

Implement agriculture policy

Kenyan farmers are hard working people. But they face a lot of problems, for instance the access to credit.

By The Organic Farmer

Will the Kenya government ever implement any of its well-prepared policy documents on agriculture? Where are the priorities of this government? Despite many policy initiatives launched in recent years to improve the country's food security, small-scale farmers continue to operate in a difficult environment. Yet they produce nearly 80 percent of Kenya's food requirements.

Of course, we can see some improvements in the dairy-industry. Now the farmers are getting good prices for their milk. And this has slightly improved their income. But look at the sugar and pyrethrum farmers: They are yet to be paid months after they delivered their produce to the factories. When they are not paid on time, it means that other economic activities are also affected.

Lack of access to credit

We are sure, that a lot of small scale farmers could do much better if they had access to affordable credit. This would enable them to purchase important agricultural inputs to improve crop yields. It is a pity that there is no more any government supported credit-system, that can cater for this category of farmers; remember the benefits farmers in



Small scale farmers urgently need inputs to improve yields. (Photo TOF)

the whole country gained from the Guaranteed Minimum Return (GMR) of the 1970s. However we cannot turn back the wheel. Following the collapse of many cooperative societies, there is a need to rethink the way forward.

Nowadays there are many institutions ready to offer credit facilities to small scale farmers (read the story on page 3). But most of the institutions only give loans to farmer groups. And here lies the problem; farmers in Kenya prefer to work individually.

The farmers should change the way they have been operating. They should lobby for their interests. They should come together and look for solutions. One way in which they can do this to set up their own credit systems such as revolving funds or set up their own Savings and Credit Cooperatives (SACCOs). We will give you more on these in our next issue of *The Organic Farmer*. As we have told you before, farmers have to help themselves. It is time that they determine their destiny.

The menace of hunger

In a recent tour in the Western Region of the country, I couldn't believe my eyes the abject of poverty that could be read direct

By The Organic Farmer

from the faces of the people in this crowd I was attending. They were so thin and emaciated, and their dry skin forming lines in the bright sun. This big crowd formed the majority of the members present in the meeting. They looked at their (minority) pot bellied leaders at the podium with a lot of expectation, only to be given promises that could not help their immediate problem: hunger.

Hunger has remained the greatest menace to the lives of many Kenyans. Poverty in Kenya is growing. Slow or negative economic growth in the last 15 years has meant that there are few new jobs to engage the growing population. People have lost vocabulary of balanced diet: it is anything that can fill their tummies.

The Government's free primary education increased enrolment in the schools, but still poverty forces children out of school. This in itself does not help them either for it condemns them to remaining poor and poor. Some of the youths who are forced out of the school due to hunger, engage in the jungle survival skills, where they will hunt other people and steal their property to survive.

The situation is made worse such that, while some people do not value a shilling; some people value it so much. Commodities in shops have been subdivided into very small quantities.

All the same, farmers should be encouraged to use proper farming methods. This can help a bit to alleviate this problem. No one will come from the blues and do it for you. "Kila mtu na mzigo wake" as per now.



Maintaining the Earth's fertility

Organic farming: What does it take? [Page 2](#)

Benefits of crop rotation

Crop rotation is also a natural way to fight pests [Page 6](#)

Concerned farmers

Soil acidity in North Rift is too high. [Page 8](#)

MY OPINION

By Z.M. Kinyua


Among other considerations, profitable farming demands efficient prevention of crop yield losses. Since accurate and timely identification of a problem is important for its management, farmers should be proactive in seeking and utilising information from relevant sources, for instance from local agricultural extension officers and experienced farmers near them. More challenging problems may need specialized investigations and advice. Among other reference points, the National Agricultural Research Laboratories (NARL) of the Kenya Agricultural Research Institute (KARI) offers crop protection advisory services.

Dr. Z. M. Kinyua is a plant pathologist based at KARI-NARL Nairobi

The Organic Farmer

The Organic Farmer is an independent newspaper for the Kenyan farming community. It promotes organic farming and supports discussions on all aspects of sustainable development. *The Organic Farmer* is published monthly and distributed free to farmers.

The reports of *The Organic Farmer* do not necessarily reflect the views of ICIPE.

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

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Maintaining the Earth's fertility

What is organic farming? Enrich yourself with facts about organics and apply it on your shamba.

By Eric Lumosi Asiligwa

Many are in bewilderment trying to figure out what is this monster invading our long time farming, Organic Farming? In the recent years farmers have embraced the modern kind of farming where much effort is put into application of expensive chemical fertilizers, sprays, vaccines and medicines. The soils are normally compacted on by heavy machinery making it impossible for almost any form of life (micro-organisms) to live in it. The increased uptake of fertilizers and pesticides in order to keep the yields high, boosts the production of yields while compromising the water-soluble chemical fertilizers which may be harmful to the soils which will loose its fertility gradually, therefore becoming very expensive to maintain and sustain the fertility. This is due to the financial dilemma the farmer will find himself.

Owing to inherent weakness of the artificially fed plants, new pests and diseases are occurring all the time, while beneficial soil organisms may be killed. That is the reason why the Organic Farming tries to answer to some of these problems. "Feed the soil" is the organic farmer's maxim. Give the soil a good supply of organic material and good soil structure will gradually develop.

Natural balance

Organic Farming emphasizes on the development of the soil fertility using a blend of new and traditional farming systems. This enhances the building of fertility and not destroying it. Fertile soil needs, plants, animals, water, air and warmth. Human beings have had the task of cultivating and maintaining the Earth's fertility. This is the biggest objective of the organic farmer where good agricultural traditions are kept. On an organic farm, because of the more natural balance, crops, animals and human beings get fewer diseases without the use of dangerous and expensive inputs.

The word "organic" means "of plant or animal origin" i.e.

organisms. Organic agriculture therefore deals with organic manures and other natural inputs (minerals or pesticides of plant origin locally). Organic agriculture is a holistic way of farming; besides production of goods of high quality, an important aim is the conservation of the natural resources fertile soil, clean water, and rich biodiversity.

In circumstances where natural conditions are maintained, nature provides abundant production of healthy crops and animals. Converting a farm from "chemical" to organic is not just a question of exchanging one method of farming to another or from one spray for another which might look less harmful. The major aim is to create a healthy balanced environment in which plants can grow and thrive, without any artificial synthetic inputs.

Not all insects are pests

Choosing organic may also require the farmer to change his/her attitude. It is essential for the farmer to imagine that every insect is a pest, or every plant growing in the farm is a weed and therefore every solution to a problem needs spray. Insects have not been created to bring destruction to the plant world or to make life troublesome for the farmer. On the contrary, their function is to destroy the unfit. If your soil provides the right balance of nutrients, your crops will be healthy and resistant to pest control.

In natural landscapes like forests and savannah nature maintains a plant cover everywhere all through the year. The animal populations in such landscapes do not destroy vegetation but only graze it. The soil remains covered, no soil is ever exposed, humus is created, no erosion takes place, no artificial fertilizer is applied and yet there is plenty of healthy vegetation. This is termed as balanced environment.

To farm and feed ourselves we have to destroy organic natural vegetation. But in organic farming, soil is kept fertile. To keep soil fertile we have to learn what the soil needs.

In situations where the farmer has chosen to change to organic farming, many of the complaints and problems experienced in farming are solved. Choose it, dear farmer, and you will not have regrets.

Tough loan conditions for small farmers

Farmers need to be careful before taking a loan from any lending institution to avoid repayment problems .

By Patrick Mwangi

When he secured a Sh20, 000 loan to rear chicken five years ago, David Githigi dreamt of becoming one of the most successful poultry farmers in Nyeri district. He was a member of the Kiawaithanji Muguna Self Help Group who had been convinced by officials of Faulu Kenya to register with the organization to qualify for loans.

"The conditions of the loan were very tough as I had to pay Sh700 weekly. I could not make that kind of money," Githigi said at his home in Kiawaithanji village in Tetu division. He explained that to qualify for a loan, members of the group had to guarantee one another. Further, one was required to open an account with Faulu.

Things worsened when some members failed to service their loans, which meant the organization had to recover its money from other members' savings. "Although I struggled hard to repay the Sh20, 000 loan, I lost a similar amount in servicing the defaulter's loans," said Githigi.

Group collapsed

Faulu had given him three weeks to start repaying, which he feels was a short period because farming does not make returns as quickly as a business would. Githigi also thinks the 22 per cent interest on loans was too high especially for a small-scale farmer like him. The group has since collapsed and each of the 24 former members have abandoned farming.

An official of Faulu Kenya says it would never give farmers conditions they cannot fulfil. But Faulu refused to comment Githigi's complaints about the high interest rate and payback-rhythm.

Many lending institutions

Faulu is one of the some dozens micro finance institutions, like Equity, K-Rep, Sisdo, Pride, Kadet, Jitegemee, Bungoma Family Development Programme and others. The government owned Agricultural Finance Corporation, which was not operational for a long



time, started lending farmers in 2003. But it cannot cater for farmers with less than 5 acres of land. From the big banks only Co-operative Bank is giving loans to small-scale farmers. Savings and Credit Cooperatives (SACCOs) play an important role in provision of credit to small scale farmers. The Catholic Church also has a credit scheme for members including farmers who would like to take soft loans (We will feature these credit schemes in the next issue)

Important questions...

But the farmer has to ask himself the following questions before he takes loan?

- Do I really need to take a loan?
- Will the loan improve my farm?
- Will the loan improve my income?
- Will I be able to pay back the loan?
- Are there farmer groups I can work with to guarantee the loan?

Some farmers take loans without any plan on what they want to do and end with repayment problems. Others take the loan and do not use it for the intended purpose.

...and reliable guarantors

If the farmer is sure of what he intends to do then he can go for the credit. He will need fellow farmers to guarantee him. What every farmer should know is that the lending institutions will do everything to ensure their money is recovered. From the interest the bank will make some profit and recover some of the costs it incurs in lending.

All lending institutions give tough conditions for their loans to farmers; those seeking loans must therefore be ready to fulfil the conditions. All

the Micro finance institutions give almost similar conditions:

- The farmer must have regular source of income on daily basis and with records to prove if he is a farmer,
- He has to be in business that has been in operation for at least six months,
- He has to be guaranteed by other trustful group members,
- The group has to be registered with the ministry of Culture, Gender and Social Services.
- The borrower has to give initial contributions for sometime before one qualifies to get the loan,
- The borrower has to become a member in these organizations.

To understand these conditions farmers are made undergo training which also teach them financial and business management skills. The group members have to guarantee the borrower. The interest ranges between 10 and 22 percent and the time for repayment depends on the amount borrowed. To borrow a loan can be helpful for many farmers, but it is a heavy burden. They therefore need to think about carefully before making a decision.

Growing flower exports

Kenya's flower exports have doubled in the last three years. More than 88,000 tonnes of cut flowers were sold in 2004, a 45 per cent increase over 2003. But the export value rose by only 13 per cent. Kenya is the largest exporter of cut flowers to the European Union. 65 per cent of the business goes to Holland.

Newspaper helps solve farmers problems

After reading The Organic Farmer, some farmers in Karatina have taken action; they have formed a group.

By Peter Kamau, Karatina

On a market day last month, Joseph Kiragu from Ihwagi village in the outskirts of Karatina town had gone to town to buy fertilizer. He found people distributing the The Organic Farmer newspaper. He picked it and tucked it in his side pocket thinking it was just one of the brochures that are often distributed by sales promotion people from local companies.

“On reading it while at home I discovered it had answers to some of the questions that had bothered me for a long time. So I got a piece of paper and decided to ask about some of the crop diseases that are destroying my cabbage crop here”, he says.

Farmer group

The 55-year old farmer did not keep the information to himself. He immediately visited his neighbour Joseph Wangai, also a fruit and vegetable grower and showed him the newspaper. Now they have formed the Gachatha Green Farm group and are busy lobbying other farmers to join them. They will now to solve their problems as a group.

“Our soils are poor because of using chemical fertilizers for many years. Now I have come together with other farmers and our aim is to buy the neem fertilizer to see if it can improve the soil” he says. Since it is cheaper, the group plans to buy the fertilizer from Nairobi and sell to other farmers in the area.

“For the 30 years we have practiced farming here, each of us has worked individually. But now we are discovering the advantages of working as a group.” He says if more farmers joined the group, they would share ideas and even grow a particular crop in sufficient volumes for sale to exporters or transport it to markets where prices were favourable.

Although he has been using farmyard manure on his crops, Kiragu says he has gained additional knowledge on how to make compost from the newspaper articles. He will also teach group members on how to use waste to



Joseph Kiragu at work on his farm in Karatina.

(Photo: P. Kamau)

make compost. “Previously we have used manure on the crops before it has decomposed completely. Now we know how it is done”, he says.

Extension officers

His 5-acre farm is an intercropping of cabbages, tomatoes, carrots, potatoes, beans and maize. Most farms here have adequate piped water for irrigation. Kiragu has five head of cattle under semi zero grazing. He sells their milk. Seven hybrid goats - also under zero grazing, provide milk for his family of five. But from his point of view all this is wasted effort because whatever amount of food he produces, market prices have been lower than the production costs.

“When the prices were good I could make up to sh100,000 from a 1 1/2 acre portion of cabbage crop, but this is no longer possible because of the poor prices offered by middlemen and the devastation by the cabbage disease,” he says. This year he has not planted any cabbage after disease destroyed his crop last year. He had tried to diversify by growing passion fruit two years ago, but the crop was attacked by fulsarian wilt, a bacterial disease forcing him to abandon the whole venture.



Joseph Kiragu

Despite being only five Kilometres from his farm in Karatina town, no personnel from the divisional agricultural extension office ever visit farmers to give technical advice. This is what prompted him to write to *The Organic Farmer* Newspaper in Nairobi after trying various chemicals to treat the cabbage disease with little success. “Although we raise our problems during field days, no extension officer has come to assist us with advice”, says Kiragu.

“We need buyers”

Karatina market is said to be the biggest in Sub-Saharan Africa, but farmers in Ihwagi village face the same marketing problems as their counterparts in other parts of the country. There is overproduction of fruits and vegetables. As a result the prices are low, making it difficult for many farmers to recover the money used for labour and other inputs.

Middlemen from as far as Mombasa, Nairobi, Nakuru, Kisumu and other towns buy fruits and vegetables from desperate farmers at throw away prices and make hefty profits, when they sell in those towns. Others approached the farmers to grow French beans for them and disappeared with the money, after the crop was delivered. Kiragu says farmers have lost hope, but adds that the situation would be different if there were food processing companies in rural areas to process agricultural produce and pay farmers promptly. This would have stabilized prices and offered them an incentive to grow more food.

Crop rotation helps increase soil nutrients

Fertile soil, less diseases, natural ways to fight pests: these are the results of crop rotation.

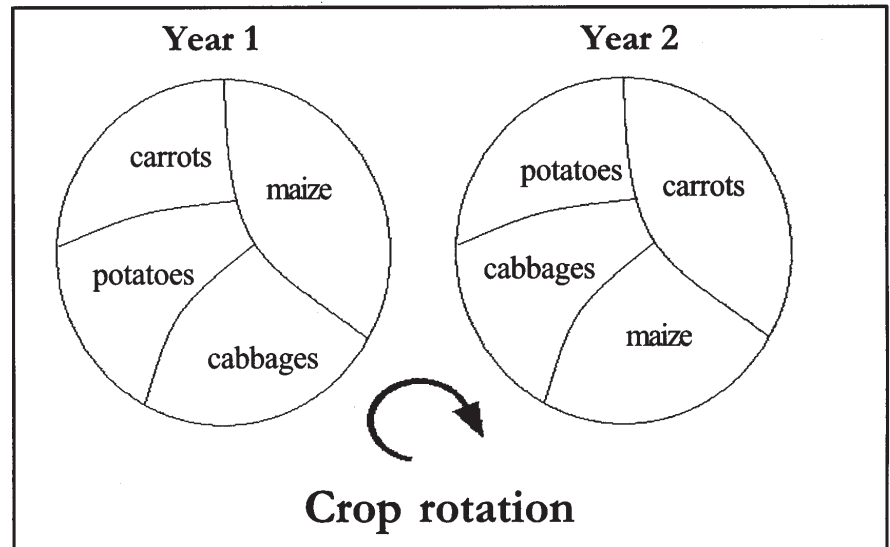
By Sandra Zumpano

In June, *The Organic Farmer* informed you about the natural ways of crop protection. There are two excellent methods to get the most out of your food crops: crop rotation and intercropping (see August edition). They allow the soil to recover and promote an increase of crop yield from the soil. These practices are not new. In Kenya they are even more important since most of the farmers do not have enough land to practice the fallow system. Rotating and intercropping help to maintain a plant friendly environment. In this edition we will inform you in detail about crop rotation.

Different use of nutrients

Crop rotation is defined as planting different crops over time on the same land. All of us know: growing the same crop repeatedly in the same place eventually depletes the soil. One way that farmers can avoid a decrease in soil fertility is to practice crop rotation. That means different crops are planted in a regular sequence (see box). Why? The principle is easy to understand: Each species of plant needs a different mix of nutrients. A crop that leaches the soil of one kind of nutrient is followed during the next growing season by a crop that returns that nutrient to the soil.

For example: legumes such as beans, peas, peanuts, soybeans or lentils have nodules on their roots



which contain nitrogen-fixing bacteria. It therefore makes good sense to alternate them with cereals (grasses such as maize, sorghum, wheat) and other plants that need nitrogen. A common modern crop rotation is alternating Soya beans and maize. If crop rotation is done properly, farmers can keep their fields under continuous production, without a need to let them lie fallow or to apply artificial fertilizers, both of which can be expensive for the farmers.

Protection against pests

Crop rotation is also used to control pests and diseases which establish themselves in the soil. Plants of the same families tend to have similar pests. By regularly changing the planting location, the pest cycles can be broken or limited because it removes the food for the pest. For example when cultivating potatoes: the life-cycle of the Bacterial Wilt

(see May edition) can only be interrupted by planting another crop on the same field the next season.

An example of a crop rotation pattern is: potatoes followed in the next planting season by beans and then followed by maize. This principle is of particular use in organic farming where pest control is achieved without synthetic pesticides, herbicides and fungicides.

We have obtained some of the information from two books: Gaby Stoll, Natural crop protection in the tropics, and: IFOAM Training Manual for Organic Agriculture in the Tropics.

If you have your own experiences please share your knowledge with your colleagues by writing to The Organic Farmer.



Planting the same crop over the years on the same land leads to poor harvest.

(Photo TOF)

Your questions, our answers

Our newspaper is receiving a lot of letters with questions on problems facing farmers across the country. We are lucky and thankful that Su Kahumbu, the committed and successful organic farmer from Limuru, will in future give answers to the readers of our newspaper. Please write your questions direct to *The Organic Farmer*, P. O. Box 14352, 00800 Nairobi. We will forward them to Su Kahumbu. And please notice our new Telephone number: 020 445 03 98.

In one of the next issues we will carry a story on the biological control of pests in the cabbage crop, based on research by ICIPE.

We request all farmers, who have written Letters to the editor, to be patient. We will publish them in the coming issues.
The Editors.

What helps against rotting cabbages?

Patrick Macharia, Nyeri, Joseph Gachie Kiragu, Karatina, John Karangu, Nanyuki and so many other farmers are asking, why their cabbage crop rots on the lower surface just before harvest. What can they do?

Cabbages can rot where the root meets the stem for various reasons:

1. Waterlogging: During the rainy season, high humidity in soils with poor drainage result in poor soil aeration. This can cause rotting of the plant area under the soil, followed by that above the soil. This can also be a problem of too much irrigation in soil with poor drainage.

2. Boron Deficiency: Slice the head off the cabbage where the stem meets the head. If there is a black circle running around the dissected stem, this is a sign of Boron deficiency. In cauliflowers which are of the same family, the heads will remain small and bitter, young leaves become distorted, and curds develop brown patches. Boron is a trace mineral needed in minute quantities by plants. Too much can be toxic to the plant. Borax bought from the chemist can be incorporated into the soil at 30grams raked into 15 square meters.

3. Black Rot

This is a fungal infection which shows as small specks on leaves which turn yellow and drop, internal root and stem tissues become black.

If all of the cabbages are effected, I would advise you to uproot your crop before you loose it entirely. Incorporate good organic matter with well decomposed nutritious

compost into the soil ensuring good drainage before your next planting. Your next crop should be from an entirely different plant family group. I would suggest beans if possible, so they may help the soil recover. If the problem is only on random plants, lift them and burn them before the problem spreads.



Diseased cabbage (Photo P. Kamau)

Bacterial wilt

Jotham W. Namasambu and some other farmers want to know, if the same method we mentioned in the last editions on the control of the bacterial wilt disease in potatoes can be used in other crops in the same family.

Yes, the same methods used to control disease can be adapted on all of the crops in the tomato family. These are Potatoes, Aubergines, Peppers, Chillies. This is like wise for all family groups, e.g. solutions to problems for the Brassica group would be the same. Brassicas include, Sukuma, Cabbage, Cauliflower, Broccoli, Brussel Sprouts, Khol Rabi, Kales.

Regardless of whether your problem is due to waterlogging, boron deficiency or Black Rot, the underlying problem is plant health. The plants immune response to pest and disease is compromised due to poor nutrition during its growth period. Prevention is cheaper than cure.

Prevention lies in **COMPOST**. We must strive to make the best composts possible thus providing our crops with excellent nutrition. A healthy plant will fend off pest and disease, and in turn pass those vital healthy nutrients to the consumer. Life begins in the soil. If we look after our soils we are looking after ourselves.

Marketplace

Potatoes: In the last two issues of *The Organic Farmer* we informed you about the lack of clean potato seeds due to the bacterial wilt disease in all parts of the country. The Gathathi Pioneers Farmers group in Githunguri, Kiambu, called us. They have potato seeds of Tigoni and Asante varieties for sale to farmers. Those interested should get in touch with the group through this address:

Samwel Gathuru Karonjo,
P. O. Box 146 Kiambu
Tel. 0721-341 655.

Market: Any organic grower wishing to be helped with markets, can contact
Su Kahumbu, Green Dreams Ltd,
Box 1403 Limuru, 0722 70 4488

Farmers check list



Su Kabumbu

Thank you, editors, for giving me the opportunity to share my experiences and knowledge with the readers of *The Organic Farmer*. As a dedicated organic farmer, I have been extremely frustrated and thirsty for material, advice, examples, information on all aspects of organic production. I have been lucky to stumble across some very inspiring like minded friends on my quest for all information organic.

I feel honored now to share all I know with *The Organic Farmer* readers, and hope, that my experiences and recommendations are useful in the field. For areas beyond my scope, I shall refer to my friends for advice. I hope with the help of *The Organic Farmer*, we can impart this useful information to other organic farmers and beyond.

It would help greatly if farmers would use for their questions this check list or at least some points of it. It will help to identify the problems.

Su Kabumbu

Farmers check list for diseases

- 1) Absolute area of disease, e.g. stem, root, leaf, fruit etc
- 2) Colour and smell if any of diseased area, e.g. yellow rotting smell, black ring, no smell
- 3) Soil humidity, drainage and texture, e.g. wet, good drainage, much organic matter
- 4) Plant nutrition, e.g. compost, rock phosphate
- 5) Compost compilation, e.g. green manure, weeds, Tithonia
- 6) Plant 2 crops on same land
- 7) Seed condition at time of

Early and Late Blight in tomatoes

Isaak Maina Munyari, Subukia, wanted to know more about Early and Late Blight. "What can I do against this problem?"

As the names imply, usually early blight affects tomatoes early in the life cycle and late blight later on. Tomatoes are one of the most difficult crops to grow organically. Blights being the biggest problem. This season we thought we had it right. We produced tomatoes this time in our small green house trying to keep the plants 'warm' as the night temperatures plummet in Limuru. Up to the fruiting stage we were winning, no problems, very healthy plants. We had managed to keep the white furry fungus on the stems at bay by spraying with milk. Yes milk! Diluted 1:10 with water it seemed to work.

Spectacular crop, but.....

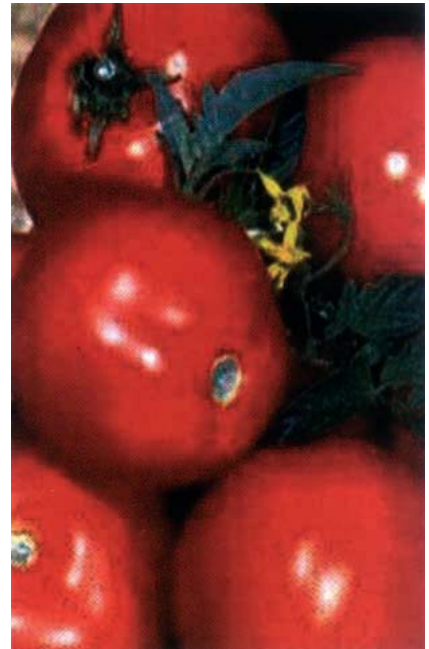
We were happy to have made it through the early blight stage. Feeding was done with a seaweed foliar feed and EM2, (Effective Microorganisms). Our crop was spectacular, big green tomatoes dripping off the healthiest tomato plants we have ever grown. Then the late blight struck. We noticed the first signs just 3 weeks before ripening! We tried everything, Thiovit, a sulphur spray, more milk,

thinning of already mature plants to stop the contact and increase aeration. Complete plant crop hygiene, the green house was abandoned and contact contamination was totally minimised. Finally we resorted to harvesting green tomatoes in the hope of them ripening ok, but alas, this did not happen. As they ripened they grew blighted areas. However, instead of losing the entire crop, I have cut off the good bits and blended them to a tomato paste that I have frozen for use in cooking later. So near yet so far!

Am I disappointed? Not really, in fact we are proud to have gotten this far. All four other times we have lost the entire crop!!

What will I do differently next time?

Next time I will try a Neem and garlic spray as has been suggested by a friend, I will spray this concoction



plus my others... (I firmly believe in the milk one, it's great.) ... weekly as a preventative before I can visually see the problem. To ensure some tomatoes on the table, I will continue to grow the smaller wild cherry tomatoes which seem to cope better outside. I'll also get my planting right and grow towards and during the hot season. I would love to hear from successful organic tomato growers. Is there a secret?

- planting, and germination
- 8) Any other abnormalities identified during crop growth? E.g. specific insects?
- 9) Temperature in area, e.g. hot days freezing nights, hot in green house etc.
- 10) Growing area e.g. open field, green house, under netting, shaded area

Farmers check list for pests

- 1) Name of insect if known, detailed description if not known e. g. size, colour, soft or hard body, number of legs etc.
- 2) Population density e.g. all over crop, in few patches
- 3) Crop effected
- 4) Specific area of damage and damage seen e.g. roots, leaves and stems.
- 5) Solution tried e.g. garlic spray, neem

Organic farming reduces soil acidity

After years of using chemical fertilizers, farmers are being advised to use organic methods to reduce soil acidity.

By David Macharia, Eldoret

After many years of using fertilizer in the maize and wheat growing areas of Uasin Gishu, Trans-Nzoia and West Pokot districts by farmers, the soil acid levels are too high. The farmers are being advised to adopt organic farming methods to rejuvenate the soils.

Agricultural experts say that organic farming is the cheapest method to bring down the acid levels in the soil. By using organic methods, farmers need not carry soil samples to researchers for analysis. Used over time, organic material gradually balances acid levels while maintaining the soil structure and fertility. Kenyan farmers are used to burning crop residues during land preparation. Many have used chemical fertilizers for more than 40 years to grow maize and wheat, as a result, crop yields in much of the region has reduced to a level that is causing concern in the agricultural sector.

"The problem is not confined to the North Rift region alone", says S. M. Kanyanjua, a soil scientist at the Kenya Agricultural Research Institute - National Agriculture Research Laboratories (KARI-NARL) Nairobi. "Other agricultural areas are also affected, but many farmers do not understand why crop yields in the affected areas are decreasing". Even if the government knows about the importance of agriculture, up to now it has done a comprehensive soil survey in all agricultural areas. Although any fertilizer containing Nitrogen acidifies the soil, it is important to note that other factors could also be responsible.

Adding lime

The alternative to reducing the acid levels is the addition of lime. The problem is, that most farmers in Kenya do not even know what lime is, or where to buy it. Due to low demand, many agro- veterinary shops do not stock it; farmers should enquire in major towns which shops sell lime. But it is even trickier because they may not be



Many farmers do not know the acidity level in their soils (Photo TOF)

able to use the right quantities. Too much lime destroys essential micro-nutrients that sustain plants. Agricultural extension personnel need to advice them on the right quantities to use. Alternatively they could use only very little lime and supplement this with organic manure to reduce the acid levels.

Tolerance to acidity

One of the critical variables that affect how nutrients can be made available to plants is the amount of acid in the soil. Too much acid causes available nutrients to dissolve quickly; too little may mean that minerals may not dissolve at all and thus not provide plant nutrients. Soil that has too much acid is called acidic soil; that which has too little acid is called alkaline soil. Basically acidity is the amount of lime (calcium) in the soil. The amount of acidity can be measured on a mathematical scale called pH. At one extreme is acid soil with a pH of 1. At the other extreme is alkaline soil with pH of 14. At pH 7 the soil is said to be neutral. Most healthy soils range between pH 5.5 and pH 7.5. The absorption of minerals can only take place within this neutral range of acidity or alkalinity; therefore the right pH number can be critical to the health of a particular crop. It is important to note that various minerals dissolve differently in more or less acid or alkaline soils. Reducing the pH of alkaline soils is difficulty but alkalinity is not a big problem in most of the agricultural areas in the country. Generally, soils in the moist climates tend to be acidic, while those in dry climatic zones are alkaline.

Farmers are advised to take soil samples of their farms to agricultural research institutions near them for laboratory analysis. This will help them identify causes of reduced crop yields in their farms. Why they should do this is because different crops have various degrees of tolerance to acidity.

For example crops such as chillies, sweet potatoes and Irish potatoes are tolerant to acidity and can do well in soils with pH values below 5.5. However horticultural crops such as onions, spinach, carrots, cabbages and cauliflower do not tolerate acidity and can only grow well in soils with pH levels above 6.0. Cabbages, maize and flowers grown for export are highly sensitive to acidity. Farmers growing such crops need to have their soils tested regularly to maintain their crop yields. But if a farmer has no access to any soil analysis facility or a shop where he can buy lime, the use of organic fertilizers such as compost will help to reduce the acidity.

The Organic Farmer in August



What are the benefits of intercropping?