

More drought resistant crops

Due to the unpredictable weather patterns, Kenyan farmers should grow more drought resistant crops.

By The Organic Farmer

It is sad to hear that Kenya is again faced with food shortage due to the delayed onset of the long rains in March and April this year. This is a worrying trend considering that the country has a huge potential for food production.

Whenever the rains fail, Kenyans are often faced with a desperate situation forcing the government to appeal for food aid from donor and relief agencies to save lives. This is a situation which can be reversed if only farmers and the majority of Kenyans can accept to diversify the food crops we grow and eat.

A variety of crops

For decades we have come to rely on maize as our staple food, yet this crop needs plenty of rainfall and a longer

Dear Farmers

We have a problem: Many letters are being returned to us because of wrong addresses. Please send us your correct address: Note: We have a new e-mail-address:
info@organickenya.com

length of time to mature for consumption and sale. It is unwise for Kenyan farmers to continue relying on a few crops, that are expensive to produce and more so in a country that faces grave food insecurity.

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Sorghum-the alternative? (Photo TOF)

Previously Kenyans relied on a variety of food crops that were crucial to the country's food security situation. These included cereal crops such as sorghum, millet and cassava roots and tubers such as sweet and Irish potatoes, beans and peas (see: Sorghum, page 8). The last few decades however have seen a decrease in the production of these crops as more and more farmers switched to the production of maize, wheat and rice.

Indigenous crops

Although the above traditional crops can do well even in low potential areas, many farmers in this areas still plant maize often with disastrous results. It is cheaper for farmers to grow indigenous crops which do not require a lot of inputs, care and are less susceptible to diseases. Farmers require much more education on the benefits of growing such food crops.

But one thing we should not forget: Hunger is first of all the root cause of poverty. There is enough food on the market, either locally produced or imported. But tens of thousands of families in Kenya do not have the money to buy it. This is the real scandal in Kenya.

Let's learn

from each other

Last week we got a call from Charles Maina, a small-scale farmer in Karatina. He found The Organic Farmer by chance. After reading and

By The Organic Farmer

discussing the articles with his fellow farmers in the neighbourhood, they decided to form a group, so that they can get our newspaper regularly.

This is exactly what we support. First, we can reach more farmers in Kenya; sending The Organic Farmer to a group is also cheaper. Second, and this is even more important, Charles Maina and his colleagues have discovered a very important message: Farmers have to join, have to build up groups. They should work together and support each other in their day-to-day life. They have to learn from each other and to unlock local skills, they have to share their knowledge and their experiences. And they have to help each other in rising the awareness for new techniques, for instance in organic farming. This grassroot-approach will not only build up the individual and collective confidence but also enhance the self-confidence of the farmers. It's them who are feeding the country, and they are the backbone of Kenya's economy.

Acting as a group will strengthen the position of farmers. As a group they have much more pressure for realizing their common goals. There are so many possibilities for change to a better livelihood. But we have to do it, we have to push. And we have to trust in our own capabilities, and to commit ourselves to change in a free and fair way. We can not wait for somebody who is doing the work for us; nice but empty words have never changed anything.

Of course, this takes time, patience and the mutual respect even for people with other opinions. All of us will sometimes have to jump over our own shadow. This farmer-to-farmer approach needs a change of our attitude and of our behaviour. But we should never forget a very true and very old word: Unity makes strong.

MY OPINION

"Poverty is a major cause of food insecurity and sustainable progress in poverty eradication is critical to improve access to food. This should happen within the framework of sustainable management of natural resources, elimination of unsustainable patterns of consumption and production, particularly in industrialized countries, and early stabilization of the world population. We acknowledge the fundamental contribution to food security by women, particularly in rural areas of developing countries, and the need to ensure equality between men and women.

1996: Declaration of the heads of state on World Food Security

The Organic Farmer

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Soil Fertility with Liquid Manure

You have tried chemical, compost, mulch and others, now try liquid manure for exemplary performance.

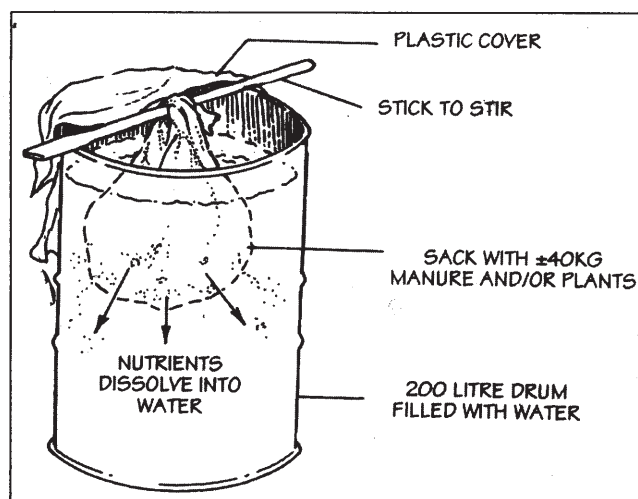
By Eric Lumosi Asiligwa

Strength of soil is determined by the amount of nutrients it has. Well maintained soil will observe fertility. If soil is overused, it loses capability to feed plants. Therefore, it is important to think in terms of liquid manure and plant teas or slurries. Liquid manures are helpful to overcome temporary nutrient shortages, they supply nutrients very fast. In organic farming they are mainly used to stimulate growth during the growing season, especially when roots have been damaged and nutrients uptake through the roots is hindered.

Liquid manure and plant teas are ready for use after two to three weeks, as compared to eight weeks or more for compost. Liquid manure is made from farmyard manure (i.e. cow-dung, chicken & goat droppings e.t.c.) The process is simple to understand: Nutrient rich material is soaked in water for at least 15 days to undergo fermentation. Frequent stirring encourages microbial activity. The contents mixed could produce a very strong smell, as excess nitrogen turns to ammonia. It is therefore best to keep a cover on the drum, also to prevent evaporation.

How to make liquid manure ...

1. Put the manure in a strong sack (50 kg of manure for one drum of 200



- litres). Fill it in such a way that you can tie the top of the bag securely.
2. Suspend the bag containing manure in a drum full of clean water. The bag should be tied securely with a rope and suspended on a strong pole placed across the top of the drum.
3. Leave the manure stand for 15 days. Cover the drum to prevent excessive evaporation.
4. After three days and every other day thereafter, stir the drum by lifting the bag several times using the pole.
5. After 15 days the water will have turned blackish and most of the plant food in the manure will have been washed into the water. Remove the bag.
6. The mixture is a concentrate and therefore needs to be diluted to the ratio of 1:2 (to 1 part of liquid manure add 2 parts of clean water). As a rough guide the diluted liquid should be a weak tea colour.
7. Water with this liquid manure for two or three weeks. Spray the crop at the stem and not at the leaves. Water around the roots near the stem. It is effective as top dressing after planting the crop using compost.

... and plant tea

The preparation of plant teas is similar to liquid manures. Comfrey leaves are best, but you can also use the leaves of *Tithonia*, a bushy plant with nice yellow flowers (Maua Msandogo).

1. When preparing plant teas, branches and green sappy leaves are chopped up and placed in a drum full of clean water. It is not necessary to put the leaves in a bag.
2. Leave it covered during 15 days. After three days and every other day thereafter, stir the drum.

3. After 15 days remove the leaves, dilute the content of the drum to the ratio of 1.2 (to 1 part of plant tea add 2 parts of clean water). Water with this diluted plant tea for two/three weeks. Spray the crops at the stem, not at the leaves. Water around the roots near the stem. Water with this plant tea for two or three weeks

Invisible poison in maize-cob

Maize contaminated with aflatoxin is dangerous. It slows down the growth of children, causes liver cancer and makes people vulnerable to infectious diseases.

By Felix Mbitu Murimi

Some weeks ago thousands of school children in the slum areas of Nairobi waited in vain for their daily meal. The maize they used to get from the World Food Program was contaminated with aflatoxin. 40'000 tons have been withdrawn - Kenyans still remember, that between May and mid-June 2004 in Machakos and Makeni, more than 150 people died after eating food contaminated with aflatoxin.

The problem is well known. In sub-Saharan Africa maize grain is chronically infected with a mold fungus, *Aspergillus flavus*. The fungus produces aflatoxin which enters the body through the consumption of grain-based food. Aflatoxin contamination of maize, peanut and other food crops is considered to be a major cause of liver cancer in humans. It also disturbs the immune system and people become more susceptible to infectious diseases.

Invisible danger

Researchers from the International Institute of Tropical Agriculture (IITA) in the Benin (West Africa) identified the causes of diminished growth, leading to a slower

development of children in the region. "Some infants are exposed at an early age and this continues throughout life", says Dr. A. Hounsa of IITA. Besides, the study showed that growth is going on in slower steps, when the infants were weaned from mothers milk to solid food, especially when there are other hazards from a wide range of infections, that include malaria, bilharzia, diarrhoea and respiratory infections.

The problem with aflatoxin is that farmers cannot always see the fungus that produces it on the corn. Moreover, the toxin is colourless and it does not disappear after cooking or fermentation. As in West Africa, a large part of the population in East-Africa and especially Kenya might be chronically exposed to high dosages of aflatoxin, though the extent of the problem is not known yet. Consumers are not aware they are eating contaminated food. Even those who buy only from exclusive supermarkets are not spared, according to research findings by Dr George Siboe, Senior Lecturer at the Department of Botany, University of Nairobi. Dr Siboe has isolated aflatoxins, among other mycotoxins, from popular brands of maize flour currently in the Kenyan market.

In a comprehensive study, Dr. Siboe and his colleagues collected 174 samples of flour packed in 90 kg bags and 2kg packets in Nairobi from different selling points that included ordinary grocery stores, kiosks,



A good harvest – but aflatoxin in maize-cobs can affect the growth of children. (Photo BioVision/P.Liith)

supermarkets and open air- markets. The samples were tested for fungal infestation and were all found contaminated with molds that produce, among others, aflatoxin. 70 per cent of the 174 samples were found to be contaminated with aflatoxin, 55 percent of the samples contained similar poisonous substances produced by a fungus.

Start on the field

The role of insects in the contamination of maize by the mold and aflatoxin has long been recognized. The more beetles and weevils in the store, the higher is the threat of aflatoxin. In addition, the researchers in West Africa showed that the aflatoxin problem starts in the field. Pre-harvest grain damage by stem-borers (for example the spotted stalk-borer) makes grain more vulnerable to infections by molds, and this leads subsequently to a higher contamination with aflatoxin. Aflatoxin levels increase rapidly with grain damaged by stem-borers. That means: a reduction of field pest, such as the spotted stalk-borer, through biological control would also lead to a reduction of aflatoxin in stored grain.

Watch the maize cobs carefully

- Don't keep maize in the field after maturity. It will be attacked by birds; the openings allow access for storage beetles, which will carry fungal spores.
- Plant varieties with good husk cover (i.e., length of husk leaves above the tip of the ear more than the width of two fingers). Bad husk cover gives insects and fungal spores easy access to the cobs.
- When removing husk leaves at harvest, do not throw the naked cobs to the ground; they might get infected by the fungus, which comes from the soil.
- Only store properly dried cobs.
- Do not store maize cobs containing grain damaged by insects, birds or rodents, as they might already be infected by the fungus. Remove damaged grain immediately and feed them to the chicken and consume the remainder immediately.
- If you store with the husk leaves on, carefully check cobs for exit holes of stem-borers and the tip of the cob for insect damage. Do not store such cobs.
- Do not store maize with leaves/herbs; they are no protection against beetles and increase fungal infection.
- In general, do not consume any grain that has been damaged by insects (borers and beetles).
- Clean the store thoroughly before filling it.

These tips are given by ICIPE-scientist Dr. Fritz Schulthess



Michael Waweru (left) with members of Oloirien Organic Farmers Welfare Group.

(Photo: P. Kamau)

Group changing drought prone district

They have turned a desolate place in the dry plains of Kajiado district into a rich agricultural land.

By Peter Kamau, Kajiado

Water is scarce in much of Kajiado district, but this has not stopped Michael Waweru and his farmer group, The Oloirien Organic Farmers Welfare Group from going into organic farming. So when he heard friends discussing the benefits of organic farming 3 years ago, he decided it was the way to go.

“When I realized that it is possible to grow crops without the use of chemical fertilizers and pesticides, I decided we were going to try it”, he quips. Together with 5 members of his village welfare group, they invited extension staff from the Kenya Institute of Organic Farming (KIOF) who taught them organic farming. It was then that they formed the farmer group.

Revolving fund

Today the group, with 60 members has turned a desolate place, 70 kilometres from Nairobi, in the plains of Keekonyokie location of Kajiado district into a rich agricultural land, teeming with healthy organically grown maize, beans, potatoes, peas, onions, avocados, papaws, water melon and bananas. They have also set up a revolving fund to assist needy members in buying farm inputs, school fees or development.

The 58 year old Waweru, a father of five, is the group chairman. The group has a ¼ of an acre plot which they use for demonstration while each member owns an average of 3 acres where they grow their own crops. Although market for their organic produce is still a problem, the farmers sell their produce to selected grocery shops in Kiserian market.

“The most important thing for us is that we can now grow healthy food for our own consumption. We know what chemically produced food is doing to people’s health”, says Waweru.

Manure

Each of the group members keeps a few sheep, goats and chicken which provide the manure for use in the farm. The manure has helped improve the texture of the area’s clay soils and its productivity. “Before I could only harvest 5 bags of maize in one acre. After using manure on my farm, now I can harvest 10 or more bags. We have seen a big difference with organic farming”, says George Ndungu, a group member. Although labour intensive at the beginning, organic farming has assisted the members reduce the cost of inputs by use of farm manure to boost soil fertility including natural methods of pest control.

Water problem

Oloirien Village has a big problem of water, but the group members have learned to conserve the little moisture available through mulching methods to

grow crops. They have built small water pans near their farms or use house roofs to harvest the little rainwater available for irrigation and domestic use.

The American Embassy had promised them pipes for the water project, but none of the donors they have approached, can sink a borehole for the community. The demonstration farm provides the members with seedlings. It is here that new members learn new skills and exchange ideas on organic farming.

Market

To address the problem of market for their produce, Waweru says plans are already under way to open a shop at the Kiserian town where they will exclusively sell organic products.

“Through the shop we hope to educate the public on the benefits of eating organic food to remain healthy. In this way we will have solved the problem of market for our produce”, he says.

Expanding groups

Already the group is trying to reach out to more farmers in the area to increase membership with the aim of producing more organic food for sale locally and for export. Part of this arrangement is to purchase a 10 acre plot near Kiserian town, where they could grow food commercially for sale to exporters.

The group hopes this will help boost the income and living standards of its members.

Many ways for natural crop protection

Natural crop protection is good for human health and the environment. Farmers need a lot of knowledge on these protection methods..

By The Organic Farmer

When Isaac, Eric, Aggrey, Richard and other friends went up country to distribute *The Organic Farmer*, they were asked by so many farmers: "What do you use against this pest, or against that one?" We got similar questions by farmers in mails and Letters to the Editor. That's why we decided to carry in the coming issues some articles about natural crop protection. In this June-Issue we lay the ground for this articles. We begin with the principles of preventive crop protection.

A combination of methods

In agricultural systems where synthetic products are not used for crop protection, farmers use a series of direct and indirect measures to safeguard their crops from the ravages of enemies. Crop protection is a complex process which requires an understanding of the interaction between the environment, methods of farming and the predominant system of cultivation. Hence, crop protection cannot consist in only one specific measure, but requires a suitable combination of methods depending on crop, climate and region. These factors play an important role in the way a farmer decides to protect his crops. That means, farmers should have a strong knowledge on these aspects.

Ecological relationship

It is not the function of plant protection to ensure maximum production. This is an aim imposed by man. It is better to strive for an optimum ecological and economical relationship which leaves other life forms space and resources. But when pests threaten the safeguard of food and human existence, it is not easy to not regard them as enemies.

Many measures

First of all it is important to recognize that a natural crop protection measure as we will introduce to you in the coming issues of *The Organic Farmer* is to be understood as one measure amongst many. Generally, the short term effectiveness of natural measures is not as great as that of



Agriculture and environment should be ecologically associated. (Photo N. Wasem)

synthetic pesticides (chemicals). But in the long term run it is obvious that they have the following advantages:

- they diminish the risk of pests building up an resistance to treatment.
- they have a less destructive effect on the natural enemies of the pests,
- they diminish the risk of secondary outbreaks,
- they are less harmful to the health of either humans or farm animals,
- they cause no damage to the environment or to water supplies,
- they mean no dependency on a constant supply of agricultural chemical to the farmer, and
- they cost much less.

Let us now look at the essential principles of preventive crop protection measures through cultural practices.

Mixed farming

It is good for a farmer to have some knowledge of the way in which cultivated fields and the surrounding countryside are ecologically associated. Constant observation is very important to gain a vital awareness about the interactions. This is a valuable instrument for the proper decisions and measures most suited to local conditions.

Traditional agriculture systems present a landscape of great variety. In the fields many different crops grow simultaneously side by side, and wild flowers and plants add to the diversity. The greater availability of small habitats maintains a higher permanent population of the predators and parasites of pest. This is one principle of mixed farming: Pests can become confused or disoriented and thus are not able to detect or discover their food plant. Repellent effects also reduce the spread of pests.

For instance, maize and cowpeas planted together are subject to significantly less damage from the stalk borers. Or a mixture of maize and beans reduces infestation by the fall army worm. Potatoes planted in conjunction with onions, beans, Soya beans, tomatoes and maize were significantly less affected by the potato tuber moth.

But farmers should understand that the opposite effect can also take place. In some cases mixed cultivation increases infestation. That means, farmers have to observe carefully.

We have obtained these tips from a very informative book, "Natural crop Protection" by Gaby Stoll, published in 1987. In the next issue of The Organic Farmer we will write about the importance of crop rotation and the choice of plant varieties.

Letters to the editor

More information, please

Dear Sir's

Congratulations for launching the Organic Farmer newspaper. After working in an organic farm- Moof Africa in Nanyuki since 1999 I have developed an interest in this farming system. Right now I am the patron of Kaaga Organic Farmers Self Help Group and therefore I request you to provide with more information on this method of agriculture. My fellow farmers would also be grateful if you can assist us supplement what we already know in this field.

Phillip Mukiri Mwangi, Nanyuki

We are unable to carry all the information you may need. However you may order a book by the title "Field Notes on Organic Farming", edited by the Kenya Institute of Organic Farming (KIOF) whose address is: Kenya institute of organic farming, P.O Box 34972, Nairobi, Tel: 732487,580450; E-mail: kiof@elki.gn.apc.org

Useful

Dear Peter,
This is to confirm receipt of your second issue of The Organic Farmer Newsletter. Kindly retain us in your mailing list. The information is very useful to us and those we closely work with especially in the field. Thanks so much!
Karanagathi, Green Belt Movement

Dear Farmers

Do you have anything to offer? Are you looking for something? This column is your market place. Letters must be brief, do not forget your address! We also would like to remind you of our new e-mail-address: info@organickenya.com

Educative

Dear editors,
I wish to thank you for sending the newspaper on organic resource management. I has distributed the copies to farmers groups and a secondary school. The article by Su Kahumbu was very educative especially on pollution caused by agro-



Farmers in Limuru go through a copy of Organic Farmer (Photo F. Murimi)

chemicals. On behalf of the AGRO-CONSERVE YOUTH FORUM I wish to thank you for creating a forum for exchange of information in organic agriculture.

Mathew Kemboi Kwambai

Please in English

Dear Organic Farmer editors,
As for the language matter in the current issue I would like to advise that most farmers with difficulty in reading English have even more difficulties in reading Kiswahili, and they would be more comfortable dealing with English. The exception is the coastal region. So please continue publishing in English unless you are doing so for the coastal region. My advice is based on years of working with farmers and involvement in production of extension materials.

Thank you for the good idea of producing the Organic farmer.
Dr. Joseph Methu PhD, Nairobi

Some farmers from Embu called us. They were not very happy with English; they would prefer Kiswahili. What do you think? The discussion is still open!

Bacterial wilt

Dear sirs,
The Organic farmer last month was well received by farmers, especially the practical tips in the control of potato bacterial wilt disease. However, the farmers are wondering if the same methods can be used to control the disease in other crops in the same family. We hope that in the coming issues you will deal much more in that area. I must thank you and urge you

to keep up the good work in alleviating poverty.

Jotham W. Namasambu

We know the seriousness of the problem, Namasambu. We will consult experts and give you the right answers in one of the coming issues.

Encouraging

Thanks you very much for sending me your newspaper. Organic farming has been of great help to us. I know many farmers will be encouraged to practise organic farming after reading the paper.

Godfrey Gichuhi, Karatina

Very "glossy"!

Dear Sir's,

Thank you for sending me the Organic Farmer, I have received both issues. I thought the article very well done regarding compost in this issue, but would comment that compost should be ready in three weeks not months in Kenya if made and turned well. I use it within that time made in Limuru and I do use EM. I do not know if you have seen 'Acres' the 'voice for sustainable agriculture' in America? it is published exactly like a newspaper and no colour pictures, it is an inspiring paper and if you published that way you might be able to find funding for a paper with a lot more useful content. Yours is very 'glossy' and we are not a 'glossy' section of society!

Well done! Susan Brown, Nairobi

Farmers are now producing potato seed

Because of landgrabbing the Government can no longer meet the country's potato seed demand.

By Peter Kamau

An acute shortage of potato seed has forced research and multiplication centres to allow the production of seed by selected farmers for sale to growers.

Private individuals have grabbed large portions of research land that was previously used by the Kenya Agricultural Research Institute (KARI) to multiply seed for farmers. The farmer-based multiplication of seed has been started by the National Potato Research Centre (NPRC) in Tigon, Limuru to increase both the seed quantity and quality available to farmers countrywide.

"We realised many farmers were planting normal potato due to lack of quality seed which has led to an increase in potato diseases. We want them to renew their seed every time they plant to ensure the diseases are controlled" says John Karinga, a potato expert at the centre.

Due to lack of land, Karinga says the government's seed multiplication program can only cater for 1 percent of the country's seed requirements. As a result, the majority of farmers in the country do not have access to quality seed. "By allowing them to produce

seed, we help them to increase clean seed and facilitate its access by a larger and more diversified group of farmers across the country", he adds.

Renew the seed

The centre closely monitors farmers to ensure that production standards are maintained. Most growers in the country have been using recycled potatoes as seed and when the productivity of a variety decreases, they buy the seed from a different region or exchange it with neighbours. Apart from spreading diseases, such seed will often reduce the overall yield.

"Farmers should renew their seed every season in order to reduce the incidence of diseases and improve harvest" says Karinga.

There are many varieties

The following are some of the seed varieties being produced by farmers:

Tigoni: The Tigoni seed variety was released in 1998 and does best in areas with an altitude of 1800 to 2600 metres. It matures in three to four months. The variety is good in making chips, boiling and mashing. It is tolerant to most of the potato diseases such as late blight and does not rot fast during storage. It is mainly grown in Kiambu, Nakuru, Uasin Gishu and Narok areas but still does well in most potato growing areas.

Asante, Furaha: It has all the qualities of the Tigoni variety but it is mainly used for domestic consumption as it is not good for industrial processing. It can also tolerate most potato diseases. The variety does best in Meru, Mt. Elgon, Nyeri, Mbooni, Ndeiya, Machakos, Laikipia and Taita Taveta districts. It still does well in most of the potato growing areas.

Dutch Robjn: This is one of the old varieties. It was released in 1960 and it does well in areas with an altitude of 1600 to 2600 metres. It takes 4 to 5 months to mature. It can be stored longer and is suitable for industrial processing such as in the making of potato crisps. It does best in Mt. Elgon and Bomet areas.

Kerr's Pink: The variety does well in areas with an altitude of 1400 to 2700 metres. It is tolerant to drought and is mainly suitable for domestic consumption. It is grown in Meru, Nyeri and Nyandarua.

Desiree: This is a variety that grows in high altitude areas. It is suitable for industrial processing and can be stored for a longer period.

Seed Producers

The most commonly grown varieties, mainly preferred because of their tolerance to diseases are the Tigoni and the Asante varieties. Farmers interested in acquiring clean seed should get in touch with the following producers:

Central Province

Vincent Mbugua P.O. Box 29
Miharati Tel.0734-605876
Patrick Ndungu P.O. Box 204
Limuru Tel.0722-748745
John Kimaru P.O. Box 159
Nyandarua Tel.0720-926227

Eastern province

Beatrice Mburugu P.O. Box 120
Timau Tel.0721-673914
David N M'Nguthari P.O. Box 3176
Meru Tel.0720-376478

South Rift Valley

Ann Mbugua P.O. Box 466 Molo
Tel.0722-691245
Ezekiel Saoli P.O. Box 592 Narok
Tel 0735-493306
Samuel Ketyenya P.O. Box 104
Keringet Tel.0722-898805

North Rift Valley

Mr Powon c/o KARI P.O.Box 450
Kitale Tel.0733 893140

Mr. Komen c/o Kenya Plant Health
Inspectorate Service Kitale.

NEWS - CORNER

Victory for Third World

The European Patent Office, based in Munich, Germany, has upheld a decision revoking a patent on a fungicidal product derived from the seeds of the Neem tree marking a milestone in the struggle against theft of biological resources of indigenous peoples. According to a press release jointly issued by the petitioners seeking repudiation of the patent claimed by the US and the company Thermal Trilog, the historic decision resulted from a legal challenge started ten years ago. The plaintiffs contended that the fungicidal properties of the Neem tree had been public knowledge in India for centuries, a fact that undercuts the patent holder's arguments of inventiveness and novelty. Such a patent, they said, merely manifested the crafty skewing of international law by powerful corporations and

opportunistic scientists from the US and EU to steal biological resources from poor countries and peoples. It was the first successful biopiracy-case - the theft of biological material - since indigenous peoples across poor parts of the world started to wake up to the clandestine transfer, appropriation and commercialisation of their biological knowledge.

DDT a threat for exports

Uganda will lose some major export markets if the Government goes ahead with plans to spray the chemical DDT, an official of the Uganda Exports Promotion Board has said. Europe and the US will not accept products with pollutants. Because of its danger to human beings and the environment the use of DDT is forbidden in Europe and in the US.

Sorghum needs little rain, is nutritious

It is not only drought resistant, sorghum is also nutritious and can grow in most of Kenya's climatic zones and soils.

By Abisae Amugune, Arorr

Sorghum is Africa's oldest food crop. It is often referred to as the continent's food for the poor. However many Kenyan farmers do not grow it. Yet this crop holds the answer to the country's food security. It is not only drought resistant and adaptable to most of Kenya's climatic zones and soils; it is also full of energy giving nutrients and has many uses unlike common cereal crops such as maize and wheat.

The high concentration of potassium and starch in sorghum, a less acidifying effect and the fact that it is easily absorbed and well tolerated is a reason, why it is given to sick people such as diabetics, adults and children alike. Bakers use it to add flavour and colour to bread and other



Sorghum has to be stored in a dry place.

(Photo BioVision/P.Lüthi)

confectionaries such as pancakes and doughnuts. Traditionally sorghum is used to make ugali or fermented to make porridge. Yeast is sometimes added to make sorghum beer. It can be processed into a variety of whole grain products similar to those used traditionally or just chewed as a mouth freshener.

Organic method

In Kenya it is grown in low and medium altitude areas with a minimum of 600 mm of rainfall but it can still grow in

areas with as little as 250 mm of rainfall. Most Kenyan farmers use organic methods in the production of sorghum since it does not use a lot of chemical fertility in the soil. The farmers use manure prepared from animal by products.

Research has shown that local varieties of sorghum are less prone to bird damage compared to hybrid ones. To get a good yield, farmers should buy seed varieties suitable to their ecological zones.

Useful tips for planting and harvesting sorghum

Land preparation: All seed varieties require a fine seedbed for better seed establishment. If a tractor or oxen plough is used, it is advisable to harrow. The field should be prepared after harvesting.

Planting: Dry planting is highly recommended. Plant before or at the onset of the rains in the furrows made by the tractor or oxen plough, hill plant in the holes made by jembe or panga. Seed should be applied at 3 to 4kg per acre. When dry planting the depth should be 5 cm but in moist soils it should be 2.5 cm to 4 cm.

Spacing: Row spacing is 75 cm and between plants at 20 cm. Row spacing of 60 cm and between plants at 20 cm is recommended when using wheat planter. In semi arid areas the oxen yoke is fixed at 90 cm especially in Machakos, Makueni, Kitui and Mwingi districts.

Intercropping: Sorghum can be intercropping with grain legumes such as beans, cowpeas, and pigeon peas. Alternate single row of legume between 2 sorghum at 90 cm and legume row at the centre. For double rows of legume, spacing will be 150 cm by 20 cm – that is two rows of legume between rows of sorghum. For semi arid lowlands and coastal

areas, intercrop at single row of legume between 2 sorghum rows.

Manure application: Most soils in sorghum growing areas are low in soil nutrients including nitrogen and phosphorus, which are important for adequate crop growth. To alleviate this deficiency a wide range of manures and fertilizers are used. Manure improves the organic matter content of the soil, soil moisture retention ability and structure. Manure can be broadcast in the field and mixed with soil during ploughing. It can also be spread along the planting furrows and mixed with soil before seeds are placed.

Weeding: The parasitic striga weed attaches itself to the roots of sorghum depriving it of nutrients and reducing the yields sometimes by up to 50 per cent. The weed can be controlled by crop rotation with legumes and cotton.

Thinning: Sorghum seedlings can be thinned to one plant per hill 3 weeks after emergence in semi-arid warm areas or 4 weeks in cooler areas when the new plant has 2 to 3 leaves. It should be done when the soil is moist to reduce moisture loss.

Harvesting: Harvesting should be done when the grain is hard and does not produce milk when crushed. Cut

the heads with sickles or a sharp knife when the plant is still standing or on the ground.

Drying and storage: The harvest can be sun dried in the same way maize is dried. It can be dried in panicles (sorghum heads) or threshed into grain. It should be dusted with super actellic at 50 g per 90 kg bag to kill pests before storage. Clean the store before storing the grain. After every 2 or 3 months the grain should be removed from the store and dried for 2 or 3 days to protect it from mould.

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What does it mean to be an organic farmer?