

The Organic Farmer

The newspaper for sustainable agriculture in Kenya



Nr. 10 February 2006

Ticks cause huge losses

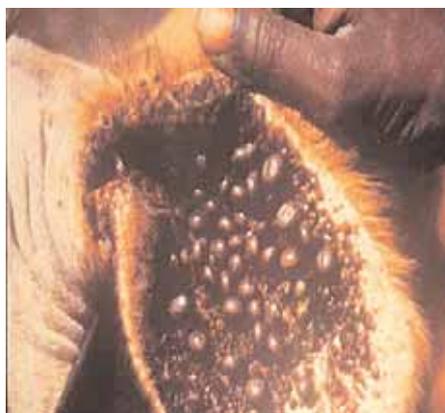
Kenyan farmers are losing billions of Shillings every year because of ticks and tick-borne diseases. Ticks are becoming resistant to chemicals.

The Organic Farmer

Thousands of farmers in Kenya can talk of their bitter experiences with a pest only a few millimetres in length and the tongue-twisting name of *Rhipicephalus appendiculatus*. In Kenya as well as in several other East African and Central African countries this pest is better known as the Brown Ear Tick. It is the most dangerous of the 70 or so tick species found in Kenya. The Brown Ear Tick transmits the parasite *Theileria parva* to cattle and causes the notorious East Coast Fever (Ndigana, - in Kimaasai and Kikuyu).

A million cattle affected

Although there are no accurate figures, experts estimate that several thousand cattle in Kenya die each year from East Coast Fever. Other sources put the number at up to a million cattle. Kenyan farmers purchase chemicals (known as acaricides) to control the tick, worth about Ksh 400 million every year. Once the cattle catches the East Coast Fever, the economic damage rises into millions of shillings, since the cattle take a long time to recover. During recovery, almost no milk is produced, and the animals lose weight. When the disease affects calves, even if they recover, they become stunted. The treatment for a single cow costs more than Ksh 4,000.



A cow's ear infested with ticks (Photo ICIPE)

The organisation Veterinarians Without Borders-Germany in collaboration with the Kenya Agricultural Research Institute (KARI) and the International Livestock Research Institute (ILRI) have recently carried out large-scale tests in parts of Narok and Kajiado districts with a vaccine against East Coast Fever. One dose costs between Ksh 600 and Ksh 800.

Life long immunity

It involves injecting an animal with the parasites together with an antibiotic. The immunity induced protects the animal for its entire life. It protects the animals from the disease, but not from the tick infestation which weakens the cattle and causes other infections, and therefore affects the health of the animals. That means even if the cattle are vaccinated, they still need to be protected from ticks. But the frequency of treatment with acaricides can be reduced from weekly to once every three or four weeks, depending on the area and season both of which influence the availability of ticks.

This vaccine is not yet available countrywide. There are plans by KARI, the private sector and ILRI to conduct similar large scale tests in other areas of the country so that the vaccine can be available. Since the producers of the vaccine are the same ones as those who sell the chemicals against ticks, some experts fear that these producers might not be interested in promoting the vaccine because the demand for the acaricides would decline. (See page 5)

Dear farmers,

First, we would like to thank all those who have filled the questionnaires and returned them to us. We kindly appeal to all the other farmers who have the questionnaires to make sure they send them back to us as soon as possible. Your answers will enable us to respond better to your needs and ensure you receive the right kind of information to use in your day-to-day farming activities.

After reading a few of the questionnaires the farmers have sent back to us, we are glad to note that many of you have embraced organic farming and are already making use of the information our newspaper provides such as the tips we give on pest and disease control. This clearly shows there is a bright future for organic agricultural production among our farmers. We will give you the true picture once we have received all the questionnaires from the field.

Our sympathy goes out to our brothers and sisters in Northern Kenya. They have to endure another devastating drought and famine. This has led to great suffering and deaths of livestock and even humans. We may not want to go into the details of what is happening but we are really disturbed to know that while these people suffer, the National Cereals and Produce Board stores in the affected areas are full of maize that is yet to be distributed. This shows that Kenya badly needs a streamlined distribution system and less bureaucracy.

As we have said before, the policy makers need to take agriculture more seriously as the important sector it is. The government should formulate strategies that help boost food production in the long term. Being the backbone of the economy, any small disruption, lack of proper planning or implementation of policy in this sector affects the whole economy. It also threatens the country's food security. While we support increased agricultural production, this does not mean there is inadequate food in the country. Food is available but the starving people in most parts of the country cannot afford it because they live in extreme poverty. Only a stable economy can improve their incomes.

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MY OPINION**By Mary Wanjiru**

Sometimes I find it difficult to understand my fellow Kenyan farmers. The world over, farmers are adopting new methods of agricultural production which improve human health, protect the environment and increase crop yields. But not our farmers; here a farmer will learn how to make a natural pesticide to control a particular pest, but when the pest strikes he will go to the nearest shop to buy a chemical pesticide, although he knows the dangers of using chemicals! He will spend every penny he has saved to buy DAP fertilizer, although there is good manure in the cattle shed.

Mary Wanjiru is a farmer in Kitale

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 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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Layout

In-A-Vision Systems(k)

Good nursery good start

Most plants can be propagated with seeds. The work has to be done carefully; seeds need moisture, warmth and darkness to germinate.

The Organic Farmer

After publication of an article on seedbeds in the December issue, many farmers asked for more information. With good reasons! Managing the propagation of plants is very important work for every farmer and should be done with great care.

Every farm needs a well established nursery as a place for germinating seeds and producing seedlings. Plants will benefit from developing in a protected, shaded area with good soil. The seedlings raised on rich soil benefit throughout their life cycle even if they are transplanted to less fertile soil. In a nursery, the first signs of pest or disease attack can be dealt with more easily.

Guidelines for a nursery

Spacing: Give seedlings space to grow. Densely sown seedlings compete for light, water and space. The healthiest plants can be selected and the weakest eliminated.

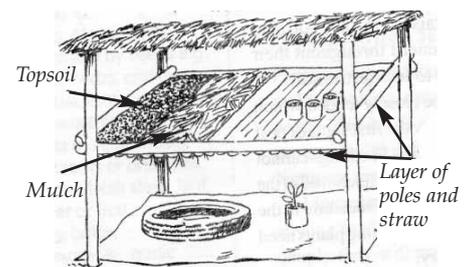
Water: A nursery needs regular watering and control of moisture in the superficial (top) soil layer. It is essential that the soil is kept evenly moist at all times. It may be necessary to water twice a day in hot weather. The ground should be level to avoid run-off damage. Cover the soil with a thin layer of dry grass or mulch. This keeps in the moisture; when there is no nursery shed, it protects the soil surface from rain splash and crusting over. Attention: if the mulch layer is too thick the seedlings can not grow!

Shade: An nursery needs different degrees of shade. It is not expensive to construct some kind of shade house from a framework of poles.

Long grass or palm fonds, laid in varying thickness, helps to regulate the shade intensity for different stages of growth.

Soil: For proper germination of seeds, the soil is very important. The seedbeds and the containers should have fertile soil with loose tilth (texture) for at least 10 to 15 cm depth. The soil should be mixed with well-decayed organic matter or humus. The soil should be free of anything that may hinder growth, such as stones, gravel and hard clods of clay.

Special beds: Apart from having specially-prepared seedbeds, the enriched soil can also be put between small stone walls, in wooden boxes or in old car tyres. The tyres should be placed on a plastic sheet to avoid the roots of the seedlings touching the ground. For a bed on a wooden table



sieve the soil and mix well with straw. Make a layer of 15 - 20 cm of the soil mix and compost. The system has good drainage and avoids many pests from ground level. Water twice a day. You can also use other kinds of containers, such as milk cartons or clay pots.

Protection: Protect the nursery as a whole from invasion of animals with a wall of stones or with hedges made from thorny branches. Strong smelling plants (such as marigold) can be planted in the hedge to prevent some pest problems.



Strong seedlings can resist pests

Well prepared seedlings and good soil preparation with compost or manure create the ideal conditions for crop growth.

The Organic Farmer

Transplanting has to be done with the same care as the preparation of seedlings (see page 2). Transplanting is the removal of a young plant from the nursery in order to plant it in a permanent place. Plants raised in nurseries must not be kept there too long. Eventually they will need more space to develop normally. If transplanting is delayed, the seedlings start to compete for food. The roots get tangled and the plants are then hard to separate. They come deformed. Dwarfed and twisted plants must not be transplanted as they will not do well.

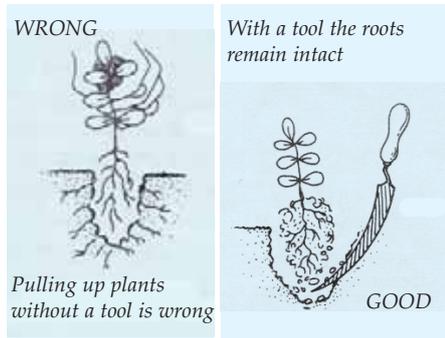
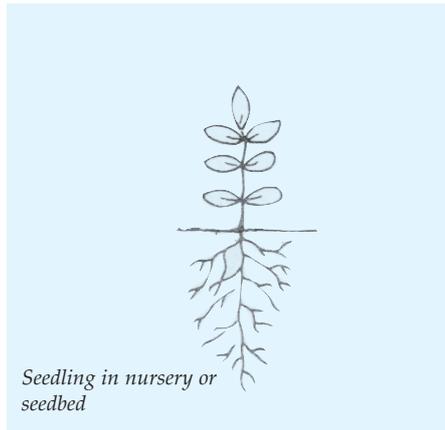
Before transplanting, enrich the soil in the new site with compost and water it well. Transplanting is done at the end of the day to allow the plant to recover in the cool night hours.

Seedlings from a seedbed

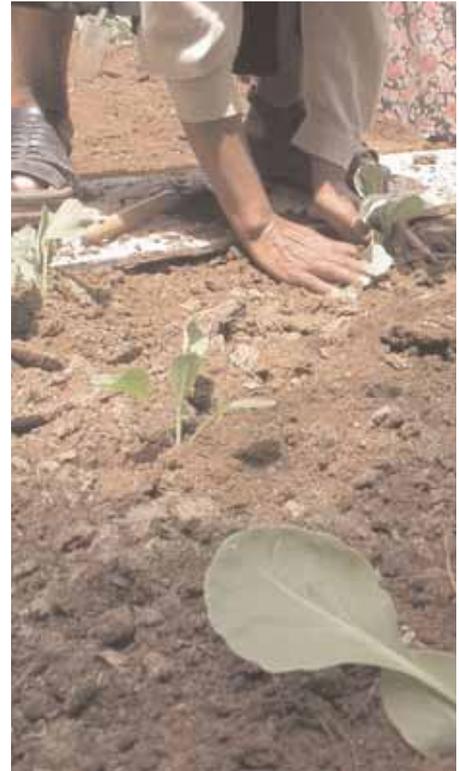
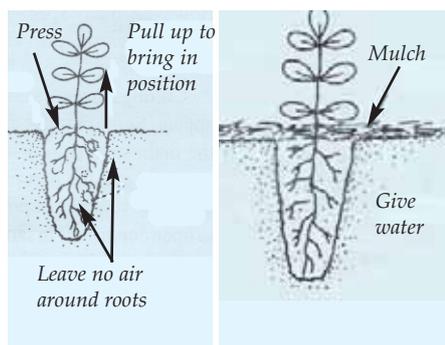
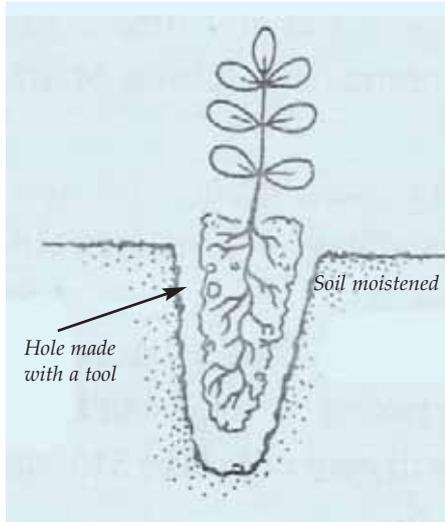
Seedlings from a bed are transplanted with their roots exposed and most soil removed. The time to transplant is when they have 2 to 6 true and well grown leaves and several well-developed roots. The stem should be firm, sturdy and erect. Using a trowel will help to crumble away the soil and lift the plant so that the roots remain intact (see illustration on the right).

Seedlings should be transplanted immediately and not left in the sun to dry out. Take a wet cloth and wrap it around the seedlings if planting is delayed. When there are too many roots they should be trimmed with scissors or a knife, not by pulling or tearing them.

The seedlings should be planted in well-loosened soil so that the small rootlets can penetrate easily. The depth of the planting hole should be greater than the length of the transplanted roots. The roots should be positioned properly. Then pull the plant half a centimetre gently upwards to put the roots in place before firming them with soil. The collar of the seedling (link between stem and roots) should be exactly level with the ground after compacting the soil by stepping or pressing it around the plant.



TRANSPLANTING



Carefully planted seeds grow well (Photo TOF)

The transplanted seedlings need shade and generous watering. This also helps compact the soil. Cover the soil with mulch or grass. This keeps the soil moist.

Seedlings from bags or pots

Plants started separately in bags or pots have a root ball protecting their roots with soil. Transplanting is less risky, but take them carefully out of the bag or pot. The roots do not need trimming unless transplanting was late. When seedlings are held too long in pots or bags, the roots grow in circles. They will have to be untangled and trimmed (with scissors or a knife!) to ensure normal growth. The collar is easily positioned level with the ground. These transplants need less shade, but they should be pressed firmly into the earth and watered well.

Watch the environment

Good growth in the seedbed and later on in the garden is the best defense against pests or disease attack. Make sure that you start with healthy, viable seeds, a well prepared soil, and clean, disease-free pots and utensils. Washing pots and utensils in soapy water will normally remove most potential hazards.

Sources: Production without Destruction, Natural Farming Network, Zimbabwe 1995; Organic Gardening, Dorling Kindersley, London 2005

AIDS-widows learn to grow health foods

People affected by HIV/AIDS need nutritious food. A group of HIV-positive women in Kisii are producing their own rich food.

By Peter Kamau, Kisii

It was a double blow for 33-year-old Rose Kemunto following the death of her husband six years ago from AIDS-related complications, as he was the family's breadwinner. For a start, relatives and friends shunned her, for she too was ailing and had been in and out of hospital several times. And though weak and helpless, with no-one else to turn to, Kemunto had to fend for her three children, including her last-born son of nine years who was also ailing. There were essential medicines to buy, school fees to pay and other bills to settle at home.

Group changed her life

But hope was in sight. Rose learnt that a group of women widowed by AIDS in her Nyaura village in the outskirts of Kisii town had come together to start the Nyaura Women's Group. They too had been subjected to the stigma and deserted by people previously close to them and their families. The Group welcomed her with open arms. She has now made new friends who have also taught her how to identify, grow and prepare nutritious foods that have greatly improved hers and the children's health. She has also had the courage to undergo an HIV test, and having confirmed her status, is now on antiretroviral drugs (ART). More importantly, she is now living with confidence.

"Belonging to the Group has changed my life. Colleagues help me in the garden when I am sick and advise me on the right kind of food to eat. This has improved my health and that of my children", she says.

Contributions help members

The Group started informally as a merry-go round in October 2004. Since she lost her husband to AIDS in 1997, Alice Ontuga, who is also the Group's chairlady, says that she had on many occasions depended on other people's goodwill to educate her six children, three of whom are in secondary school. But all this changed when she and other AIDS widows formed the Group. "Now I can grow the right food and even get



Nyaura Women Group members pick indigenous vegetables in a member's garden

(Photo TOF)

assistance from other members to settle the school fees arrears", she says.

"We discovered that nobody wanted to associate themselves with women who were affected by the disease. We therefore decided to come together, share our problems and encourage each other", Ontuga says.

Every Tuesday they hold a meeting where each of the members contributes Ksh 10. In addition, each of them contributes Ksh 50 monthly, money they deposit in the Group's account at a local bank. To raise the money, the members have to work hard in their kitchen gardens where they grow a variety of indigenous vegetables, avocado, sweet potatoes and bananas, which they sell in the local market. In May 2004, each of the members contributed Ksh 100 for a poultry project where they bought 50 layers. These were housed in one of the members' homes, where the women take turns to care for the chickens. The Group, which is already registered with the Department of Social Services, also rented a quarter-acre plot of land from one of the local farmers where they grow Napier grass for sale to local farmers to earn extra income.

Growing indigenous vegetables

Money from the Group's various income generating activities is used to assist members to sort out their financial problems. These include buying drugs for those who are sick, assisting orphans with food, and paying school fees for those already in school. The money also helps to

buy fertilizer and seeds for needy members.

The Kisii District Home Economics Officer, Hellen Biyogo says the women are trained to grow and prepare selected food crops to improve their health. These include legumes such as soya beans and indigenous vegetables, such as grain amaranth, carrots and beetroots. They also produce orange-coloured fresh sweet potatoes which have a high vitamin A content. These food crops help meet their nutritional requirements, while the surplus is sold to meet their other needs. "Value addition is also an important part of the training as it helps increase their earnings from the various products that they grow", she adds. The women are trained on how to make avocado, carrot and banana juices and jams. They are also taught commercial home baking and energy conservation methods in their homes.

They would like to diversify their activities such as in assisting each of the members to buy a dairy goat or cow to give them milk for consumption and sale. They would also like to acquire a small plot of their own where they could carry out development activities such as knitting, cookery or even operating a posho mill. They have already made proposals to several donors including the Constituency AIDS Committee, but none have yet responded. "If we get support we can achieve a lot despite our status", Ontuga concludes.

With their determination, the sky seems to be the limit.

Many tick control chemicals are not effective

Ticks have become resistant to most of the chemicals available in the market. Farmers should try other cheap tick control methods.

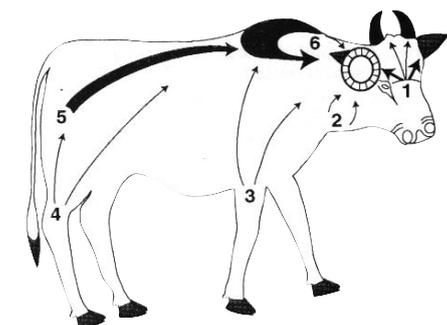
The Organic Farmer

There are many cost effective methods small scale farmers can use to control ticks. First of all, farmers need more information about tick behaviour. Ticks are not only able to adapt to the chemicals commonly used by farmers to control them, but they can even survive for up to two years without food. During this period, they can hide in pastures until they find a host to suck blood. Ticks are able to locate a cow from a distance up to ten metres. Current research is focused on controlling their capacity to reproduce following their resistance to most of the chemicals in the market. Many farmers often burn down pastures in order to control ticks. This cannot work because the ticks hide below the soil. They reappear when the grass starts growing.

To control the Brown Ear Tick that spreads the parasite causing East Coast Fever, knowledge about ticks is important. In his study, ICIPE scientist Ahmed Hassanali set ticks free on the legs and the back section of animals (see illustration below). They instantly made their way to the cow's ears. The ticks primarily fled the anal section since they did not like the smell of cow dung. That makes it necessary for the farmers to check especially the ear section of their cattle to prevent East Coast Fever infection.

Useless chemicals

But it is not only the Brown Ear Ticks that cause disease. Ticks in general are a plague and degrade the



Pathways of Brown Ear Ticks on a cow. They move directly towards the ear-region. Numbers indicate points where the ticks were released. (Fig. ICIPE)

The Brown Ear Tick: The female (left) after feeding on blood. The male (centre) and female (right) before feeding.

Photo courtesy of University of Edinburgh



animal's health. Their bites can cause wounds on the skin and reduce the quality of the hide, inject poisons into the animal, suck blood and interfere with the normal growth of an animal.

When buying tick control chemicals, farmers need to be very careful. When *The Organic Farmer* inquired from different agro-vet-shops on the most effective anti-tick chemicals, it made a very surprising discovery. Some shopkeepers told us frankly not to use some of the chemicals they were selling, since they do not help the farmers. The ticks had become resistant. One shop attendant pointed out clearly: "These products should be removed from the market, the farmers are being cheated".

Pour-on oils are effective

The only effective tick control chemicals are those made from synthetic pyrethroids (chemicals that act in the same way as pyrethrum). These chemicals also come in formulations known as pour-on or spot-on. The pour-on oils are easy to use because all a farmer needs to do is to pour and rub on the animal's back. The oil spreads throughout the animal's body repelling any ticks that come into contact with the animal. The pour-on oils are especially suitable in areas where there is inadequate water as they do not require diluting. But they are three to four times more expensive than the synthetic pyrethroids.

Farmers, if you really want to protect your cattle, you are advised to insist on effective acaricides (tick control chemicals), either the pour-on oils or the synthetic pyrethroids. But even these have to be applied once a week to eradicate all ticks on the cattle. Unfortunately the government does not allow these effective chemicals to be sold in all parts of the country. There are areas where

farmers are told to continue using the chemicals, which have been shown to be useless.

Helpful plants

There are quite a number of plants which are useful in the fight against ticks. Various communities across Kenya have a wide knowledge of tick control and management, as Prof. Hassanali found out among the Bukusu community in Bungoma District. Many times this knowledge is only available in particular areas, or it is being kept as a closely guarded secret by those who know and do not share it with the others.

One of those plants is the molasse grass. Its smell does not only drive away ticks, they simply cannot survive in the grass. A small scale farmer can plant the grass around the cattle boma which works as a barrier against the ticks. The cattle on the other hand avoid feeding on the grass since they also do not like its smell. Molasse can only be effective on zero-grazing animals since free-range animals are not confined to one place (molasses grass is available at ICIPE and at most KARI stations). In this context, the zero grazing system, as practised by many small scale farmers, has many advantages. Farmers who let their cattle roam freely should consider switching to zero grazing as it is much safer.

Our research shows that up to three quarters of zero grazing farmers do not experience problems with ticks anymore even though they do not use chemicals. However, grass from outside the farmstead may carry ticks. Farmers have to be careful especially with grass obtained from roadsides where ticks reside.

Scientists have also found out that plant extracts made from neem (Muarubaini) and pyrethrum repel

Continued on page 7

To sell, you must know your customer's needs

I have decided to rear milk goats and want it to be a business. I will keep about 10 goats. Please help me with advice on where I can sell that milk. I also want to grow capsicums and cabbages organically, so please help me to market my crops. Marketing is a problem.

Francis Kungu of P.O. Box 69 Solai

You are right, Francis, marketing of farm produce is a problem faced by many Kenyan farmers. This has often led to frustration, with some of them giving up the whole enterprise altogether. But this need not be the case. Before venturing into any enterprise, we need to look into a number of factors that will help us make an informed decision.

For farmers, it is important to consider a number of issues when it comes to marketing:

1) Identify your market.

The first plan of action when trying to start any commercial venture is to identify your markets. The biggest mistake is to start producing a perishable product without any market in mind. Unless you are able to extend the shelf life of your product by processing, drying, salting, pickling, fermenting or canning, your product will expire, resulting in losses.

Always think "out of the box". Sometimes it is better to look at what is needed and try to produce it rather than to produce what is already available. By doing this you will have reduced the risk of competition for your products.

How do you identify your market? If localized, go around and see what is available, why it is in demand, whether it is profitable, and if it is seasonal. Also ask yourself if your product is not available yet required. Talk to producers and consumers. Ask yourself, "What is needed in the market?"

Once again, think out of the box. Think of growth. What will people need in a few years? Why? Take the risk of bringing them something new.

Su Kahumbu answers your questions

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2) Identify your competitors

As in any healthy business environment, competition is rife. You must therefore get to know who your competitors are. Can you compete, or would it be wiser to join their supply chain and become a producer for an already established entity? Sometimes we fail to realise as business persons that it can make more financial sense to concentrate on production and leave the other necessary logistics (and business problems) to someone else.

3) Do some costing

When doing costing, make sure to cost everything - inputs, seeds, manure, biopesticides, water, electricity, etc. Your time and other family members' time is not free. Realistically how much would it cost to replace a family member? Could that family member be more productive in another area of the business other than what he or she is currently doing?

4) Plan to be better than your competitors

Try to find innovative ways of bringing your products to the consumer that will give you an edge over your competitors. It could be better packaging, better quality, value added etc.

5) Know your customers and give them good service

Sukumawiki (kale) today is sold ready to cook, already shredded. Are there other products that can be sold as conveniently? Consumers of today have such heavy work schedules and are now recognising the value of convenient products. Such products are also proving to be cost effective in the long run.

Francis, I hope this information will help you to make a decision on your desire to produce goat milk, capsicums and cabbages. Nairobi is too far away to market the milk, as it is perishable. My suggestion would be to look around you in Solai and see if you can create a market for yourself. You could also try to add value by making goat cheese or goat "mala" for local consumption. You may find that after reading this information

you may want to produce something else all together. What ever you do, do it well.

Local sales should be your first option. Finally, by creating awareness in your area of the benefits of organic produce and by producing good quality at affordable prices, you will eventually create your own market.

How can I use diatomite...

Francis Ndungu has another question. He read in the The Organic Farmer No. 6 (September/October 2005) that diatomite powder is good for pest control. He asks: "How can I use it? With a knapsack sprayer or through dusting to crops as powder? What is the recommended quantity while mixing?"

Diatomite should just be dusted on insects. It is best to use it on aphids, termites, and around a ground area



softbodied insects may pass. It is best to get the insects in their larvae stage, as it is difficult to apply diatomite on flying insects. It is not good to use diatomite in sprayers as it absorbs water and will block nozzles.

...and how about Pyrethrum?

Francis also wants to know more about the preparation of the pyrethrum extract for pest control. He asks: "How long should I ferment it to be ready for use? Will I dilute the mixture? What is the shelf life?"

Pyrethrum does not need fermenting; it is soaked just so as to release the pyrethrins into the water. Four hours of soaking, or even overnight soaking is adequate.

The pyrethrum water extract mentioned in Vol. 5 does not need diluting. In addition, it should not stay too long before use as it expires or becomes inactive after extraction. I would suggest it is used as soon as possible as the natural pyrethrins break down quite rapidly. Use within 3 days.



Letters to the editor

Kindly acknowledge receipt of our letters

As a follow-up to what you inquired from me at the seminar, I am sending copies of two letters dated 24th June 2005 and 20th July 2005. One was to your secretariat and the other was meant for publication in the editorial

In Search of Katumani maize

Thank you for extra copies, due to shortage of the rains in this season, there will be no harvests. Please let us know of highland Katumani maize that matures in 100 days and where farmers can buy it.

John Njoroge, 3N Harvest, 0721 638034

Dear Mr. Njoroge,

The Katumani variety of maize seed is available at Kenya Seed Company stores in Karatina, Sagana and at Simlaw Seeds near Globe Cinema round-about along Kijabe street Nairobi. It is advisable that farmers buy their seed early to avoid the rush during the March- April planting season.

section. There is also another recent one (not enclosed) on organic cotton management. I shall enquire from the group leaders who receive the newspaper on whether they are working on written responses to you on issues raised in the newspaper on matters affecting our farmers. I shall definitely impress on them the need to do that for you to assess the impact of the newspaper. I would suggest however that on receiving letters (two or three) from an individual you acknowledge receipt in order for the writer to know they are receiving your attention particularly on important issues.

J. T. Muriithi Simba, SOHGRO

Dear Mr. Simba

Thank you for your advice. Your article on organic cotton production will be used very soon. We get dozens of letters from farmers from across the country but we cannot use them all due to lack of space, so we keep them for future use. We hope you will be patient.

Increasing Knowledge

I recently came across a copy of your magazine and learnt that they are given out to farmers. I came across the August edition while attending my regular weekly extension courses offered by our field extension officers. I am interested in getting *The Organic Farmer* since the courses I attend do not offer all one needs. Is it possible to get your last year's supply and continue through this year.

Mrs. Pauline Ondiek, P.O Box 92, 30215, Kesongo

A cover to cover success

Please could you put me in your mailing list. I only have your August 2005 issue and have found it enormously informative and interesting, a cover-to-cover success. From this one issue we now regularly make and apply the water extract pyre-thrum pesticide recipe. Have you previously written anything about the same uses and method of preparation for *Tephrosia vogelii*. It has been very good against aphids on sukumawiki and broccoli here, although our main problems here arise from the hot, dry weather that brings in the red spider mite plaque. How best do we control the pumpkin fly or "dudu" that stings and lays its eggs in courgette gem squash and butternut squash. Thank you and we eagerly look forward to receiving *The Organic Farmer* throughout the year.

Mrs. Rosalie Faull, Mugie Ranch Ltd., P.O Box 30 20321, Rumuruti

Dear Mrs. Faull,

*We are glad to hear that you have tried some of our plant extracts recipes. We plan to feature *Tephrosia vogelii* in one of our future issues. As for the pumpkin pest, we will research on it and give you the answer soon.*

Dear Farmers,

As part of our efforts to serve the organic farming community effectively, we would like to create a database of organic farmers in the country. We are interested in:

- Your names,
- Addresses, Location,
- Farm acreage,
- Are you an organic farmer?

To make it easy for you, we have a special telephone number: given above. All the farmers can provide these information through short messaging service (SMS). *Come on Farmers, Tuma jibu. Asante.*

SMS ONLY

Where do I buy EM1?

Thank you for a copy of the December issue. I find the article on Page 4 on the benefit from growth activators very interesting. My compost lasts about nine weeks to be ready for use which limits my supply for each season. However, with the application of EM it would appear I should make enough compost manure for use every season. Please let me know where I can purchase the stuff (EM) from in Nairobi..

Joseph N Nyamai, Chairperson / Project Coordinator, MARIODEFA

Dear Mr. Nyamai, EM1 is available in all the major town in agro-veterinary shops. Please get in touch with Edward Kamau of Organic Solutions P.O.BOX 59843, 00200 Nairobi or Tel: 0733 998 245. He will direct you to the nearest distributor.

Tick control chemicals not effective

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ticks by their smell. Cattle which are regularly sprayed with a diluted extract of any of these plants hardly suffer from tick infestation. In addition, the extracts are more environmental friendly. Another two plants that can be used to repel ticks are the *Gynandropsis gynandra* (Kikuyu: Thageti; Kamba: Mukakai; Kisii: Chisaga; Luo: Akeo) and *Ocimum suave* (Luo: Bwar; Kikuyu: Mukandu; Taita: Murunde; Kamba: Mutaa; Masai: Sunoni; Pokot: Chemwoken). The smell of these plants drives away ticks. If they are grown in a shamba, especially around a zero grazing area, ticks stay away. This is important since ticks are also dangerous to human beings.

It is also known that indigenous breeds such as zebu are able to resist tick infestation more than the exotic breeds (European breeds). So in areas where small-scale farmers are not able to control ticks, it is better to keep zebu breeds or at least cross-breeds rather than pure exotic breeds.

Farmers, do you have your own ways of fighting ticks? Please share your experiences with us, so that we can pass it on to fellow farmers!



No, farmyard manure is not a waste product!

Organic farmers should make every effort to use farmyard manure productively and to protect it from loss of nutrients.

The Organic Farmer

Manure is a valuable resource on an organic farm. Farmyard manure consists of animal excreta (dung) and bedding (usually straw or grass). In many places farmyard manure is dried and burned for cooking or is simply not recognised as being a useful source of nutrients and organic matter. By drying or burning farmyard manure, large quantities of organic matter and nutrients are lost from agricultural systems. Farmyard manure is an extremely valuable organic manure.

What are the characteristics and effects of farmyard manure?

- It contains large amounts of nutrients.
- Only part of the nitrogen content of manure is directly available to plants while the remaining part is released as the manure decomposes. The nitrogen in animal urine is available in the short term, or soon after excretion by the animal.
- When dung and urine are mixed, they form a well-balanced source of nutrients for plants.
- The availability of phosphorus (P) and potassium (K) from farmyard manure is similar to that from chemical fertilizers. Chicken manure is rich in phosphorus.
- Organic manures contribute to the build-up of soil organic matter and thus improve soil fertility.

How to store farmyard manure

Organic farmers rarely apply raw manure to their fields; they use composted manure. As composted manure is the primary source of fertilizer for an organic farm, care should be taken that nutrients are not lost from the raw manure. Farmyard manure should be collected and stored for a while so as to obtain a manure of high quality. The best result is achieved if the farmyard manure is composted. Manure stored under anaerobic conditions (for instance in water-logged pits) is of inferior quality.

Collection of farmyard manure is easiest if the animals are kept in stables. For storage, the manure

should be mixed with dry plant material (straw, grass, crop residues, leaves, etc.) to absorb the liquid. Straw that has been cut or mashed by spreading it out on a roadside can absorb more water than long straw. The addition of rock phosphate, bone meal or other minerals improves the quality of the manure.

Usually, the manure is stored next to the stable, either in heaps or in pits. In any case, farmyard manure should be protected from sun, wind and rain. Water logging as well as drying out should be avoided so as to avoid nutrient losses. The storage site should be impermeable and have a slight slope. Ideally, a trench collects the liquid from the manure heap and the urine from the stable. A dam around the heap prevents uncontrolled in and outflow of urine and water.

Storing manure in pits is particularly suitable for dry areas and during dry seasons. Storage in pits reduces the risk of drying out and the need of watering the pile. However, there is a greater risk of waterlogging and more effort is required as the pit needs to be dug out. For this method a 90cm deep pit is dug with a slight slope at the bottom. The bottom is compressed and then first covered with straw. The pit is filled with layers about 30cm thick and each layer is compressed and covered with a thin layer of earth. The pit is filled up until it stands about 30 cm above ground and then covered with 10 cm of soil.

Moisture and aeration

Turning the pile is not needed if optimum conditions are met. The moisture content of the pile will often determine if turning is necessary. This can be tested by squeezing the material in your hand -- if it shines and small moisture droplets appear, the moisture content is sufficient. Beginners at composting tend to have piles that are either too dry or too wet.

If the pile is too moist, water replaces the air in the pile. These are bad conditions. You have to turn the pile to reintroduce air. The smell of the compost should be your guide; it should be sweet-smelling. An unpleasant smell indicates that decomposition suffers from a lack of air. If you are in a wet area, either



build a roof over the pile or cover the pile with straw or black plastic to avoid leaching of potash (K) and trace elements.

On the other hand, if the pile is too dry, biological activity will cease. In this case, water will have to be added. This is best done when the compost is being turned.

Application of compost

Farmyard manure takes about three months to mature and should be black to brown in appearance with a crumbly texture. Ideally, it should be spread as soon as possible after it is finished. The longer it sits, the more it mineralizes and loses available nutrients. The presence of weeds on the pile indicates that mineralization is occurring and that the compost should have already been applied to the land. Application rates vary depending on the crops, the needs of the soil and the age of the compost.

Mature farmyard manure should be spread evenly on fields. Hoe lightly into the soil as a top dressing without disturbing the root area of the crops. In lighter soils the manure can be incorporated deeper (up to 20cm) and mixed well with the soil.

A special way of applying farmyard manure is as surface compost mulch. On heavy soils this kind of application stimulates soil life. However, the loss of nutrients with this method is high. Adding a grass mulch on top of the manure is recommended in this case, although this adds to the labour inputs.

Sources: International Federation of Organic Agriculture Movements (IFOAM), Training Manual on Organic Agriculture in the Tropics, October 2002