

The Organic Farmer

The newspaper for sustainable agriculture in Kenya

Nr. 8 December 2005



Farmers lose a lot due to poor storage.

(Photo courtesy of ICIPE)

Benefits of proper maize storage

Early harvesting and good storage can reduce losses and increase earnings for farmers.

The Organic Farmer

In order to protect their harvest, many farmers in Kenya build well-sealed stores that cannot be broken into by thieves. But they forget other "thieves" already waiting in the stores. These include weevils, the larger grain borer or "Osama" and even moulds that contain deadly poisons such as aflatoxin. Many people died in parts of Kitui district last year after eating poorly stored maize that contained aflatoxins.

Can you imagine buying fertilizers, seeds and tending your maize crop all year round, only to have it destroyed by pests after harvest? Yet this is what happens to many farmers every year. According to the United Nations Food and Agriculture Organization

(FAO), farmers in Africa lose between 15 to 40 percent of their harvest to pests. This can be avoided if only they could take a few simple measures to stop the loss, called "post-harvest loss", during storage.

Many buyers, milling companies and the National Cereals and Produce Board often reject poor quality maize, forcing farmers to sell it at lower prices to middlemen. This is mainly due to poor harvesting and storage.

Early harvesting is the answer

Losses always begin in the field. It is a practice among many communities in Kenya to wait for the school holidays to start harvesting. Of course we understand that smallscale farmers are not able to pay for outside labour. This is the reason why they depend on their children for harvesting.

But this will already be too late. At the moment, many farmers have not yet harvested their maize, although it has been raining in most parts of the country in the past two months. Farmers are going to lose a considerable quantity of maize due to rotting and pests even before they harvest. Most of the maize varieties planted in March and early April should be ready for harvesting by October. If the already mature maize stays too long in the field, the husks tend to open. They are then not only exposed to pests, but also to water from the rains. The water in the cobs is responsible for the yellow colour and rotting. Hybrid varieties are especially vulnerable to pests and decay.

See page 3

Dear farmers,

This is the last issue of the The Organic Farmer this year. In the last 12 months, many of you have faced a number of challenges in your efforts to increase agricultural production, both for food self-sufficiency and for sale. Despite it being the festive season, many farmers are already engaged in harvesting maize and related food crops. That's why we have given additional tips on maize storage. It will be most unfortunate if farmers lose their precious crop after working so hard during the last 12 months.

Now the year is coming to an end. What does it mean to you? First of all it is helpful and always important that farmers take stock of failures and achievements. This gives you an opportunity to evaluate yourself so as to perform even better in the coming year to avoid the same mistakes. The decisions you make today will have consequences tomorrow.

After selling farm produce, farmers need to focus sharply on the tasks ahead. A lot of financial requirements will be waiting for you, such as land preparation, farm inputs and even paying school fees in the month of January. You may also have various debts that need to be settled. All these obligations mean that you have to plan properly in order to meet all these responsibilities.

Every year farmers who do not prepare their activities carefully are caught up in a vicious cycle of problems. Planning is an important step to avoid troubles later in the year. Careful choice of what to plant and where to plant is essential; not all plants like each other, as you can see on page 8. If a particular crop has not done well this year, the farmer has to find out the reason for the failure and make the necessary changes - of course not forgetting what the market demands.

We are looking forward to a fruitful and rewarding relationship with you in the coming year. We should not forget that agriculture is the backbone of this country's economy. Let us work together to increase production in a sustainable way that uplifts the living standards of our people. We wish all our readers and their families a happy holiday season and a prosperous New Year.

The Editors



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MY OPINION

By John Miriti

Whenever I introduce myself as a farmer to other people, the reaction I get is that of somebody who is way down the career ladder. This is despite the fact that we farmers play a very important role in Kenya's economy. We should be proud of our occupation and let other people know this fact. It is from the work of our hands that millions of our people get something to eat. Otherwise they would not survive. Farmers are hardworking and self-employed. It is so satisfying to work on the land. It is what makes me to be proud as a farmer.

John Miriti is farmer in Meru.

The Organic Farmer

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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 by ICIPE and distributed free to farmers. The reports of The Organic Farmer do not necessarily reflect the views of ICIPE.



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ICIPE assisting African farmers

ICIPE will strengthen the cooperation with African universities to promote agriculture in Africa.

The Organic farmer

Farmers in Kenya and the rest of Africa face a big problem with insect pests such as the larger grain borer, aflatoxin (a toxin produced by a fungus) in maize, thrips or even the diamond backmoth. If you mention these and many other pests, the name of one person always stands out - and that is Dr. Christian Borgemeister, the new director-general of the International Centre of Insect Physiology and Ecology (ICIPE). He is credited with having pioneered research on ways of controlling these devastating pests.

Born in 1959 in Germany, Dr Borgemeister is no stranger to Africa and its problems. He worked as a researcher at the the International Institute for Tropical Agriculture (IITA) in Benin, West Africa, between 1992 and 1997. After that he moved to the University of Hannover in Germany where he rose to become a professor at the prestigious Institute of Plant Protection at this university last year. But Africa would not lose its grip on him. "It is really a new challenge for me to lead ICIPE", says Borgemeister, who describes himself as practical in his approach to problems. "ICIPE is specialised in research into insects but our field of knowledge stretches further. While we try to solve problems of African agriculture we can help improve the living standards in the continent".

That is one of the reasons why ICIPE wants to strengthen the cooperation with African universities. "We want to establish good relationships", explains Borgemeister, "there exists a great potential because African Universities have developed very well since I left. This is especially so in Kenya in particular and in East Africa in general", he says

Capacity building is a magic word for the new ICIPE-director. He sees opportunities in that area for ICIPE. "It is an African Institute. We work in 24 African countries. The knowledge we gather in all those countries has to be used in a more intense way for the



Dr. Christian Borgemeister

good and the benefit of the people in Africa and especially for the African farmers."

That is why Dr. Borgemeister attributes a great value to the newspaper *The Organic Farmer*, published by ICIPE. "Scientists can share their knowledge with the farmers, and the farmers can see the commitment of the scientists when they are trying to solve the farmer's problems".

Fight against malaria

Dr. Borgemeister pleads for continuity of the work of ICIPE. The baseline research has to be activated more, as well as the advice to farmers. "We have to supply them with natural ways to fight pests in their crops."

But the task of ICIPE stretches further. It is also one of the leading organisations in the world in the fight against malaria. "We are not allowed ever to lose sight of the problems malaria brings along, and we always have to put human life at the centre of our focus." The manifest of ICIPE is of great importance to Dr. Borgemeister. It states: "ICIPE's mission is to help alleviate poverty, ensure food security and improve the overall health status of peoples of the tropics by developing and extending management tools and strategies for harmful and useful arthropods, while preserving the natural resource base through research and capacity building".

"Those are challenging goals", says Dr. Borgemeister, "especially when we look at all of them together. But the effort is worthwhile."

Farmers can easily reduce storage losses

With simple storage measures farmers can keep away pests and can avoid the destruction of their precious harvest.

By *The Organic Farmer*

Harvesting at the right time and using the appropriate storage methods can greatly reduce losses due to insect pests, rodents and development of mould. These are the biggest threats to farmers in their efforts to get a good harvest. As we wrote on page 1, farmers should ensure maize is harvested immediately it matures. What else can they do to save their maize?

Careful preparation

Sorting: The crop should be sorted to remove the cobs that have already been damaged by insects and mildew (mould). Studies have shown that sorting helps to reduce the amount of damage by up to 36 percent.

Drying: It is always good to dry maize before it is stored. Maize cobs should be left to dry in the sun for at least one or two days.

Shelling: Another step to protect maize is to shell it. Shelling is the best way to check pest damage. Pests prefer maize while it is still on the cob because it is easier for them to move around the cobs. If a farmer has to apply pesticides, it is more effective in shelled maize. After shelling, maize should be dried in the sun for 3 to 4 days. This should bring the moisture content to 13 percent, which is the best moisture level for long-term storage.

Storage: If you have to build a store, it should have adequate space for air circulation at the lower end and even more space in the upper part. Indeed the store should have at least 40 to 50 percent open space for the stored cereals to dry properly. The store platform should be raised up to 2 or 3 feet (or 1 metre) off the ground to allow for air circulation. (Do not forget that air circulation discourages pests which like a warm environment!) If you use a store, which is already built, thorough cleaning is recommended. This will ensure that all remains of the previous harvest, which could be infested by weevils, are removed and destroyed. Weevils reside in cracks in the wood in the store. They can survive there until the next harvest and therefore need to be removed before fresh grain is stored.

Fumigation: Farmers are advised to



This type of maize storage encourages pests.

(Photo courtesy of Helvitas)

fumigate the stores before storage (fumigation is the use of chemical fumes to kill pests). Fumigation tablets are available in agro-veterinary stores. .

Methods of pest control

Even with all these precautions, farmers have other methods to control pests. In some parts of the country farmers use cypress leaves and eucalyptus trees to help repel pests but their effect is not long lasting. Neem leaves are also used, and act longer. Wood ash is also very common as it prevents the movement of pests in maize. A new, useful and natural dust for pest control is Diatomite (see box). Unfortunately it is not well known by farmers. But since they cannot afford to lose their precious maize harvest,

they can apply the recommended chemical pesticides if the alternatives given above are not effective.

Every farmer should check the grain regularly while in the store to make sure pests do not re-invade it. Controlling rats and mice is also important. Rats eat large quantities of maize, especially during storage. They can be controlled by use of traps and rat poison. On raised stores, fixing of metal rat guards on the supporting poles can stop the rodents from gaining access to the store. The rat guards look like a collar fitted around the pole. Great care must be taken when using fumigants or rat poisons, however, so that children, pets and livestock do not become exposed to these chemical products.

A natural preservative for stored grain

Diatomite is one of the most widely used dusts in the control of pests in stored grains. It is a natural preservative dust that does not affect the quality of grain. Diatomite is a porous white rock made of fossilised, microscopic plants called diatoms, which existed in pre-historic times. The powder consists of millions of sharp edges, which resemble broken glass. When the edges come into contact with the insects, the outer coat is pierced, killing the insect. With diatomite, farmers do not need to use chemical pesticides, which leave residues in stored grains. It is not poisonous to animals and human beings, although farmers should take care not to inhale it.

In Australia and America, farmers have used diatomite in pest control for many years with good results. Although it is available in good

quantities in South Africa and Kenya, very few African farmers use it for pest control.

Application

Farmers can apply 3 kg of the dust to 1 tonne of maize, barley, wheat, oats, rice or sorghum directly into the stored grain and mix it with a shovel. The outer surface of the grain is covered with the dust with the compound at the time of storage to eradicate or stop any pests from damaging the grains.

In Kenya, Diatomite is mined at the African Diatomite Industries at Kariandusi in Gilgil and is sold under the brand name Kensil F. The cost is about Ksh 20/kg. Interested farmers can get in touch with the company at the address below:

African Diatomite Industries,
P.O. Box 32 Gilgil

Tel 050-4015209, 050-4015209. (TOF)

Farmers benefit from growth activator

The activator is helping farmers get better results and strengthen plants to withstand diseases and even pests.

By Peter Kamau, Kangema

If any one were to claim that organic inputs such as compost are slow in promoting plant growth compared to chemical fertilizers, 70-year old Rosemary Nyambura would laugh it off. The mother of six children is among hundreds of farmers in central province and the rest of the country who have discovered the use of Effective-Microorganisms (EM), a solution of beneficial bacteria that help to speed up the decomposition of organic matter while releasing essential nutrients for use by plants. The EM technology is changing fortunes for many farmers who are now using it for many purposes on the farm to increase production.

Compost decays faster

"Before my compost used to take 3 to 6 months to decompose, when I apply EM it takes only 1 month. My crops are healthier and the yield has increased considerably," says Nyambura.

Together with 28 other members of the Ngoeini-Kanyenyaini (Ngoka) Self-Help Group, Nyambura had been introduced to using organic mode of production back in 1999. Then, the group was growing Arabicum flowers organically with farmyard manure. She later abandoned flower growing due to the poor prices offered by middlemen. It was then that a businessman from Kiriaini market taught them how to use EM. She attended several training sessions until she became conversant with compost making and preparation of Fermented Plant Extracts (FPE) using the activator.

Yield has increased

From then, farming has never been the same again for Nyambura. Today



Rosemary Nyambura shows her healthy passion fruits.

(Photo TOF)

she is one of the most successful farmers in Kangema division of Muranga district. The crops in her 7-acre farm show what the activator can do to crops if it is properly used. Her 3-acre market garden is intercropped with healthy passion fruits, onions, turnips, courgettes, cabbages, sukumawiki, capsicums and improved pumpkins. A half-acre is reserved for maize while the upper section is a cattle shed with 6 dairy cows that provide farmyard manure while the remaining 4 acres are under tea.

She has seen a great improvement on the productivity of the various crops on the farm. "I used to harvest only 6 bags of maize, last year I got 10 bags on the same piece of land. My cabbages now weigh an average of 6 kg apiece. The most interesting thing with organic farming is that the yield keeps on increasing every year. By eating organic foods, my health has improved too," she says

With the extract she has managed to control many pests and diseases that were difficult to control even with chemicals. Another big advantage she has discovered with the use of EM is that crop residues sprayed with the solution decompose fast. The residue is readily converted into quality compost that cannot transfer diseases from one crop to the next. She has also reduced the number of crop rotation cycles in each portion of land. This is because the soil fertility is maintained and enhanced while diseases and pests are controlled.

Local material

The 28 members collect money and buy the EM jointly (a litre costs Ksh 200), they then prepare the FPE as a group and use it in their individual farms. The remaining cash is deposited in the group's account for

future purchases.

"The good thing with organic farming is that I use material which is readily available on the farm. The problem with many farmers who use chemical fertilizers and pesticides is that they do not sit down to find out the cost of these inputs. If they did they would discover that conventional agriculture is much more expensive," she says

Marketing organics a big problem

Now the main handicap for the group is finding market for their vegetables. Although they have produced quality vegetables and fruits for the last five years, not a single buyer has expressed an interest in them. As a result they are forced to compete with conventionally grown substitutes.

Need for certification

Geoffrey Kiragu, another member says that with the new method of organic production, the group is able to supply any quantity of organically grown items. He said they had responded to an advertisement in *The Organic Farmer* by Su Kahumbu, the farmer from Limuru who grows and supplies organic vegetables to local supermarkets. (She also answers farmers questions on page 6). Kahumbu had advised them that for their products to be accepted as organic, their farms have to be inspected by qualified organic farming experts who would then give them a certificate to show that their methods of production meet the required international standards for organic foods. But Kiragu says they do not understand the procedures involved or the people who provide certification services.

"Our problem is just the market. We hope that one day we will be able to sell locally and even export, he adds.

Dear farmers,

So many farmers are calling with enquiries on where they can buy organic fertilizers and growth activators such as phymix, bio-algene, neem and EM as well.

Beginning January 2006 *The Organic Farmer* will carry a series of articles giving details including instructions on their proper usage. If you have any questions please forward them to us and we will try to respond.

Why nitrogen is good for maize

Maize planted in soil with high nitrogen does not only grow better, it is more resistant against the stemborer.

By Felix Mbitu Murimi

Maize is one of the most important staple foods in large parts of Africa, including Kenya, as we all know. So it is obvious that scientists working on the continent are very committed to doing all kinds of research on maize. The results of different trials in Cameroon and Tanzania are very informative and have many lessons for all farmers engaged in organic farming.

The field trials in Cameroon investigated the effects of crop rotation, intercropping with a legume, cover crops and bush fallow on infestation by stemborers and on yield of maize. The scientists compared four treatments:

- (i) where maize has been planted continuously year after year,
- (ii) where maize was planted in fields where a grain legume (such as cowpea or soya bean) had been planted the previous season (rotation)
- (iii) where maize was intercropped with pigeon pea, velvet bean (both legumes),
- (iv) where maize was planted in a field that was left to bush fallow (no crops) the previous season.

Compared to the continuous maize cropping system maize in the crop sequence with legume and fallow systems (iii and iv) had much a higher nitrogen content in the stem and leaves. During the research the



Beans provide maize with nitrogen. (TOF)

scientists discovered that maize in the rotation system (ii) had 1 - 2 times more stemborers per plant compared to the continuous maize production system, especially at the early stage of maize growth. This is because the maize in the rotation system was better off and stronger and much more attractive to the stemborers.

However, 2 months after planting, the stemborer larvae were 1 - 2 times more likely to die in the rotation system than in the continuous maize system. And 2 - 3 times more grain was lost due to stemborers in the continuous maize production system (i) than in the crop sequences of grain legumes with maize (ii), and 5 - 11 times more was lost compared to growing maize after cover crops (such as legumes). This result is easy to understand. On fields where maize was intercropped or rotated with a leguminous crop or where the land had been left to fallow the previous season, the soil got much more nitrogen which could feed the plants better. The increased nutritional status of the plants lead to an increase in stemborer attacks at the early stage of plant growth, but also to improved plant vigour (strength), resulting finally in a net benefit for the plant and higher grain yield. The highest maize yields were obtained when maize was intercropped with a legume ground cover (iii).

Nitrogen the decisive factor

This results have been confirmed in similar field trials, conducted at Kibaha and Morogoro in eastern Tanzania. This project also included an economic analysis. The scientists compared two maize fields. One had been treated with pesticides against the stemborer and with nitrogen fertilizer. On the other field maize was grown without pesticides, and the scientists added only nitrogen fertilizer.

The results showed the beneficial effect of nitrogen on the plant's ability to compensate for borer damage:

- Yield loss was less with an increase in nitrogen application.
- There was not a big difference between the field where pesticides were used and the one without pesticides in terms of yield.

The analysis of the economic benefits of applying fertilizer and insecticide treatment shows the following: "Using insecticides is not profitable when the soil quality is very poor", says ICIPE scientist Dr. Fritz Schulthess. "The soil quality and the

"Nitrogen factories" of the plant world.

The growth of all organisms depends on the availability of mineral nutrients. Nitrogen is the most important element. There is a plentiful supply of nitrogen in the earth's atmosphere - nearly 79% of the air is nitrogen gas.

How do these natural "nitrogen fertilizer factories" work? Bacteria in the root nodules (swellings) of certain plants, mainly legumes, produce biologically usable nitrogen (mainly ammonium) from nitrogen gas in the air. This process is called nitrogen fixation. The bacteria called *Rhizobium* exist in soil and attach themselves to the roots of legumes, causing the formation of small nodules, in which they live. Within this nodule, the bacteria multiply and fix nitrogen from the air that is found between the soil particles. The roots become rich in nitrogen, sending it to the rest of the plant where it stimulates growth. Some amount of nitrogen may dissolve into the soilwater, benefiting other plants. Following harvesting of a legume (such as beans or peas), the roots may die, releasing further nitrogen. Although legumes are not the only group of plants that form a relationship with nitrogen-fixing soil bacteria, they are probably the most important for agriculture to improve soil fertility.

The crisis in soil health in Africa is a quiet catastrophe. Over the decades, Africa's smallscale farmers have removed large quantities of nutrients from their soils without returning them in sufficient quantities in the form of manure or fertilizer. These practices have resulted in a very high average annual loss of 22 kg of nitrogen, 2.5 kg of phosphorus, and 15 kg of potassium per hectare of cultivated land each year over the past 30 years, according to research conducted in 37 African countries. This annual loss is equivalent to US \$ 4 billion in fertilizer.. (fmm)

nitrogen content of the soil are the decisive factor in getting a higher yield.. To replenish soil fertility is even more important than using improved crop varieties".

Therefore, the cheapest way to add nitrogen to the soil is rotating maize with a leguminous cover or grain crop, or using a nitrogen fertilizer. In areas where striga is a problem, intercropping maize with desmodium is recommended.

Seedlings require tender care while in the nursery

Subukia farmers are known all over Kenya for their acumen in horticultural farming especially that of tomatoes and cabbages. There is however a handicap in realizing the optimum yields because of the following reasons;

1. Lack of proper knowledge on the preparation of nurseries resulting in failure in germination of a large population of seeds.
2. Attack by pests especially aphids and cutworms.

Please sensitize us in these two issues so as to effectively improve on the yield and improve our economic well being.

In my list of questions from farmers this month, I was pleasantly surprised to see a question from *The Organic Farmer* readers - Subukia. This indicates cross sharing of information between some farmers out there which is just fantastic to know. Congratulations to you!! Sharing of

seedlings like young children require tender care while in the nursery. Nutrition must be easily accessible and is best provided through mature compost, combined in the seed-bed with the soil.

Watch the soil...

As there are many types of soils and differences in fertility within the same, one must judge the amount of compost by the feel, smell and colour of the soil. One aims to create a dark healthy seed-bed soil with high organic content, crumbly texture and good water holding capacity. The final mixture of soil and compost must smell very earthy. Offensive odours suggest compost that has not fully rotted and will create problems in the seed-bed.

Seed-beds must never dry out completely and may benefit from slight mulching until the emergence of the young plants. Feeding of seedlings is not necessary if seedlings are to be transplanted between 30 to 45 days. However, weekly feeding via a mild liquid compost tea is necessary for seedlings and cuttings of fruit trees, trees etc. that require a longer stay in the nursery.

...and watch the seedlings carefully

Location of nurseries is very important. Ideally they should be located in a cool area as close as possible to a water source. If possible, they should also be protected from the elements by a low fencing and possibly a thatch or net covering. (For some odd reason, my dogs given the chance use seed-beds to dig and play in!!)

One area most overlooked in farming is the time of transplanting. Seedlings left in the seed-bed for too long may look healthy and strong however they will battle most when transplanted. Make sure to date your seed-beds so that you remember when to transplant the seedlings. A week of delay is acceptable, any longer - and you already have a compromised plant that will struggle to reach its full potential.

Another much over looked problem which originates in the seed-bed is that

What's wrong with my carrots?



George Githuku asks: "I am an organic farmer based in Tetu (Subukia). I planted some carrots on a well-manured plot. To my surprise the carrots did so poorly despite having weeded them and watering them regularly. What could be problem considering that the other crops I planted alongside the carrots (potatoes) did very well."

Observation is our first step in understanding nature. George Githuku rightfully observed that carrots did not perform well despite regular watering and weeding when planted on a well-manured plot. Potatoes however planted in the same area did well. He is wondering what the problem may be. Astonishing as it may seem, carrots do not like newly manured soils and bearing this in mind, they are a perfect crop to follow in rotation behind a heavy feeder crop where a lot of manure and compost was used.

We do need however to lightly aerate the soil by shallow digging before planting carrots. This will allow easier penetration by the carrot root and will also allow better water holding capacity. So George, there is no problem, you have just discovered how to save money by realizing you can plant carrots without any manure!

of over crowding. To help sow very small seed, mix in a tablespoon of soil with the seed. This will ensure good spacing. Crowded seedlings struggle for nutrition, become stressed and succumb to diseases such as fungus, which thrive in damp over crowded seed-beds. If crowding is a problem, thin the seedlings out. It is better to lose a few to save the rest. Be sure to

Su's answers

knowledge especially in the organic world is necessary. It is the religion of our planet and if we are to improve our health and that of our planet, we must be selfless in sharing and caring.

Whilst acknowledging their fame and experience in tomato and cabbage growing, these farmers feel handicapped in realizing maximum yields because lack of proper knowledge on preparation of nurseries resulting in failure of seed germination.

Fragile condition of seed

Great attention must be given to the preparation and maintenance of our nurseries or seed-beds if we desire healthy seedlings. Common sense and logic go along way when we think about the fragile condition of seed and seedlings.

Soil must be light and crumbly to allow the young seedlings an easy journey from their seed casings, and moisture must always be present to avoid drying out, thus stress to the young plant. Upon emergence,

Su Kahumbu
answers your
questions



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e-mail : info@organickenya.com



Letters to the editor

Please send us some more copies

Congratulations for the good job of The Organic Farmer editorial team. To the best of my knowledge it's the only one of its kind I have come across. PHCD Ortum (Primary Health Care and Development Programme) is an organization in West Pokot District working with marginalized farmers and pastoralist in agriculture, livestock and water development. It is in this regard that we are requesting for copies of your very informative and educative newspaper on sustainable agriculture. I just came across this article Nr. 5 August 2005 from a friend. So please if we can get at least a copy of each of the previous issues and then be getting copies enough for 20 farming groups in our working area will be a

great help. We look forward to contribute to your newspaper the experience on the ground as we also advocate for sustainable agriculture in the community. Thanking you in advance.

Peter O. Okwany, Agricultural Sector Head, PHCD Ortum

Dear Mr. Okwany,

Thank you for writing to us. So many farmers are making the same request. This is our dilemma. We print 12,000 copies, which are not enough to go round because of the huge demand. While we consider your request, we encourage farmers, who receive copies, to share with those who do not. If we continue this way, the message will reach as many farmers as possible.

Interested in organic farming

I hereby wish to subscribe to your magazine. I have a natural interest in nature and natural foods. I am also aware of the danger of food crops grown under chemical conditions. I am also giving awareness of the same to my fellow members of the group. Thanks in advance.

David Steve Osiako,
Umoja Forest Group
P.O. Box 49, Kesogon

Complaints

We are receiving complaints from farmers who cannot get their monthly copy of *The Organic Farmer*. It appears some chairmen of farmer groups do not pass the copies to their members. Others who own rental boxes used by farmers do not take the parcels to their owners. This is very bad. How can we promote farming when we have to deal with people who do not want farmers acquire the right information? We hope they will change. We also advise farmers who do not receive their monthly copies to get in touch with us or change their addresses.

Organic farming is productive

We the Johnson's family including other people in our farming community have gained a lot from your newspaper. We have been receiving copies but we are requesting for more so as to improve our farming practices. We are requesting for more support from you to show that farming is important even to the unemployed. We have found out that organic farming is more productive and we can prove it to other farmers. We hope you will support us with the right information. Thank you.

Mrs. Nduru, Karo Group, P.O Box 85, Nyeri, 0724 488127

We want to increase production

I take this opportunity to salute the editorial committee of the organic farmer for publishing this most educative magazine. I shall be most thankful if you will be sending to Kongasis Pyrethrum Growers Self-Help Group at least one copy. This self-help group is not only interested in growing pyrethrum but it also carries out other farming activities and its members are interested in improving agricultural productivity. Thanks in advance.

Elijah K. A Kisiara, Kongasis Group,
P.O Box 266, Londiani

Starting Bee keeping

I am a person who has great interest in farming more so for commercial purposes. I have gone through your September/October issue and found it to be very informative. I live on a 10 acre piece of land and would very much wish to have an apiary. I really would want to produce my own honey for commercial purposes by using Langstroth beehives. However I fear the size of my plot could be a limiting factor. Please advice. I would also wish to be furnished with technical advice on modern methods of bee management. I look forward to hearing from you. Thank you.

Sammy K. Ngigi, P.O Box 1917, Embu

Dear Mr. Ngigi,
We refer you to Mr. Charles Kimani of Box 1388 Kikuyu Tel: 0721-382-556. He is practising bee keeping on a small piece of land like yours and would share the experience with you. Alternatively you can buy the Bee Farming Handbook from the National Beekkeeping Station P.O Box 34188 Tel. 020 564-302, Nairobi. Many farmers would like to know more. We will feature this in one of the future issues.

Students want newspaper

Thank you very much for starting a newspaper for sustainable agriculture. I find it useful especially for our students who are doing agriculture in secondary school. Therefore I am requesting your office to be supplying us with your copies in future. I will be participating by writing articles concerning organic farming. Thank you very much and keep it up.

Tuei Richard, Ambusket Sec. School,
P.O Box 272, Olenguruoni

Su's answers

Continues from page 6

plant only strong healthy seedlings.

And finally, do not over-water seed-beds, unless your plants are aquatic, they do not need to be permanently wet. This inhibits gaseous exchange at the root hairs and results in rotting roots and thus death to the plants.

Rotate in the seed-bed

When a seed-bed is emptied it can be used again quite soon afterwards as long as we re-introduce some well rotted manure and dig the bed lightly for aeration. It is advisable to rotate the seed in the beds so as to avoid build up and spread of problems within the same plant family groups.

Oh, and finally again, make sure you are planting fresh healthy seed whether your own or purchased. Old seed will not do well in the best of seed-beds!

The answers to aphids and cutworms questions could not get space in this column we will bring them in the January 2006 issue.

Count on relationships between plants

Not all plants like each other. However, if you choose the right companion, your garden will benefit a lot.

By *The Organic Farmer*

Maybe you did not know it, but the association between certain plants gives excellent results, not only for the very plants themselves but also for the producer. Every plant, from the roots to the leaves, produce smells (odours) and expels substances that might be beneficial, or fatal, to other plants and insects. For instance, did you know that celery, because of its smell, drives away the pierid butterfly pest from cabbage? As a result, it will be enough to associate celery and cabbage as companion crops in the field to drive away this insect that has the nasty habit of laying her eggs between the leaves of the unfortunate vegetable.

Pea beetle may also disturb cabbage. In this case, to repel the pest it will be advisable to put a branch of thuja on the cabbage. In the same way, placing strawberry plants next to garlic, or onions next to leeks, will help ensure general protection against nematodes in the soil. Plants can therefore, in certain cases, be as effective as insecticides, but have an advantage because they will not kill the insects nor poison human beings. This is not all. By associating climbing beans and maize, both crops will give good output.

Managing the space

However, we should not associate vegetables together only for plant health reasons. We should also use the space we have for planting efficiently. Indeed, it is often interesting to make use of the association in the root systems. The most typical and profitable example is that of carrots and leeks. The first crop has very deep roots that extract nutrients deep in the soil, whereas leeks have extremely superficial roots which help the crop feed on nutrients near the soil surface. Moreover, carrots can drive away worms from leeks, while leeks can drive away flies from the carrots.

Tomatoes and radish, or better still beans with cucumbers, are other typical examples of this helpful relationship. In addition to the question of space, there is also the problem of resolving the selfishness of certain plants. Cabbage, for example, consumes water and nutrients greedily, and cannot reasonably be planted alongside other vegetables that are just as demanding.



It is even better to isolate cabbage or associate it with small plants such as peas, which are satisfied with very small quantities of nutrients.

... and managing time

Time is also an important factor in this method of associations of vegetables. Mixing long-cycle species with short-cycle species can optimize the natural productivity of the ground, while assuring a constant coverage of the soil and helping fight against the invasion of weeds. Radish, for example, once it is sowed, germinates quickly and occupies the soil, while carrot takes a longer time to germinate. Sowing radish and lettuce together, and possibly transplanting some seedlings of lettuce near them, would allow harvesting of crops gradually on the same parcel of land; radish and lettuces would be ready for harvest when the carrot is not yet mature.

Finally, it is necessary to know that legumes use large quantities of nitrogen from the air and restore them to the soil and that many other plants take advantage of this nutrient supply. Mixing maize and beans is not only good as *gibberni*, it can also help an informed farmer improve on their output. Another small detail: it is necessary to note that there are many fatal associations of vegetables, as well as the profitable associations, described above. The association of pea and garlic for instance, always ends up very badly. It is therefore important to always keep watch in our gardens!

Some good associations of plants

- Garlic: beet, carrot, potato and tomato.
- Carrot: garlic, dwarf bean, lettuce, onion, parsnip, leek, small peas, pea mange-tout, (snow peas), radish, tomato

- Celery: spinach, dwarf bean, leek, tomato
- Cabbage: beet, celery connects, cucumber, dwarf bean, lettuce, leek, small peas (garden peas), mange-tout peas and tomato
- Cucumber: beet, celery, connects, cabbage, cauliflower, shallot, bean with oars, dwarf bean lettuce, maize, small peas
- Courgette: bean with oars, onion
- Dwarf bean: aubergine, beet, carrot, celery, cabbage, cauliflower, kohlrabi, cucumber, nitwit, lettuce, maize, melon, small peas, potato, radish and tomato
- Lettuce: beet, carrot, celery, leek, maize, small peas, onion, tomato, cabbage, mange tout, radish, black radish
- Maize: cucumber, nitwit, dwarf bean, bean with oars, lettuce, melon, small peas.
- Melon: dwarf bean, lettuce, maize
- Onion: beet, carrot, cucumber, courgette, strawberry, lettuce, leek
- Parsley: radish, potato
- Leek: asparagus, carrot, celery, cabbage, watercress, spinach, fennel, strawberry, lettuce, lamb's lettuce, onion, chicory, endive, scorzonera, tomato
- Tomato: garlic, asparagus, carrot, celery, cabbage, cauliflower, spinach, dwarf bean, lettuce, maize, mint, onion, parsley, leek, radish.

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Where can farmers sell organically produced vegetables?

