

The Organic Farmer

The magazine for sustainable agriculture in Kenya



Nr. 58 March 2010

Armyworms

Armyworms invaded farms in parts of the country following heavy rains in December and January. Farmers can use organic methods to control them instead of using chemicals.
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Milk problems at a very wrong time

Milk processors claim their capacity is already overstretched.

TOF The regeneration of pasture after the good rains in December 2009 and January this year has led to increased milk production. But the local milk processing companies are unable to buy and process the excess milk; so farmers cannot sell all their milk. As a result the retail prices have gone down by between Ksh 3–5 a litre. Although the consumers are happy about this situation, farmers are counting losses.

The cause of this situation is the fact that the New KCC, the largest and the only milk processor with the capacity to make powdered milk and Ultra Heat Treated (UHT) milk is unable to process the surplus milk. They have been talking about expansion to

increase their capacity in the last 4 years.

Lack of forward planning seems to be the main problem. The scenes we have witnessed of farmers disposing of milk is very sad. This is happening exactly at a time when the dairy industry was just beginning to recover from the effects of post-election violence two years ago. Farmers should now look for ways to sell their milk in the informal sector or even do value addition as we have explained elsewhere in this issue. The New KCC should work much more aggressively to expand its operational capacity and reclaim its former export markets that it lost due to lack of adequate supplies. It can also explore other markets within the region to save our dairy industry. *Page 2*

Tired soils cannot give good yields

In Latin America, the indigenous population has an interesting habit when they drink a cup of milk or a glass of beer: Before they take the first sip they pour a little bit on the soil – somehow as a sacrifice to *pachamamma*, the mother earth. With this habit they pay tribute

and respect to the soil which produces everything that humans need to live.

Agriculture would be much better off if we would have more respect for the soil and would take more care of it. After relying on chemical fertilizers for more than 40 years, the soil is tired, the crop yields have started declining despite the use of increased amounts of fertilizers.

Organic inputs available

The only way out is to improve the soil structure with organic matter such as farmyard manure, green legumes and crop residues. More over, there are new organic products in the market that farmers without adequate amounts of organic matter can use to increase their soils' productivity. *Page 5*

Dear farmers,

The World Bank, as you may know, has in the past failed to reverse the poverty situation in African countries with its strict lending conditions and policies. On the other hand, the World Bank is a keen observer of the economic situation in Africa and the rest of the world.

In a report released in December 2009, the World Bank looks at the food crisis in Kenya 2008 and 2009. As you know, in November 2008 the Government introduced a generalized maize subsidy scheme to help millers and traders sell maize at a subsidized price. It was a total failure. According to the World Bank, the Kenyan public lost an estimated sum of Ksh 23.4 billion in subsidies and taxes while corrupt government officials pocketed these funds.

According to the World Bank document approximately 60 percent of all farming households in Kenya are net buyers of food, meaning that they buy more maize than they sell. Therefore the Bank is against the high pricing policy of the National Cereals and Produce Board and concludes: "The current maize production structure is in such a way that only 2 per cent of maize farmers account for over 50 per cent of the sales. This supports the view that expenditures on the development and dissemination of improved agricultural technology, provision of credit for small farms, and investments in rural infrastructure would more directly benefit small-holder farmers and contribute more to rural poverty reduction than the current maize producer price support."

We agree with this opinion. For several years now, your magazine, The Organic Farmer, has been looking for ways to give access to credit for small-scale farmers. We can only repeat what we have been saying so many times on this page: It is time that the small-scale farmers take their fate in their own hands.

They have the opportunities – in forming farmers' groups, in working together, in assisting each other, in selling their products as a group instead of being misused by middlemen, in crop diversification – and in the care of the soil as we describe on page 3. This allows you to produce more. Together with the other above mentioned measures, a higher crop production is the basic factor needed for your improvement.

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Why not try homemade yoghurt?

Many farmers are asking us for a yoghurt recipe. With good reason: it is good and easy to make some.

The Organic Farmer

Homemade natural yoghurt is delicious at any time of the day, as a light addition to breakfast, or as a healthy dessert mixed with fruit and honey later in the day. When eating yoghurt, you also benefit from the friendly bacteria which help to boost your digestion.

Homemade yoghurt is more nutritious than ready-made yoghurt, yet it is easy and satisfying to make – even in small quantities at home and without a commercial yoghurt maker which has an electrically heated base.

What you need

Ingredients

- 1 litre of fresh milk
- A fresh plain yoghurt (without fruits or flavours) as starter, or special yoghurt starter cultures

Equipment Required

- A clean pot for heating the milk
- A container in which you can keep the fermenting yoghurt warm for incubation. It should have a lid. Do not use aluminium, but pottery, glass, stainless steel, or plastic. Clean this container



carefully and rinse it with boiling water before use

- If you can get it, use a cooking thermometer

How to make yoghurt

1. Heat the milk to 85°C or near to boiling. Be sure to monitor the milk constantly, stirring all the while. If you do not have a thermometer, 85°C is the temperature at which milk starts to froth.

2. Remove it from the heat and allow it to cool to approximately 45°C. A cold water bath will quickly and evenly lower the temperature and requires only occasional stirring. At 45°C, the pot will feel warm and slightly over body temperature. Avoid temperatures above 45°C at all times, as this will kill the yoghurt bacteria.

3. While you are waiting for the milk to cool, let the starter yoghurt sit at room temperature. This will prevent it from being too cold when you add it to the milk.

4. Add the starter yoghurt or the starter cultures (see box) and stir well, if possible with a wire whisk. A yoghurt

starter of 150 g will be enough for up to 2 litres of milk.

5. Pour the mixture into the clean container you prepared for incubation. Cover it and keep it warm to encourage bacteria growth (as close to 42°C as possible).

If you do not have an easy-to-regulate oven, do it this way: Put the container into a bigger cooking pan filled with warm water. If the water temperature goes below body temperature, place the cooking pan with the water nearer to the fire. Again, make sure the water does not get too warm.

If you do not have time to look after the yoghurt pot for hours, wrap the covered container tightly with thick warm blankets from all sides, also on top. Leave it undisturbed for several hours.

6. Control it for 4 to 5 hours; if you wait too long, the yoghurt may get too sour and you might not like it. Leave it until it has become thick.

7. The yoghurt will last for up to one week if you refrigerate it. If you can not cool it, you should consume it within one day.

8. Add fruits and sugar according to availability and your taste.

Starter Culture

Let us make a few comments about the starter. You may use some of your homemade yoghurt as a starter to make your next batch. But it is not possible to do this more than a few times since the bacteria will deteriorate. It is recommended to use fresh plain store bought yoghurt to start each batch, or to buy special yoghurt starter cultures if you chose to make yoghurt regularly and in larger quantities. Distributor for yoghurt starter cultures: Promaco Ltd, Tel: 883586/884576; Location: No. 115 Windy Ridge, Karen; they also sell flavours and colours.

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

The Organic Farmer is published monthly by icipe and distributed free of charge to farmers. The reports in the *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. www.biovision.ch

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Other delicious products made from milk

Apart from yoghurt there are many more products that can be made from milk and its by-products – in this way adding value to your milk.

Sour milk (mala): *Mala* or *Maziwa lala* is sour milk made from milk by adding lactic bacteria, which is active at temperatures of between 25-35°C (or room temperature for those who do not have a thermometer). When making *mala*, the choice of the right starter culture is important because cultures affect the taste, texture and consistency of the product.

Milk-shake: This is a sweet-cold beverage made from milk. Milk shake is made by adding fruit flavours such as

vanilla, strawberry or mangoes into milk and colour before whipping the mixture in a blender until it produces a froth. It is then sweetened and stored in a refrigerator. No culture is added.

Home-made ice cream: Ice-cream is another high value product that can be made from milk. When the milk is boiling, fetch one cup and let it cool, then mix with custard while stirring until it forms a smooth paste. Mix the paste with the boiling milk and continue stirring until it thickens like porridge. Remove from the fire and add sugar to sweeten it. Flavour it with the desired flavour. Pack in ice-cream cups and refrigerate immediately.

Marketing goat meat: what you need to know

Prices of meat goats are influenced by many factors, most of which a farmer has control over.

By John Cheburet

Meat goat production is one of the oldest farming practices in Kenya. Communities in rural areas have kept goats for subsistence and for slaughter during traditional festivities. Goat milk is highly nutritious and supplements cow milk in most households, especially during the dry season. This has given the goat an almost guaranteed presence in every family farm. Nevertheless, the development of goat meat production has largely remained inferior compared to beef production.

The big question for many farmers is how they can fetch better prices than they are presently making. Mr Frank Chesingei, a goat trader in Mogotio says that a thorough understanding of the economics around goat meat production and awareness of the market dynamics is important for people who raise meat goats and want to make more money from the enterprise. This includes knowing what characteristics buyers look for in live-goats and the qualities consumers look for in goat meat.

Valuable tips

Market: Begin with the market in mind. This could be local butcheries, hotels, schools, restaurants in major towns or supermarkets. It is a wide market but that depends on the quality and quantity of goat meat. With that information, you then devise a breeding plan that will enable you to meet the demand of the market segment you are targeting

Middlemen: Farmers fetch the best prices for their sheep and goats when they sell directly from the farm to the consumers. If you cannot sell directly to the consumer, then, sell to the butchery. The bottom line is to try as much as possible to eliminate the middleman because the more the middlemen in the marketing chain, the less the money for the farmer.

Meat quality: More muscle means more



Goats can bring good income if farmers understand their production and market.

meat and more meat means money. A random sampling of customer preferences in major towns reveals that consumers prefer meat that is tender - easy to chew, with less fatty tissues. Tenderness is a very important factor when it comes to meat quality. Factors that influence tenderness are: the animal's age at slaughter, the amount of fat and connective tissue. Goat's meat is tender when the animals are slaughtered between 5-8 months of age.

Demand: There is high demand for meat during the Christian and Muslim festivities; Easter, Christmas, Ramadhan, Eid-UI-Fitr, Eid-UI-Adha and New Year. These festivities are never complete without goat meat to feed family and guests. Time the kidding of your animals such that they are ready for sale during these high seasons. For instance, if you plan to sell kids at 4-5 months, then the does should be served 9-10 months before the time of sale.

Breeding: Animals for breeding purposes are more expensive than animals for slaughter. One of the emerging market niches for meat goats in Kenya

is animals for breeding stock. More farmers are becoming aware of the need to improve the quality of their animals. This is evidenced by the number of farmers making inquiries about breeding practices at the animal sections of agriculture shows country-wide. Raising animals with superior characteristics will give you an edge in this growing niche for improved and better animals. However, breeders should strive to ensure high standards and consistent quality.

Marketing: There is more clout in numbers. Farmers keen on far and bigger markets like Kenya Meat Commission (KMC) can organize in cooperatives or informal marketing groups. Such groups cut transport costs and enable consistency in the number of animals supplied by pooling animals together. With such a group marketing strategy, farmers can invite buyers to the farm, in the process eliminating the risks and costs associated with transportation. Though it can be time consuming, this approach could be highly beneficial to farmers. ■

Contact the Kenya Stud Book

If you are interested in raising goats for meat or for breeding or a combination of the two, meat goats and goat meats are here to stay. The market is expanding. With a market in mind, good breeding practices are essential; selection, cross-breeding, proper record keeping and interested farmers can register their pure or cross breeds and also get breeding guidelines from The Kenya Stud Book based at Nakuru show grounds. Tel: 051 221 69 96. **TOF**

Nutrient composition of goat and other types of meat (per 100g of cooked meat)

Nutrient	Goat	Chicken	Beef	Pork	Lamb
Calories	122	162	179	180	175
Fat (g)	2.6	6.3	7.9	8.2	8.1
Saturated Fat (g)	0.79	1.7	3.0	2.9	2.9
Protein (g)	23	25	25	25	24
Cholesterol (mg)	63.8	76.0	73.1	73.1	78.2

Goat meat offers more nutritional value, greater health benefits, and is an ideal choice to be considered as "the other red meat." As the health benefits of goat meat becomes more widely known, the demand will continue to increase.

Causes of retained placenta in dairy cows

Retained placenta after giving birth, if not treated properly, can weaken or kill your cow

William Ayako

Retained placenta is one of the complications associated with delivery in dairy cows and other livestock species such as pigs, goats, sheep, horses and donkeys. Under normal circumstances, the placenta should be expelled within 24 hours of giving birth, especially in dairy cows. There is reduced uterine contraction (the reduced force to push it out) 24 hours after calving, which results in retained placenta. It may take several days before the placenta attachment to the uterus decomposes to allow it to drop.

In a herd of dairy cows, cases of retained placenta should not exceed 10% of all calving cows; figures above that indicate that there is a serious problem within the herd. A farmer with one cow may experience the problem of retained placenta after his cow has calved up to ten times. The condition is easy to recognize since part of the placenta can be seen hanging from the birth canal after a cow gives birth. In some cases, the whole placenta may remain inside the uterus thereby making it difficult to notice the problem. However, a keen farmer who observes their cow well during calving would know that the cow has not dropped the placenta.

Danger posed by retained placenta

In dairy cows, retained placenta may be the cause of serious economic loss to the farmers due to the following reasons:

- Cows with retained placenta may develop bacterial infection and become ill and thus reduce production. Some may even die.
- Milk from cows with retained placenta is unfit for human consumption and therefore cannot be sold.

The fertility of dairy cows is affected when most cows in the herd suffer from retained placenta. This causes a direct loss to the farmer due to delayed calving leading to a lengthy period between births (calving intervals) and hence low milk production. It is unhygienic to milk a cow with a decomposing afterbirth hanging on it.

Causes of retained placenta

The problem is caused by the following factors:

- Abortions and premature calvings. The birth may occur normal but the placenta may not detach itself from the uterus lining thereby causing the problem of retained afterbirth.



After delivery observe carefully to ensure that the cow drops the placenta (TOF)

- When the cow produces twin calves, the uterus becomes weak, causing retained afterbirth.
- In cases of milk fever, the lack of muscle power can weaken the animal and reduce its ability to push out or expel the placenta.
- Difficult calving may also stress the uterus after the calf has been delivered.
- Dirty cattle shed may lead to early infection of the placenta that may cause inflammation and hence delay or reduced chances of placental separation and expulsion. It is important to note that it is unnecessary to assist a calving cow before it is confirmed that the cow cannot give birth on its own.
- Lack of Vitamin E or selenium deficiency may lead to reduced muscle power in the uterus during calving.
- Other conditions such as poor feeding, liver flukes and copper deficiency may lead to general weakness and hence retained placenta.

Treatment requires a qualified vet

A farmer should always bear in mind that the uterus should always be hygienic since it is the house of a future calf and determines the future milk yield. Therefore whenever there is a problem of retained afterbirth, the affected cow should be attended to by a qualified veterinary doctor.

- The vet first removes the placenta, then administers the right treatment. When removing the placenta, care should be taken not to tear the placenta or leave pieces in the uterus. Most vets would leave the animal for three to four days without treatment to allow the placenta to decompose. However, this would depend on the health of

the cow.

- Antibiotic tablets are inserted through the birth canal into the uterus to stop infection.
- Depending on the level of sickness and the presence of a large volume of stinking fluid, a veterinary surgeon may drain the uterus using a length of tubing with warm saline water.
- Full treatment with the use of injectable antibiotic may help the animal to recover quickly.
- However, for effective control, proper recording of all calvings would assist the farmers to establish the cause of high incidences of retained afterbirth in their animal herds. ■

Dairy cow management after birth

Apart from the problem of retained placenta, dairy cows that have just given birth could develop infections. About 90 per cent of the animals have some form of bacterial infections during the first week of delivery. Some animals with a strong immune system can resist bacterial infections of the uterus after delivery. Others require antibiotic treatment.

Although the use of antibiotics can solve the problem in some animals, studies show that some animals can still overcome the problem without treatment through proper diets that restore their health. Milk from animals under treatment should not be consumed for a period of upto 72 hours. Some antibiotics such as oxytetracycline can persist in the animal's body for longer periods.

TOF

Organic fertilizers maintain soil's health

Organic farming opens many ways to restore soil fertility and to improve income for small-scale farmers.

The Organic Farmer

It is now a common experience by almost all farmers that crop yields are declining every year. This is so despite the use of all the required inputs, such as certified seed and chemical fertilizers in adequate and recommended amounts. There are many reasons for this development. Unfortunately, most farmers do not even know how to identify the problem: They lack facilities (or cash) for soil tests and technical advice.

The only solution for farmers is to restore soil fertility according to the organic farmers' slogan: "Feed the soil to feed the plants." There are various organic methods which we have often emphasized in past TOF-issues.

Manures

Farmyard and liquid manures are a good source of nutrients for all crops.



A soil test kit, unfortunately it is not available locally (Photo PR)



Fertile soils bring good crop yields and income for the farmer (Photo PR)

Various manures such as slurry and plant extracts such as that made from Tithonia provide nutrients that can be applied in diluted form to growing plants. These can effectively meet the nutrient requirements of any crop and can be used to replace chemical fertilizers, in the long term. Farmers can also make Fermented Plant Extracts (FPE). Plants with various nutritional values such as stinging nettles, neem, comfrey etc, are mixed with EM1 and molasses to make a solution. It can be applied on crops to feed and protect them from diseases and pests (See TOF Nr. 24 May 2007).

Cover crops and green manures

Green manures are crops planted for the purpose of soil improvement. When they are slashed and incorporated into the soil or left as mulch

before planting, they raise the humus levels of the soil rapidly. If you interplant a leguminous cover crop like pigeon pea, lablab, or sun hemp (crotalaria) into the main crop of the previous season, the subsequent crop will profit from the nitrogen, phosphorus, potassium, and other nutrients accumulated by the legume. Leave it to grow in the field after harvesting time, even during the dry season, and slash it and incorporate the residues into the topsoil about one to two weeks before planting. This can have the same effect as the addition of 10 to 20 tonnes per acre of farmyard manure.

Tithonia

Tithonia is a very good source of nutrients that does not cost the farmer anything. Tithonia is a quick source of

Continued on page 6

Environmentally-friendly products for soil improvement

There are organic products in the market which can improve soil quality very fast while reducing acidity. Most agrovet shops in major towns stock these products:

Humic and fulvic acids

Humic and fulvic acids (also called humates) are effective in improving the quality of all types of soils which do not contain adequate amounts of organic matter. Humic substances determine the structure and the fertility of the soil; they are formed when organic matter such as crop residues or farmyard manure decomposes. The two acids are extracted and processed in highly concentrated form and sold to farmers who do not have adequate compost or farmyard manure for application.

Humic substances store nutrients and stimulate soil microorganisms which are important for nutrient release from organic matter. They increase assimilation of all plant nutrients that would otherwise be washed out or locked up in the soil. Humic and fulvic acids allow improved water retention which is especially important in sandy soils, and deeper root development. They allow the easy penetration of nutrients and water into plant roots. Therefore, humates are not fertilizers; they only improve the absorption of plant nutrients and soil structure.

Humic and fulvic acids can be used in combination with both organic and chemical fertilizers to improve nutrient uptake by plants. Humic acid is available in the shops under different brand names; one of them is Humax. A 500 g pack of Humax goes for Ksh 1,500, enough to make 200 litres of solution that can be applied on 3,000 plants.

Black majik or black earth

Black majik and black earth contain three compounds, humates, potassium and ulmic acid. It reduces the acidifying effect of chemical fertilizers in soils, in the process increasing the effectiveness of fertilizers in promoting plant growth. 1 kg of Black majik costs Ksh 300. Farmers can mix 50 grams of Black majik or Black earth in 20 litres of water and spray it directly into the soil or planting holes.

Earthlee

This is a compound containing 80 per cent humus and carbon. It reduces the need to use large amounts of organic manure for farmers who do not have it at the time of planting. Farmers who are using chemical fertilizers are advised to mix 1 kg of earthlee or Black majik with 50 kg bag of DAP, CAN or NPK to reduce the acidic effects of these fertilizers on the soil. 1 kg costs Ksh 500.

TOF



nutrients including nitrogen that fast growing crops require, for instance *sukumawiki*. There are many tithonia bushes, even by the roadsides. Use it in high-value-crops and plant Tithonia along your field borders to have it near the place where it is needed. Tithonia can give you the same crop yield as you would get when using chemical fertilizers - and at no cost!

Tithonia green manure and mulch: Chop young Tithonia shoots and work this material into the soil one week before transplanting. Use 4 to 5 kg Tithonia per square metre. A good layer of chopped Tithonia can be added as mulch to established plants regularly. Tithonia decays quickly and releases its nutrients within a short time. In contrast to synthetic fertilizers, Tithonia mulch increases soil organic matter and improves soil fertility in general.



Tithonia-tea: Chop tithonia leaves and branches into small pieces and soak them in water at the ratio of 1 part tithonia to 4 parts water. Put it into a container, sealing it tightly to stop nitrogen from escaping. Let it stand for 7 days. Sieve it using a piece of clothing if you intend to use a knapsack sprayer to stop particles from blocking the nozzles. Spray it within 5 days at the root of the plants. Repeat this after every 2 weeks.

Rock phosphate: Mijingu rock phosphate is a slow release organic fertilizer; this means that it releases phosphorus slowly. One way to improve phosphorus supply is to incorporate humic acid; it is available in most agrovetterinary shops.

Another good option is mixing generous amounts of rock phosphate into the compost heap when preparing compost. If you apply rock phosphate together with organic matter such as maize and bean residues to your crops regularly, this will produce natural humic acids that help make phosphorus available to all plants including heavy feeders like *sukumawiki*.

Unfortunately, *mijingu* rock phosphate is not easy to get in most farming areas. It is however advisable that farmers ask for it in agrovet shops. If the shop keepers realize that there is a market for *mijingu* rock phosphate, they will stock it.

Compost: Try to make use of all organic wastes and prepare compost from them. Compost is a valuable soil amendment which increases soil organic matter and soil fertility. ■

Fruit drying centres set up in Western Kenya

As part of MATF's Fresh Fruit Processing Project, fruit drying centres opened for business last month and are now fully operational in three districts in West Kenya.

Small-scale fruit farming is a key economic activity in West Kenya. However, it is estimated that over 60% of all the fruit produced in West Kenya perishes, as farmers cannot readily access the fresh fruit market.

High demand for fresh fruits

The Fresh Fruit Processing Project aims to directly improve the livelihoods of 600 local fresh fruit farmers located in the Busia, Homa Bay and Vihiga Districts by establishing fruit drying centres where they can dry their fruits to sell at good prices to supermarkets in cities. This simple solar-drier technology will help small-scale farmers to process their fruits and guarantee a market that will pay cash-on-delivery. Currently, there is a high demand for dried fresh-fruits in the local supermarket chains in Nairobi and other major towns.

More farmers to benefit

The 600 farmers involved in the project will also take part in field days and local exchanges where they will pass on the fruit drying and marketing skills they have learnt to other farmers. As a result, the project will impact an additional 2,400 other farmers in West Kenya.

The fresh fruits currently being processed are bananas (in Busia and Vihiga districts) and pineapples (in Homa Bay district). These fruits are locally available and there is plenty of sun to facilitate the drying process.

Gilbert Muhanji is MATF's Communication Officer.

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5 years of TOF

Good response

to farmers competition

We will have a difficult task of selecting the winner to the farmers competition, which we launched last month to mark the 5 years since we started publication of *The Organic Farmer*. This is due to the large number of entries that we have received. By mid-February we had received more than 40 entries. The first winner will get a plastic water tank worth Ksh 18,000. Other prizes include a drip irrigation pump, milk can, a knapsack sprayer and a Money Maker pump.

Buying and Selling

Green Pepper: I am looking for green pepper. Anyone with 200 kgs can contact me on Tel. 0722 848305. Leonard Saitoti.

Capsicum market: I have organic yellow and red capsicums. Is there anyone who can buy these products? Frank Muriungi Tel. 0722 218 058

Chaff cutter: I have 5 head of cattle and require a chaff-cutter. If you have one for sale please contact me. Peter Wachira Tel. 0722 341 718, Meru.

Dairy goats: We are looking for pedigree dairy goats to provide high quality milk for HIV/AIDS patients to be able to boost their immune systems and nutrition. Please give us their milk production rates and let us know if they can do well in South Rift Valley highlands. Joseph Koskei, Rural Projects Support Facility, CBO, email: e08kitur@yahoo.com

Cassava, bananas for sale: I have cassava and bananas for sale. Any farmer who needs these products can get in touch with me. Tel. 0718476260/ 0727502903, Oliver Wetete Masungu. email-olivermasungo@gmail.com.



Tetanus affects all animals, not only donkeys

In your reply to a farmer's query (Nr. 53, Oct. 09, page 7) you stated that donkey dung is good for manure. Isn't there any problem with tetanus and how do we go around this problem? B. W. Oduor, P.O.Box 279, Ngiya, Cell. 0722 833 701

Tetanus is a life threatening disease. The tetanus-bacterium can live in the intestinal tract of all warm-blooded creatures. When it is excreted, it can survive in the soil for many years. The bacterium enters the body through open wounds.

If a wound has been infected, susceptible animals will show symptoms and die from the toxin produced by the bacterium within a short time. But as long as animals (or humans) are healthy, there is no problem with their dung.

What we would like to emphasize

is: This problem is not at all restricted to donkeys! Cattle, goats, sheep, pigs, dogs; birds are equally affected. But man and horses (donkeys belong to the horse family) are more sensitive and will die from tetanus more easily.

Useful vaccination

To protect yourself and your animals from tetanus, do the following:

- Vaccinate your family and your donkey against tetanus. A donkey can work for more than 20 years if it is kept healthy - the services it provides during its lifetime is worth the vaccination fee many hundred times!
- Make sure your animals do not acquire open wounds from tethering, standing on dirty ground (leading to foot diseases), from working with inadequate harnesses or other practices.

How to make peanut butter

Hi, is it possible for me to get a full recipe of peanut butter preparation as it went on air on 2. 7. 2009? Andrew Wemali, Box 169, Kakamega, 0711 810368

The recipe is simple: For every 500 g of roasted shelled peanuts, you need about one small tablespoon salt and

about 50 g of good vegetable oil. This mixture must be blended or ground into a smooth paste. You would need something like a blender for this. For crunchy peanut butter, stir one cup of chopped roasted peanuts into the paste. Ensure that the peanuts and oil are of good quality.

Apples can be grown in Kenya

How long do apples take to mature into a fruit after seedling transplant? How many fruits can one harvest from a single apple tree? How many harvesting seasons does an apple have in a year? What is the average gross margin of a single apple tree? What is the average life span of an apple tree? Peter Okwany from Kapenguria, 0737 334 386

Although apples are fruits of cool temperate regions, there are some areas in Kenya which are suitable for their production. However, some requirements are difficult to fulfil and the skills needed to overcome these constraints should not be underestimated. Apple trees need a cold period before their buds open and leaves and blossoms start to grow. A hot period is required

to produce fruits of good quality. Some commonly used manipulations in tropical regions include defoliation, application of certain chemicals, and drying. You will have to learn correct pruning techniques. Try to get information on cultivars which are best adapted to your local environment.

Seedlings are usually grafted on rootstocks which also make sure that apple trees remain relatively small for ease of work.

Fruiting starts around the third year after



Aphids affect cabbage

Why do cabbage heads that have just started forming get deformed heads and leaves in the presence of aphids? Farmer, Buyangu

The presence of aphids and other pests may lead to reduced and stunted growth and therefore to poor head formation, especially if they appear in high numbers and feed from the heart of the plant. The heart is the centre of growth and the place where new leaves are formed. Aphids should therefore be controlled early. Use a neem or pyrethrum product. In light cases, a soap solution may be sufficient. Aphids are usually a problem if plants lack nutrients but also where too high amounts of fertilizers are being used.



Supply sufficient water

Other factors that can affect head formation even more than pests are:

- Water stress; must be avoided during this period!
- Nutrient deficiency, especially nitrogen (excess nitrogen also causes the problem). Cabbage is a heavy feeder, and during head formation, nutrient requirements are high. Plant cabbage after a legume, incorporate 10 to 20 tonnes of manure per acre before planting. Two weeks after transplanting, you may start to give side-dressings at weekly intervals (manure, slurry, plant teas).
- High temperatures during head formation; this may lead to loose heads.

planting. Between year 4 and 6 years, you may harvest between 2 and 10 kg apples per tree and per year; later, this may go up to around 15 kg. There are two main picking seasons in Kenya: In February and August. Usually, the trees are removed after 15 years, or when their yields have declined markedly. Gross margins will depend on your skills and care, and on the prices in the market. Keep in mind that most apples consumed in Kenya are imported from regions where climatic conditions are less demanding for apple production.

Recommended literature:

Griesbach J. (2007) *Growing Temperate Fruit Trees in Kenya*. World Agroforestry Centre, Nairobi. 128pp. The book can be found on: <http://www.worldagroforestry.org/downloads/publications/PDFs/b15496.pdf>

Biological methods can control armyworm

Armyworms are not a threat except during an outbreak. Then, you have to take immediate action.

The Organic Farmer

The African armyworms cause damage to cotton, barley, oats, wheat, maize, millet, sorghum, soya bean, sugar cane, grasses, citrus plants, beans, okra, cabbage, cucumbers, marrows, potatoes and tomatoes; they attack foliage, growing points and young stems. Some maize varieties are more susceptible to attack than others, e.g. Katumani, a dry land variety grown widely in Eastern Kenya. These varieties are most at risk where probabilities of armyworm infestation are high.

Normally, only small numbers of this pest invade pastures. However, periodically, the populations increase dramatically covering many thousands of square kilometres. Outbreaks often follow late rains in the hot season. The armyworms travel from field to field in great numbers, hence the name "armyworm". The first armyworm outbreaks appeared in Tanzania and in Kenya. In nine years out of ten, they have been known to cause 90 percent of crop and pasture loss in their worst years. In 2001 alone, they covered 157,000 hectares of crops and pasture.

Natural enemies

Many animals, birds and insects prey on the African armyworm at different stages of its lifecycle. These natural enemies should be encouraged to thrive by maintaining natural surroundings with plenty of breeding places for them, including trees and



A maize stalk infested with armyworms

shrubs. Night birds and bats feed on the African armyworm moths. Lacewings, wasps, parasitic wasps and spiders consume the caterpillars.

First step: Monitoring

To monitor the presence of armyworms, conduct a visual inspection by going around all your fields. Armyworms feed at night and hide under debris during the day. However, they can be checked in late evening or early morning as they may still be actively feeding. Regular monitoring is vital for timely action. A recommendation for doing this is to examine 100 plants at random by sampling 20 plants from five locations.

Second step: Fight them

There are quite a number of plant extracts which can be used successfully against armyworms. To make these extracts work, follow carefully the given instructions. It is advisable to add soap, since soap acts like a glue, so that the plant extracts stick well on the leaves. Spray thoroughly on the infested plant, preferably early in the morning.

Neem (*Azadirachta indica*): Remove the flesh from fallen fruits and dry them carefully in airy conditions (in sacks or baskets), to avoid formation of mould. When dry, the seeds are shelled, finely grated, then soaked overnight in a piece of cloth suspended in a barrel of water. There should be 2 to 50g of powder per litre of water. This solution is then sprayed on infested plants.

Pyrethrum (*Chrysanthemum cinerariaefolium*): The white flower heads possess insecticidal properties. Pyrethrum is most productive at altitudes of above 1600 meters and ideally in semi-arid conditions. On richer soils the insecticidal properties are reduced. Pick the flowers on a warm day when the flowers are fully open, dry them carefully and store them in an airtight container in the dark. Light reduces the effectiveness of the flowers.

Pyrethrum powder: Grind flowers to a dust. Use it pure or mix with a carrier like talc or lime. Sprinkle over infested plants.

Pyrethrum liquid: Mix 20g pyrethrum powder with 10 litres of water. Soap can be added to make the substance more effective but it is not vital. Apply immediately as a spray.

Use of garlic against armyworms is effective

Garlic has anti-feedant properties (stops insects from feeding) as well as bacterial, fungicidal, insecticidal, nematocidal and repellent properties. It is non-selective, has a broad-spectrum effect and can kill beneficial insects as well. Therefore it should be used with caution. The best time to spray is early in the morning.

Garlic bulb extract I: It is used against the following pests and diseases:

African bollworm, African armyworm, onion thrips, root knot nematodes, anthracnose, downy mildew and rice blast.

You need:

85 grams of chopped or crushed garlic
50 ml of mineral oil (vegetable oil)
10 ml of liquid dish soap
950 ml of water
Strainer
Bottle container

Preparation:

Add garlic to vegetable oil; allow

mixture to stand for 24 hours. Add water and stir in the soap. Store it in the bottle container.

How to use:

- Dilute 1 part of the emulsion with 19 parts of water (for example, 50 ml of emulsion to 950 ml of water).

- Shake well before spraying.

- Spray thoroughly on the infested plant, preferably early in the morning.

Garlic bulb extract II: It is used against the same pests and diseases as:

African bollworm, African armyworm, onion, thrips, root knot nematodes,



anthracnose, downy mildew and rice blast

You need:

100 g garlic cloves,
0.5 litres of water
10 gm soap
2 teaspoons mineral oil

Preparation:

Soak the finely grated garlic for 24 hours in the mineral oil. Dissolve the soap in the water, mix the infusion of garlic and mineral oil, stir well together and filter through a fine cloth. Before use, dilute this solution with 20 parts of water.

Fruit trees:

The following preparation is successful against caterpillars in fruit trees: Two finely grated garlic bulbs and two spoon chilli peppers are stirred into four litres of hot water in which a nut-sized piece of soap has been dissolved.

Source: infonet-biovision, HDRA