

The Organic Farmer

The magazine for sustainable agriculture in Kenya



Nr. 51 August 2009



Farmer wins prize from TOFRadio

Mrs. Grace Onyango, a small farmer from Malik Vilage, Kibabii receives a wheelbarrow she won in the TOFRadio competition from the TOFRadio producer John Cheburet. Listeners have a chance to win by answering a simple question. The competition comes after every two weeks. (Photo TOFRadio)

Hard times for potato farmers

Potatoes are the second important staple food in Kenya. But potato farmers are neglected.



The Organic Farmer

The crisis facing the potato industry in Kenya is getting worse by the day: There is a serious shortage of certified seed in the country which has forced farmers to go for uncertified potato varieties from neighbouring countries, which they are now using as seed. The new varieties which have spread to almost all potato growing areas of the country pose a serious problem of diseases. The use of uncertified potato seeds mainly sourced from Tanzania and Uganda has raised concern among government's regulatory agencies who fear that such seeds could threaten the entire industry if they are infected.

The country has not been able to meet its potato seed requirements for the last 18 years because land meant for production of basic seed, including multiplication, was grabbed by individuals in the government. Attempts to reclaim the 240 acres of KARL in Tigon and another 12,000 acres in Molo have so far failed resulting in a critical shortage of potato seeds. But the question anyone would ask themselves is: "How can a government that pledges to meet the country's food requirements fail to resolve such a small issue as recovering land meant for seed production for almost two decades? And if the recovery of the land is difficult, are there no other ways that can be devised to ensure the country's capacity to produce potato seed is not compromised?" The potato seed shortage is a clear indication that we can no longer rely on the government to solve farmers' problems. See page 2 & 3

Dear farmers,

The country is still in a precarious position with regard to food security. The long rains have once more failed. As the weather forecasts rightly predicted at the beginning of the year, the long rains have been inadequate in most of the food producing areas. The farmers' calendar started badly with very little rain reported in March, a time when most farmers often plant their maize. There were rains in late April in most areas, but they remained erratic in May, while June was the driest month, which led to crop failure. The country will experience a food deficit which may force the government to import food to bridge the production gap. This does not mean that farmers should give up; there are indications that the short rains may be much better in quantity and duration. Indeed, weather experts predict that the rains may extend into January next year. Therefore the government should chip in by giving free seeds and offering affordable fertilizers as they did at the beginning of the year. This will help resource-poor farmers to replant and perhaps recover some of their losses. Farmers should, on other hand, take advantage of the short rains to replant, not only to meet their food requirements, but also to have some food for sale. Although most farmers have abandoned planting traditional drought resistant crops such as millet and sorghum, this is the time to rethink and try out these crops. The climate change is affecting farmers' worldwide. It is only those farmers that are able to cope with the weather changes by use of emerging technologies, including growing crops that can withstand drought, that will survive these hard times. And African governments should empower the people to produce food instead of leasing prime land to foreign companies to do so.

i-TOF

Finally we are happy to inform you that the information and organic input (i-TOF) centres we promised you have started in four areas in the country. We encourage farmers near these centres to make use of them to get information, training and even buy organic inputs. (See page 6). The future of agriculture in Africa depends on well-informed farmers ready to adopt sustainable methods that improve food production and income.

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New potato variety becomes popular

Potato varieties from unknown sources can spread bacterial and viral diseases.

The Organic Farmer

On one of his frequent trips to Waku-lima Market where he occasionally delivers his potatoes for sale, Peter Njoroge Gitau saw a new variety of potatoes that had been brought from Tanzania. The sheer size of the potatoes made him curious and enquired from the owner what variety it was, but the traders did not have any idea. They told him that the potatoes were bought from Tanzania. They were not ready to sell him any as the entire consignment had already been bought by a trader. Desperate to get a few tubers, Gitau waited until the lorry was offloaded. As the lorry's conductor swept the trash after offloading, some tubers remained in the trash. Gitau managed to pick all of them, which he carefully wrapped in a polythene bag and took them home to his Kahuhu village, in Karati, South Kinangop.

Variety has spread to many areas

When he got home he cut them into tiny pieces and planted them the following day. "After tending the potatoes for seventy-five days, I managed to harvest six bags of potatoes. I again prepared



Peter Gitau introduced *sangi* potato variety in Kenya from Tanzania. (TOF)

the six bags for seed and planted them in one acre. This time I got 90 bags. Impressed by these potatoes, everyone in my village wanted to buy them, but I was reluctant because I wanted to multiply them again. However I decided to sell some to a few farmers," he says. Within a year the new variety which he had now nicknamed *Sangi* had spread throughout the village and beyond. The variety is now the potato of choice in the potato growing areas of Nyandarua, Olkalou, Molo, Mau Narok, Timboroa, Kiambu, Murang'a and many other parts of the country. One important reason why farmers like the variety is that it can produce up to 100 bags an acre if it is well taken care of. The variety sets tubers when flowering and only needs seventy-five days to mature, with adequate rains, which is an advantage to commercial growers. It is however prone to frost, although it can still grow well with little rain.

Unscreened varieties are dangerous

The popularity of *sangi* potato variety is not a new phenomenon among farmers in potato growing areas of the country. Having used the recommended certified seed varieties for many years; many farmers are now having a problem with these varieties because of declining yields brought about by viral diseases, including bacterial wilt. They are now going back to new varieties from neighbouring countries that are high yielding and which they claim are not prone to diseases.

Potato growers in Mau Narok and Nyandarua had earlier "discovered" two other varieties; one known as *Mugaruro* and *Thima Thuti* (the one that

enables you to buy a suit). The origin of this varieties is not very well known, some farmers claim it originated from Mau Narok while others claim it was brought from Uganda or Tanzania. Like a bush fire, the new potato varieties have spread to all potato growing areas.

The National Value Chain Development Committee chairman George Bett, a member of the National Potato Task Force which was formed two years ago to look into problems facing the potato industry, has already raised the matter with the Ministry of Agriculture. In a letter addressed to the Agricultural Secretary Dr Wilson Song a, Bett says unscreened potatoes from neighbouring countries are being brought into the country and turned into seed by farmers, which raises the danger of introducing more diseases that could pose a serious threat to potato production in the country. Farmers like the new varieties Farmers give various reasons why they prefer the new varieties in place of certified seed. "I have tried Tigoni and Tana Kimande potato varieties but they take longer to mature. For Tigoni variety, it has to be delivered to the market immediately because it starts greening within a short period, says Njoroge Ng'ang'a. "This complicates its marketability because farmers have to have a ready market for it. For Mugaruro the other common variety in this region, the farmers say it is also productive but not as good as *sangi* and *thima thuti*, he adds. The potato farmer further explains that the main problem with *mugaruro* is that it produces many stolons (underground stems) during dry period but with tiny potato tubers that buyers do not like. As for *thima thuti* many say it was previously high yielding but now, with too much recycling of the seed, its yield has been declining due to the spread of bacterial wilt and viral diseases, which has forced many of them to abandon it and go for new varieties such as *sangi*.



Sangi potato tubers

(Photo TOF)

The Organic Farmer is an independent magazine for the Kenyan farming community. It promotes organic farming and supports discussions on all aspects of sustainable development.

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Potato seed crisis now worsening

The government's capacity to produce potato seed is overstretched.

Corrupt individuals have stole land meant for seed multiplication.

The Organic Farmer

Many farmers are quite happy with the new potato varieties. However in the eyes of experts, this happiness may be short lived. According to the director of the National Potato Station KARI, Tigoni Dr. John Kabira, the spread of diseases is to blame for declining production of all potato varieties. Very few farmers practise crop rotation, which is responsible for the increase in diseases and potato yield in almost all potato growing areas of the country. This means that, whichever variety farmers may have at the moment, it cannot remain disease-free for long due to recycling of diseased seed.

Three reasons for the disaster

Land-grabbing: Even if farmers could afford to go for certified seeds every time they need to plant, the seed producers are overstretched. "The government had more than 12,000 acres of land for seed multiplication in various parts of the country of which only less than 500 are remaining", says Kabira. "Most of this land has been grabbed", he mourns.

Disruption of training of farmers: Three years ago, the government, with the support of Germany Technical Cooperation Agency (GTZ), started a programme to train agricultural extension officers who would then train



Lack of certified seed and exploitation by traders has reduced farmers earnings.

selected farmers on seed production. It was hoped that after the training, the extension officers would recruit more farmers to go into seed production. But this did not happen. A few months after the farmers were trained; the Ministry of Agriculture effected mass transfers

of extension officers across the country. The result was that more than 120 extension officers from potato growing areas who underwent training were moved to non-potato producing areas paralysing the whole programme. **Post-election violence:** The violent displacement of many thousands of potato farmers from the main growing areas in Rift valley province in January 2008 made the problem worse: Potato seeds were destroyed in stores while those that had not been harvested were abandoned in farms. Dr. Kabira says the shortage of potato seeds coupled with the displacement of farmers led to poor production early this year when the price shot up to Kshs. 6,000 a bag. Because of the favourable prices, some of the farmers who had seed potatoes decided to sell them as commercial potatoes to traders who came from as far away as Mombasa.

Efforts for revival.

The stakeholders in the potato sub-sector are now trying to revive the industry through the following measures:

- The Ministry of Agriculture will involve the private sector in the production of quality seed for sale to farmers.
- A quality assurance system would also be put in place to ensure contracted farmers produce quality seed.
- The immediate priority is to ensure that institutions such as KARI are equipped with adequate resources to produce quality basic seed from their stations in Tigoni, Molo, Njabini and KARI Ol Joro orok and Meru.
- The seed would then be given to companies and organised groups including individual farmers who will multiply it under the supervision of Kenya Plant Health Inspection Service (KEPHIS).
- KARI has taken most of the new varieties including *sangi* and is already

Continued on page 4

Why farmers need certified potato seed

Potatoes need very good management if farmers expect to get good yields and control diseases. But the main problem that is causing rapid spread of diseases is the tendency by farmers to ignore advice given to them on field sanitation and choice of the right planting material.

Only clean certified seed should be used as seed. If a farmer has bought certified seed, the same can be planted up to three times if there are no signs of bacterial wilt or any other disease in the soil. Farmers should know that apart from bacterial wilt, early and late blight, potatoes are prone to a host of six viral diseases. These are Potato Virus X (PVX), Potato Virus Y (PVY), Potato Virus A, Potato Virus S (PVS), Potato Virus M (PVM) and Potato Leaf Roll Virus (PLRV). PVY and PLRV are spread from one plant to the other by aphids. Although it is easy to identify bacterial wilt symptoms, most of the

viral diseases can only be identified by experts. This is one reason why farmers are always advised to use certified seeds, which are screened against all these diseases.

Peter Kinyae, a social economist from KARI, Tigoni says the main problem is that most farmers do not want to buy certified seeds. "We have had training programmes in places such as Meru where we showed them how to grow potatoes to control diseases, but after the training, the farmer's went back to their old practices of recycling seed some of which was diseased," he says. Whatever the experts say, the major problems facing the potato industry are poverty and ignorance among farmers which is made worse by corruption and poor planning on the part of the government.

Additional information: Miriam Mbiyu, Biotechnologist KARI, Tigoni.



A flowering sangi potato prop.

Food for people, fodder for livestock

Beetroot are not very common, but it is a healthy plant with many uses for humans and animals.

The Organic Farmer

Beetroot (*Beta Vulgaris*) is a highly nutritious vegetable grown for its roots that are good for people and even animal fodder. It is a good source of calcium, iron potassium and vitamin A and C. Beetroot can be stored for long if kept in a cool dry place. The common varieties cultivated are the garden beet, used as a vegetable, sugar beet which is a major source of sugar and the mangold which is used as fodder for livestock or the Swiss chard which is grown for its edible leaves.

In Kenya the most common types grown for the market are the Detroit, a small-sized sweet, round shaped root that is dark-red in colour, the Crimsom Globe and the flat Egyptian types. Mangold is also available for farmers who want to grow it as fodder.

Climatic requirements

Beetroot is a cool season crop although it may also be grown in warm climate. It prefers light freeable, rich soils with a pH of 6 to 6.8. It is slow to germinate, hence soaking the seed in water for 24 hours before planting helps to speed up germination.

Land preparation

The soil should be made fine and the seeds planted in rows. The row spacing should be 25-30 cm apart.

Planting

Seeds are planted at a depth of 1.5-2.0 cm. The seed-bed should be made

firm and kept moist. Avoid planting in the soil which has been freshly manured. Germination takes about 1 to 2 weeks. The seedlings should be thinned out as soon as they can be handled; planting them about 5-10 cm apart in the rows. Stagger the crop by planting a row

every month so that the crop is spread throughout the year. Planting during the rainy season exposes the seedlings to diseases.

Fertilizer application

Rock phosphate or any other organic fertilizer can be applied along the rows before planting but farmers should avoid using farm yard manure on beetroot.



Beetroot vegetable and tuber of the mangold variety (Photo TOF)

Weeding: Keep the field weed-free and well watered. Mulching can help to preserve soil moisture during the dry period. Beetroot is ready for harvest in 9 to 10 weeks. Yields range between 2.5 to 4.5 tonnes per acre. When harvesting, the plant should be lifted carefully to stop damage to the tap root or the beet. Twist off the leaves to stop them from bleeding.

"It saves my animal during the dry season"

Samuel Mungara, a farmer in Pas-senga village in Rurii location of Ol Kalou District, discovered the advantage of beetroot two years ago when he ventured into dairy farming. His father used to grow beetroot for the family's dairy cows in the 1970s, but it was abandoned because they had plenty of fodder from oat grass and other natural pastures on their farm. However, pasture on the farm has become scarce because of prolonged dry conditions that have affected most parts of the country. Two years ago, Mungara decided to try beetroot which most farmers in the region had neglected. He put a quarter of an acre under beetroot production for his 4 head of cattle. Today, he is full of praise for beetroot for saving his animals. He has increased the area under beetroot cultivation to half an acre. "Beetroot is wonderful fodder as well as a vegetable crop. Unlike most of the other crops it is not affected by frost that is common during the dry season. It retains a lot of water which is very important during the dry season when animals need water most. My animals maintained the same level of milk production during the last two dry seasons thanks to beetroot," he says.

Mungara uproots some of the tubers

every January while leaving the rest on the farm for use as vegetables. The beetroot tubers are then stored and fed to the milking herd every morning and evening when the animals are milking. Each cow is fed about 4 kg of beetroot fodder daily which is combined with feed concentrates.

Long-term feed

"One big advantage of beetroot is that they can be stored for up to 4 months without rotting or losing essential nutrients which is very important during the dry spell when there is limited fodder on the farm," Samuel Mungara adds. Beetroot is drought resistant; come the dry season and it becomes the only vegetable that survives the dry spell, when other vegetables such as cabbages or sukumawiki wither and dry up. This is one reason why many farmers are now turning to beetroot growing, having realised its advantages over other vegetables.

The farmers in Ol Kalou are not the only ones who have changed to beetroot. In many parts of the country such as Nyandarua, Western Kenya and the Rift valley farmers are now growing beetroots for use as a vegetable and animal fodder. Beetroot seeds, especially the mangold variety, are now available in many agro-veterinary shops due to increased demand.

cleaning them of viruses to ensure farmers have clean seed from all the potato varieties.

There before, the government has had very good blueprints to improve various sectors but they have not been implemented. Whether these measures will work remains to be seen.

Meanwhile to speed up the production of potato seed, the United States Department of Agriculture (USDA) together with USAID is funding the establishment of an aeroponics potato breeding system. The potatoes do not come into contact with the soil, contaminated air or water. This prevents fungal and bacterial infections. Under this system, one tuber can produce up to 50 potato seeds, compared to the conventional system where one tuber produces 10 seeds.



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The liver fluke causes serious damage

In most regions in Kenya, liver flukes are dangerous parasites, often ignored by farmers.

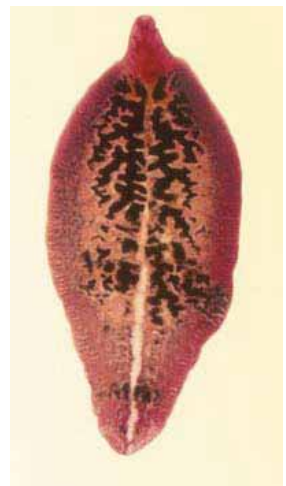
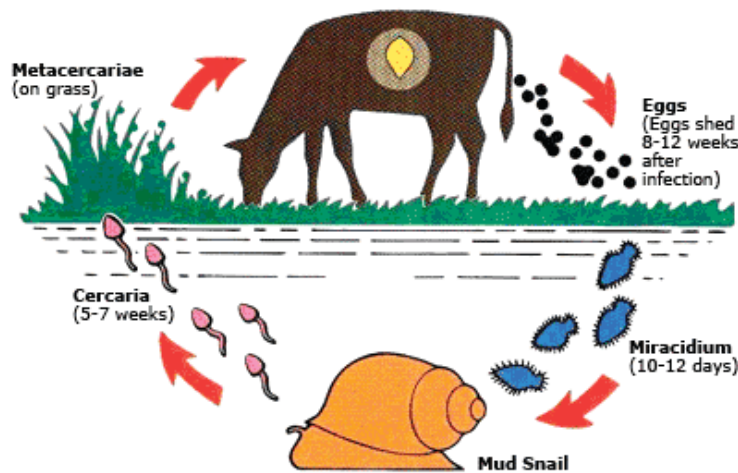
The Organic Farmer

Liver flukes are strange parasites. The life-cycle of these microscopic creatures starts on a blade of grass and ends up in the liver of your cattle as large parasites known as flatworms. The flukes, can lay an astonishing 20,000 to 50,000 eggs a day, over a long period of time! The common liver flukes, *Fasciola hepatica*, have a bizarre life-cycle: The cattle ingest grass with an encysted stage of the fluke. After the cattle eat this contaminated grass, the microscopic juvenile flukes burrow through the lining of the intestine, escape into the abdomen and migrate into the liver. In the liver, they feed on blood, and over the next 6 weeks or even more, they find their way to the interior of the liver lodging themselves into the bile ducts from where they begin to lay their eggs. The fluke's eggs are thereafter shed through the manure of the cattle. These eggs then hatch and make their way to fresh water snails, which they infect and undergo further development. They at last emerge from the snail as young flukes and form a resistant coating on blades of grass. When cattle ingest them, the life cycle is completed.

Flatworms cause serious damage

Liver flukes mainly infect cattle and sheep but can nevertheless develop in many other animals including horses, pigs, goats and rabbits. Humans can also be infected with liver fluke when they eat watercress collected from contaminated streams, or use contaminated water on fruit and vegetable gardens.

The flukes' feeding behaviour causes serious damage to the liver and anaemia due to blood loss. This liver damage and anaemia lead to diarrhoea, loss of body weight and reduced milk production. Liver flukes are also



The lifecycle of liver flukes, left; the photo on the right shows the liver fluke

dangerous for they can indirectly cause the deadly Red water sickness. Red water is caused by a bacterium called *Clostridium hemolyticum*, which colonizes the liver of susceptible cattle and produces protein toxins. They destroy the body's red blood cells, damage other organ systems and rapidly cause death. The migrating liver flukes damage local areas in the liver, causing low oxygen tension. These are good conditions for the Red water bacteria; they grow rapidly in these damaged areas. The vast majority of affected cattle are usually found lead and bloated.

Another problem liver flukes seem to be associated with is decreased fertility. Studies published in USA have shown decreased pregnancy rates in replacement heifers and increased age to puberty in heifers infected with liver flukes.

Remove liver flukes: There are drugs that extract flukes from animals, but farmers should choose a drug which kills both immature and adult flukes. Liver flukes may develop resistance. It is important that you follow the prescriptions of the label (see article below).

Reducing the number of snails: Snails prefer low-lying, wet, marshy areas. Draining these areas reduces snail habitats and snail numbers.

Area management: Fluke-prone areas are low-lying, swampy areas and areas of slow flowing water. You can identify fluke-prone paddocks with the help of your local animal health advisor. Fence off these areas. One major problem however is that the grass is too short, the cattle eat too deep down, as sheep normally do, reaching the lower blades where the flukes are normally anchored.

Garlic and pumpkins ...

The following recipe works against stomach and intestinal worms as well as against liver flukes. But it has to be carried out over a long period of time.

Garlic: Chop 250gm of garlic and pound them fine. Mix it with 4 litres of water and drench a half litre twice a day. This treats both worms and live flukes.

Pumpkin: chop whole pumpkins, inclusive of their seeds, into small pieces then boil it until all water evaporates. Add a pinch of salt to encourage intake and feed adult cows with 1 kg. Goats and sheep should be fed on half a kilo.

... and fodder trees

Fascioliasis, caused by liver fluke parasites, is a major threat to livestock kept by resource poor farmers, since the disease effects are magnified by

poor nutrition of the livestock. Scientists in UK and Nepal have found that diets with different protein and nitrogen contents have different effects on an animal's ability to withstand and to recover from infection with Fascioliasis.

They recommended that farmers should aim at feeding a diet containing up to 14% protein. Additional feeding of high quality protein feeds such as from tree leaves or from cheaply purchased urea/molasses feed blocks is one possible way to boost the protein level. Harvesting tree fodder has obvious cost advantages to a farmer, as it is often free to collect, as long as it does not promote environmental degradation through trees being cut down or killed. The best fodder trees are Leucaena, Sesbania, Calliandra and Grevillea.

Series on parasites



With this article on liver flukes we close our series on parasites and how to protect livestock against them.

- TOF Nr 48 May 09: Parasites in livestock small but dangerous (treatment of lice, flea and mange)
- TOF Nr 49 June 09: Ticks pose a great danger to livestock
- TOF Nr 50 July 09: Internal parasites: Deworming improves animal health
- TOF Nr 51 August 09: Internal parasites: The liver fluke causes serious damage.

Here are the *i-TOF* centres

As you read this copy of *The Organic Farmer*, the four information and organic input centres (*i-TOFs*) which we had promised you in the past two months have been opened and are now operational. Farmers living near these centres can now be able to access information and also buy organic inputs that are environmentally safe and which will help reduce reliance on chemicals. The use of chemical products has been found to have damaging effect on soils, beneficial organisms and even human and animal health. Since this project is on a trial basis, we are working together with two agricultural institutions and with two active farmers' groups:

- *i-TOF* Baraka: Based in the Baraka Agricultural College, Molo, respectively in their outreach centres in Mau Summit, Kamara and Nyakinyua.
- *i-TOF* Western: MajengolBuyangu, in co-operation with the Sustainable Organic Farming Development Initiative (SOF-DI) in Buyangu, Ebungwe, and Mukumu;

- *i-TOF* Central: Gatuto/Kagio, Kirinyaga district, in cooperation with the Amuka Farmers Self Help Group Gatuto;

- *i-TOF* Eastern: Kangundo, in cooperation with the Kangundo Dairy Farmers CBO, Kangundo.

i-TOFs for farmers

With the opening of the four centres, *The Organic Farmer* is moving closer to the farmers. The reason for this is that farmers have often made called us requesting to know if we can be able to visit them and offer training courses on organic farming. They have also made numerous enquiries to us asking to show them where they can buy organic inputs. For farmers' groups, eager to get more knowledge in their profession, it is easy: They can call the *i-TOF* extension workers in their respective region (the cell phone numbers given below) and book them for a one day training on specific agricultural areas. The extension workers are trained agronomists, equipped with a full information package.

The following conditions apply to all groups that will undergo the *i-TOF* training programmes:

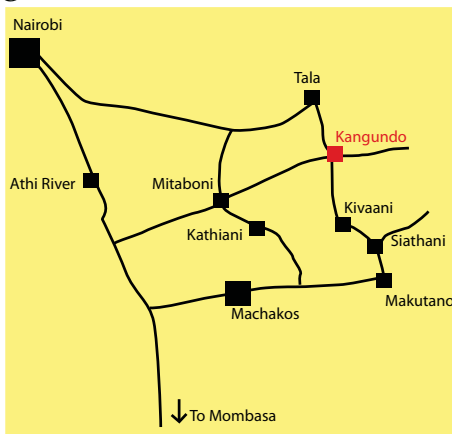
- The training will be conducted free of charge to all farmers groups.
- The farmers have to identify a training venue and organise a demonstration plot where the training will take place.
- Training will be offered to farmers groups with at least 15 members and above.
- Each training session will take 4 to 5 hours, farmers must observe punctuality.

Close monitoring

The *i-TOFs* are offering around 25 training modules in all areas of a sustainable agriculture to improve farming practices for increased yield and income. We shall monitor them closely. If we find that the farmers are gaining benefits from the information package including training by our extension officers, then the project will be extended to other farming areas of the country in order to benefit more farmers.

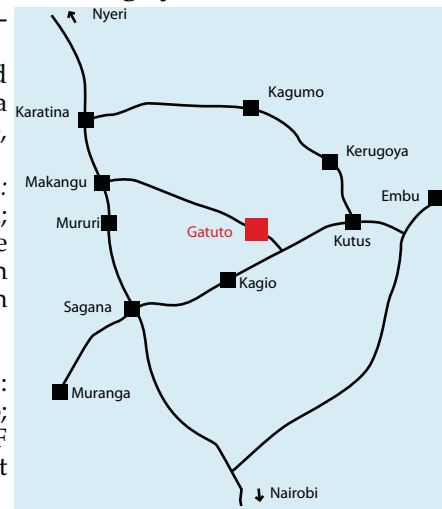
i-TOF centre, Kangundo, Eastern

Host: CBO Kangundo Dairy Farmers (KDF), running a milk bar
Location: KDF-milk bar in Kangundo Town
i-TOF information: Within the premises of KDF, equipped with the whole information package, run by the *TOF*-extension worker
Contact: 0724 331 405
i-TOF organic inputs Shop: Situated within the premises of KDF in Kangundo town.



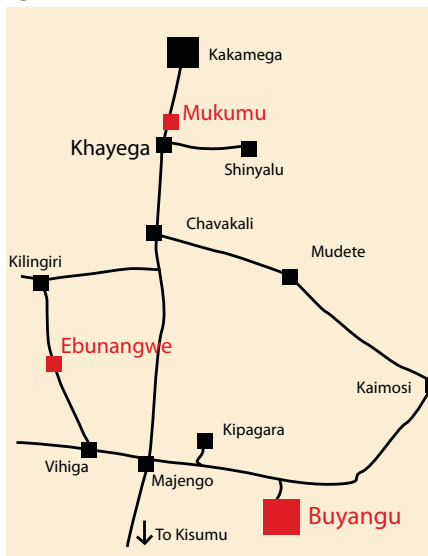
i-TOF centre Gatuto, Kerugoya

Host: Amuka Farmers Self-Help Group, Gatuto
Location: Meeting and education hall of Amuka Farmers Self Help Group, Gatuto
i-TOF information: Within this meeting hall; equipped with the whole information package, run by the *TOF*-extension worker
Contact: 0724331 375
i-TOF organic inputs Shop: An agrovet shop in Kagio; to be named in the *TOF* August-issue and by direct mail to farmers' groups.



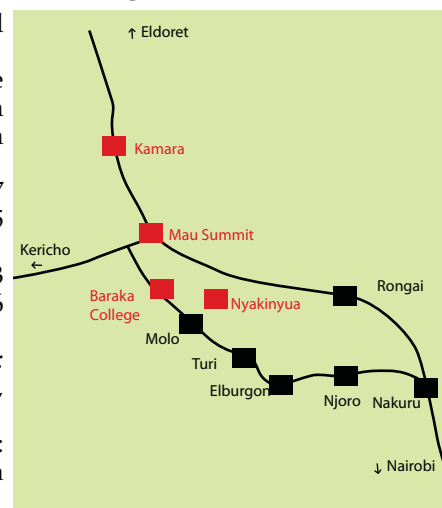
i-TOF centre, Buyangu, Western

Host: Main office of the Sustainable Organic Farming Development Initiative (SOF-DI), Buyangu
Location: (SOF-DI) Buyangu, in the compound of the Catholic parish
i-TOF info centre: Within the premises of SOF-DI, equipped with the whole information package, run by the *TOF*-extension worker
Contact: 0724 331 456
i-TOF organic inputs Shop: Situated within the premises of SOF-DI main office in Buyangu



i-TOF centre, Baraka College, Molo

Host: Baraka Agricultural College, Molo
i-TOF info centres: In the three Baraka outreach centres each staffed with an extension worker
Contact Kamara: 0725 507 038, 0720 041 556, 0725 665 781
Contact Mau Summit: 0723 778 688, 0725 854 197, 0726 714 708
Contact Nyakinyua/ Sirikwa: 0721107 981, 0723 792 099, 0724 704 586.
i-TOF organic input shop: Located within Baraka Agricultural college.



Chaffer grubs not such a threat

I am a small-scale farmer in Bikeke Trans-Nzoia. My crop is badly affected by chaffer grubs. Please advice. Samuel Adema 0733 471 229

Chaffer grubs are creamy-coloured pests, about 1.5 em (0.6 inch) in length. They are normally found in the root systems of most plants and can be mistaken for other pests. Chaffer beetles lay their eggs on the grounds which hatch into chaffer grubs within two weeks. The chaffer grubs feed on plant roots. They later on dig themselves into the soil, only to appear as beetles again. It is very difficult to kill chaffer grubs with pesticides. But they can be controlled naturally by nematodes (*heterohelminthitis lilegidis*). The nematodes look for chaffer grubs and attack them by entering natural body openings. Once inside, they release a bacteria that stops them from feeding, thereby killing them. They then reproduce inside the dead pest and release more nematodes



which likewise go for the chatter grubs. Most farmers do not take any measures to control chaffer grubs because this natural control method seems to work perfectly. You will notice that the chaffer grubs do not stay for long on the affected area and will often disappear after a short period, causing less damage to crops, so it is wise to ignore them for the time being. TOF

Comfrey is a wonderful plant but....

I want to know more about comfrey and its uses? Njogu, Karatina

Comfrey is a fantastic plant. It has been in use since the 6th century mainly in wound healing, swellings, gout, ulcers and even gangrenes. Comfrey roots have been used to treat lung breeding, diarrhoea, dysentery, coughs, bronchitis, varicose veins, bum sores, sprains and many other conditions. In some parts of Kenya it is used in the making traditional dishes such as 'irio' (Kikuyu traditional dish). It is said to be a great blood purifier and is also used to control rheumatic pain and arthritis. The plant is also used in teas, cooked as a vegetable, added to other foods and even as a compress on wounds. As a compress, the root is usually grated (about one cup full) and then tied over a wound and held in place for a few days at a time. It is used in the same way over closed wounds and bone fractures where it is believed to speed up the bone knitting process. In medieval times comfrey was called 'bone knit'.



have discovered that the plant has compounds such as pyrrolizidine and alkaloids which are known to cause cancer and even liver damage. In view of these findings, comfrey should not be eaten but it should only be applied externally. Application of comfrey on broken skin should also be avoided. The US Food and Drug Administration (FDA) has banned the use of comfrey in USA. All comfrey root containing compounds are also banned in Canada. On the other hand comfrey is quite safe when used as a growth activator in crop production. Internal use of comfrey is therefore dangerous.

Su Kahumbu/TOF

Some legumes are dangerous for cattle

Which plants cause frothy bloat? 0722 989 681

Bloat is defined as a severe enlargement of the abdomen due to an over-accumulation of gasses trapped within the animal's stomach (see TOF Nr. 50, July 2009). Bloat can be classified as either frothy bloat, or the less frequent free-gas bloat. Consumption of legume forages in large quantities is

one of the primary causes of frothy bloat; however, not all legumes cause frothybloat.

Bloat-causing legumes include Lucerne, sweet clover, red clover, ladino clover, white clover, and alsike clover. A preventive strategy against bloat is feeding a course hay prior to grazing bloat-prone legumes, and avoiding continuous grazing. TOF

...answers in brief

How can I buy this product?

Please advise me on where I can buy TwinN in Nyeri, Karatina or Nanyuki, Simon Tel. 0720 824 888.

You can contact Lachlan Kenya Ltd. On Tel. 020 207 3912/3/4 or Te1.0721 409 201. They can advise you on a dealer near you from where you can buy their products.

The value of tree tomato

I want to know more about tree tomatoes.

Tree tomato is a highly valuable commercial crop that has a ready market all year round, for farmers who like to diversify. We will send you copy of TOF Nr. 33 where we give farmers all they need to know about the fruit crop and even how to grow it. We hope this information will be useful to you.



Using water from a cow shed

Can I use water collected after washing my cow shed and use it for top-dressing my crops? Tel.0735 644 969 Yes you can, when you are not using chemicals while cleaning the cow shed. Cows have very good manure for crop production but the farmer has to make sure that once collected the manure is not exposed to the sun and rain because these lead to loss of nutrients.

Artificially bred birds vulnerable

Birds raised in a brood are of great loss to farmers because they easily fall prey to thieves and prey birds. Tel. 0720 063 460

This may be true in some cases because chicks raised by a mother bird learn a lot of survival tricks from her. This



training by the mother is very useful to them when they grow up. Chicks reared in artificial brooders are slow in responding to danger. Such birds need protection from harm including predators.

tips and bits

from farmers for farmers

Proper handling and storage keeps eggs fresh

Farmers invest heavily in poultry but incur losses when they do not take care of eggs.

The Organic Farmer

An egg is an extremely fragile and a perishable product. It should therefore be handled with care after laying to ensure it does not get spoilt or broken. Most people buying eggs from the shops will admit that this commodity is either broken or rotten. The problem has to do with handling and storage while in the farm. Great losses can occur if eggs are not handled properly. To minimise loss, poultry farmers need to be cautious to ensure eggs reach the market while still fresh. Proper handling and storage protects eggs from harmful micro organisms such as bacteria, natural predators, loss of moisture, tainting and temperatures that cause deterioration and possible crushing during storage and even transport. Eggs, like other living organisms, need to breathe. The packaging crates should be kept in a room where there is free air circulation to provide oxygen. All the storage crates should be kept odourless and as clean as possible so as to prevent possible contamination and tainting. Eggs should also be protected from extreme temperatures and humidity.

Keep in a cool place

In the tropics, eggs can deteriorate very fast because of the high temperatures. Unless stored at low temperatures, the farmer may lose a large number of eggs before they reach the market. They



Eggs are perishable. They get spoilt easily if poorly stored.

(Photo TOF)

should ensure the eggs are stored in a cool place that is not too dry because they may lose moisture very fast if kept in a dry place. The storage condition will depend on the number of days the farmer wishes to store the eggs. Experienced farmers have been able to store eggs for up to 6 or 7 months using refrigeration. Small-scale farmers on the other hand may need to store eggs for a shorter period until they get the desired number for incubation (never store eggs meant for incubation in a fridge).

Egg storage for incubation

Almost all local farmers use natural incubation method where the mother hen or a surrogate hen (hen that is given eggs from other birds such as guinea fowl to sit on) is used to incubate the eggs until they hatch. Indigenous hens are very good when used for brooding.

However, for maximum hatchability, the farmer has to ensure that the hen is given only eggs with a higher probability for hatching.

One method farmers can use to determine the right eggs for incubation is the candling method. This is a selection method whereby the egg from a brood is held against bright light and observed to see the inside of the egg. Hold the egg vertically between the index finger and your thumb, then shine a bright light, preferably from a LED torch from the opposite direction. If the process is carried out correctly, the farmer can see the veins, including the developing chick, and decide if the egg should be discarded or retained for brooding purposes. This form of examination ensures that only fertile eggs with a high chance of hatching are selected for brooding.

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