in a cut-and-carry system, for feeding animals in stalls. For grazing, it should be heavily stocked to maintain it in a lush vegetative form. The mature leaves are razor sharp and sometimes provide a

problem for grazing cattle. The coarse stems produce new shoots and leaves. The grass is best grazed when the new growth consists of five new leaves. A stem plus leaves takes a year to grow. Grazing at six- to nine-week intervals at a height of about 90 cm gives good utilization. The highest yields can be expected from cutting at 12-week intervals and applying nitrogen after every cut. Nitrogen fertilizer can be applied after each grazing or cutting in high-rainfall areas. Any coarse, leafless stems should be mowed.

Napier grass is a rapid colonizer of disturbed areas and prospers in a broad range of conditions. It tolerates periods of flooding and drought and fire, although it grows best in high-rainfall areas (in excess of 1 500 mm or 150 cm per year). Its deep root system allows it to survive in dry times. It grows best in deep, fertile soils through which its roots can pass easily. (fmm)

### Uprooting and replanting

Farmers are encouraged to identify clean planting material, either by selecting canes from parts of their land that are some distance from any infected plants, or by buying planting material from other areas where the disease incidence is low. District agricultural offices have also been urged to create 'designated clean zones' where unaffected planting clean material can be obtained for distribution.

### Search for strategies

In the long term, ICIPE Scientist Dr. Zeyaur Khan believes regional collaboration will be vital to controlling the disease. Several institutions (ILRI, ICIPE, Rothamsted Research, KARI and others) are working together to develop a regional research programme. Research priorities will include identification of the possible insect vector and screening for Napier varieties that show resistance to both the disease and its vector. Scientists also need to develop a strategy for distribution of clean planting material.



## You have to feed the soil

"Onions tend to do well when planted, then after one or two months, they turn yellow. The same happens to capsicums. What is wrong?" asks Evelyn Heyi from Bomet. Similar questions were coming from some other farmers.

This sounds like a nutrient deficiency. Healthy plants are a deep green colour. Any signs of yellowing or purple colours indicate that the plants are hungry. Most of our tropical soils are not automatically very fertile. We have to both dig or plough the soils to give the plants air and loosen the soil for good root growth. And we have to feed the soil with good compost, manure or green manure (this means digging in live green plants) to activate all the good soil micro organisms, so they can help make the soil productive.

The quickest way to restore a healthy colour and good production to a discoloured crop is foliar feed. There is one on the market, which is approved for organic farming, called "Freegrow" and is made from seaweed. However foliar feed can be made at home from any good

smelling compost or dried manure. Put 5-10 kg compost or dried manure in a gunny bag and immerse in a drum of water. If EM (Effective Microorganisms) is available add about a cup to a drum of water, this will help extract the good nutrients while fermenting the mixture in a healthy way.

Leave the bag in the water for some days - up to a week, then spray the solution - a cup in 20 l clean water on to the crop. (If you need more information on EM contact Peter Chandi 0733 546491)

In the long run though there is no shortcut to feeding the plants well from even before planting. Compost making and/or green manuring and rotation of the crops is the backbone of organic farming. We have to feed the soil so it can feed us. The peppers above turning yellow in the third year have by then used up all the nutrients that the soil had to begin with, and unless more nutrients are fed to the soil, yields will continue to go down. Compost, manure and green manure also helps the soil to absorb water better during rains, and to hold more air for root growth.

### Nutrient deficiency symptoms

Some of the most common nutrient deficiency symptoms:

a) Nitrogen deficiency: Yellowing of older leaves first, then if serious all leaves turn yellow and the plant does not grow well.

Nitrogen is found in urine, manure - especially chicken manure (careful - it might burn the plants if you put too much), compost and foliar feed.

b) Phosphorous deficiency: Purple colours are seen and the plants grow slowly. Phosphorous is found in Majingu rock phosphate as well as animal manures.

c) Potassium deficiency: Yellow spotted leaves with wilted leaf margins and tips. Sometimes leaves curl or crinkle. Often seen on brassicas, who really like their potassium. Potassium is found in wood ashes.

d) Copper deficiency: First symptoms are wilting of leaf tips, yellow patches in the field when seen from far, and stunted growth. Copper is found in small quantities in animal manures, but the organic system allows the use of added copper when needed either as a seed treatment (copper oxychloride) or as a spray on young crops (see also page 3).



### Damage by bean aphids

Isaak Maina Munyari from Subukia had his beans infested with dull-black small insects, and afterwards the beans were covered with a liquid like honey and did not do well.

These insects are bean aphids. It is always useful to look carefully and control aphids at first signs of infestation as otherwise they will spread to the whole crop. If caught early the insects can be sprayed with either natural pyrethrum or neem in the spots where they are seen. But remember, if all plants are sprayed, we also kill the good insects that actually eat aphids, and so in the long run make a bigger problem for ourselves. Ladybird beetles (small red round beetles with black dots) eat aphids, and keeping a good population of ladybird beetles is a good insurance against heavy aphid infestation.

### MARIGOLD EXTRACT

In page 3 we informed you on early and late blight. For lack of space we shifted one important advice to this page: Online Information Service for Non-Chemical Pest Management in the Tropics, OISAT, recommends the use of Marigold extract against early blight in tomatoes (see also [www.oisat.org](http://www.oisat.org)). Below is the recipe:

**Materials:** Whole flowering plant Soap, Water, Strainer, Drum

**Preparation:** Fill-in drum with ½ - ¾ full of flowering plants. Leave to stand for 5-10 days. Stir occasionally. Strain before use

**Use:** Dilute the filtrate with water at a ratio of 1:2. Add 1 tsp soap in every litre of the extract



### How to control thrips?

Cowpeas do well in Bomet, however, farmers here abandoned growing them due to the problem of thrips. Evelyn Heyi from Bomet asks: "How can we control this pests?"

Thrips are very difficult to control. The best solution so far is a good rotation with non-legume crops, removal of all unused vines and leaves and composting or burning them, then planting a different crop in that area. However it is rumoured that ICIPE is doing research on thrips control, so the question is hereby forwarded to them.

*We will carry a story on thrips in the next issue. The Editors*

Su Kahumbu answers your questions assisted by Anne Nganga



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## Letters to the editor

### New insight on goats

First and foremost I would like to congratulate you for your effort to make us more knowledgeable in farming. Keep it up. I came across your No. 6 Sept/Oct. 2005 issue through a neighbour, after reading a topic on dairy goats I was really impressed because we only rear goats for slaughter during Christmas and related ceremonies. But after realizing that it can produce up to 3 litres of milk a day, my perspective towards them has changed. Already I have sent a letter to the Kenya Dairy Goats Breeders Association for more information on how I could obtain at least one.

With these remarks I say thank you for enlightening the farming community. My group though young will benefit.

Francis K. Kemboi, P.O Box 301, Moi's Bridge, 0723 373 420.

*Dear Mr. Kemboi, a lot of farmers have written to us giving positive comments on the dairy goat story, others have requested for more information on value addition of goat milk products. In one of the next issues we will bring some more information on dairy goat farming. In the meantime we wish you good luck.*

### THE MARKET PLACE

Any organic farmer with products for sale can contact the following buyers:

Su Kahumbu, Green Dreams Ltd,  
P.O. Box 1403. Limuru,  
Tel-0722-70 44 88.

Mr. Mathenge, Super Veg, Ltd,  
P.O. Box 41876-00100, Nairobi  
Tel-823 234 Fax 823 236  
Cell- 0722 315 063.

### Distribution

I am writing to acknowledge receipt of the 300 copies of The Organic Farmer magazine that you had sent us. We have so far distributed 270 of the magazines and we intend to issue the balance this week. We also designed a distribution form for the farmers to sign when getting the copies hereby

attached for accountability purposes. We will send you all the filled copies once collected from the filled by the 15th of October, as part of our distribution report. It is our hope that the report will help you in your future supervision and monitoring of the project as well as accountability to your donors. The current issue was very interesting to our farmers and us, especially the articles on the dairy goat keeping and poultry production for they are good sources of income in Ukambani and are important in drought coping mechanism.

Elijah M. Mutungi, Director  
MAEEO, Kitui

*Dear Mr. Mutungi, we are impressed with your commitment. We would like other farmers to prepare a list showing who is receiving the newspaper for record keeping purposes. In this way it will be easy to streamline the distribution in order to serve you better.*

### Organic fish farming

I am starting tilapia breeding and growing enterprise and I would very much like to get it right from the outset. Please can you advise me on whether there are established and commercially accepted guidelines for organic freshwater aquaculture. I would appreciate any contacts you may know of in tilapia farming. I would also be very pleased to receive your publication. Congratulations on providing a much-needed light.

Anthony Dodds, Balakwasi  
Enterprises, P.O. Box 15,  
Rumuruti, Tel. 065-20321.

*Dear Mr. Dodds, fish farming is relatively new in Kenya although quite a number of farmers practise it. Information on organic fish farming is even scantier. Perhaps you could get in touch with Fisheries Department in Nairobi for additional information and advice in this field. Contact Mbugua Mwangi (an Aquaculturist) P.O. Box 58187-00200 Nairobi Tel 254-020-3742320/49 Mobile 0722-357980. Another good source of information is the Internet. There are many sites that contain information on organic aquaculture.*

### Good for farmers

Receive many thanks for The Organic Farmer copies, on behalf of KOAN. I request you to increase the number of copies of the magazine being sent to me, since the demand for the same has increased very much. I am currently in contact with an international development organization, which interacts with over 4,500 small-scale farmers in Nyanza, that predominantly produce, organic. These farmers have found the newspaper invaluable in refining their agricultural practices, and I can assure you, we are no doubt a team, working for a better future. Once again thank you.

Dominick O. Ogut, CARE-KENYA, P.O Box 526, Homa Bay,  
Tel: 059 22433, 0721 368 338.

### Looking for markets

I work with a company called Organic solutions LTD, which deals with organic farming and products. We are currently introducing the E.M technology in farming. I am very impressed with the work you are doing in promoting organic farming. I am working with 40 farmer groups that are strictly in organic farming in Mt Kenya region. Their biggest problem is market for the products. I would like to start with groups in Othaya and Kangema. I have given out all the magazines you sent me and I need more of them if you have. I would also like to know if you advise farmers on what to grow for you to buy. Is it possible for you to visit some of my groups?

Georges Mugambi,  
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*Dear Mr. Mugambi, we understand the problem farmers are facing in marketing their produce. But as we try to assist, our capacity is limited, for example all we can do is to give them space in the market place column on this page where they can advertise their products.*

*But it is up to the farmers to make a follow up and establish contact with the buyers (Read our Editorial on page 1).*

# The beans that can reduce malnutrition

*Soya beans are of great value. They have the highest concentration of proteins, vitamins and minerals of any crop.*

## By The Organic Farmer

Despite its high nutritional value, many farmers in Kenya and many other countries in Africa do not grow soya beans. This is mainly because most people do not know its value. Another reason is that unlike other food crops such as maize and beans, it needs processing into flour before it is consumed. In recent years, however soya bean is becoming increasingly popular with farmers who have discovered its importance as a source of cheap protein. It has the highest protein content of any food crop.

Soya beans have all the nutrients required by the body including proteins, fats, carbohydrates, vitamins and minerals. Just to show its value, 1 kg of Soya bean has the same nutritional value as 2 kg of meat or 40 eggs. It is free of cholesterol and is therefore a healthy food crop. Its oil is easily digested in the body. People now grow it for



blending with traditional food crops such as maize or sorghum to make highly nutritious porridge or ugali. Many Kenyan families use roasted ground soya beans to make a healthy caffeine-free drink that they prefer to tea or coffee.

Besides improving the diet, soya bean can also contribute to soil fertility by fixing nitrogen through rhizobium bacteria in the roots. Maize and sorghum yields can be increased by up to 25 percent if intercropped with soya beans.

### Varieties for all regions

There are many varieties of soya beans that have been developed in Kenya to suit the various climatic

regions and soils in the country. The Gazelle variety is mainly grown in parts of Central Province and Laikipia region. The SCSI and Nyala varieties have been found to do well in Kitale area. The German Technical Cooperation Agency (GTZ) has developed the promiscuous soya bean variety that can grow anywhere in the country. Farmers are advised to confirm varieties suitable to their areas before purchasing seeds.

Alternatively farmers can obtain high quality seed including rhizobium from Kenya Seed Company agents near them (Seeds will be available before the planting season in 2006, since they have run out of stock at the moment). Most other seed companies also stock seeds.

### It is easy to grow Soya

Soya beans can grow well in deep, fertile and well-drained soils. They prefer slightly acidic soils - basically they can do well in all maize-growing areas of the country. They grow best in a humid climate with plenty of rain during the growing period (35-60 cm of rain is adequate). Plants can tolerate drought conditions after the seedling stage. However they can perform better when the rainfall is well distributed during the growing period.

**Land preparation:** Prepare a well-drained area of land and ensure green matter residues are well decomposed before planting.

**Planting:** Before planting, test the viability of the seeds to ensure it will germinate. The test is important because soya bean seed loses its viability 6 months after harvesting. This can be done by planting 100 seeds, if 75 of the seeds germinate, then the viability is acceptable. You will need 25-30 kg good quality seed per acre. Plant at a depth of 5cm in rows 45-50 centimetres apart. Plant two seeds per hole.

**Fertilizer application:** Farmers are advised to use farmyard manure if available at the rate of one handful per hole. They can also use 50 kg of DAP fertilizer per acre. Use one packet of rhizobium inoculants for every 100 kg of soya seed. (A 100-g packet costs Ksh 80). If the soil is poor, potassium can be added at the rate of 20-32 kg per acre. Mix fertilizer with the soil to avoid direct contact with the seed. Soya beans can also be planted in rotation with a well-fertilized cereal crop such as



*Soya beans*

*PhotoTOF*

maize wheat or barley to avoid the use of fertilizer.

**Spacing:** The holes should be 5-10 cm apart within a row.

**Intercropping with maize:** plant two rows of soya between the maize rows. When intercropped with maize there is no need of applying extra fertilizer as the beans can use the fertilizer applied to maize.

**Weeding:** The crop should be weeded two times during the growing period.

**Harvesting:** Different soya bean varieties mature at different times. The early maturing types take about 75 days while the late ones take about 100 days. Harvesting should be done when the leaves turn yellow. Yields of up to 11-90 kg bags per acre can be attained depending on the variety and region of the country grown.

**Storage:** The beans should be stored in a cool dry place to ensure the seeds are not spoilt (preferably at 10% moisture content). As human food, it can be stored for up to 3 years without chemical dressing or change in nutritional quality.

### *The Organic Farmer* in December



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