

The Organic Farmer



The magazine for sustainable agriculture in Kenya

Nr. 71 April 2011

Benefits from carbon project

TOF - In Western Kenya, a group of small-scale farmers are changing agricultural practices and earning carbon credits. In the process, the ground-

breaking Kenya Agricultural Carbon Project is set to improve food security, help address climate change, and improve the livelihood of rural folk. Developed with the support of

the World Bank, the project, located on 45,000 hectares, generates carbon credits which are sold to the Bank-administered BioCarbon Fund. The direct benefit to local communities is over Ksh 29.5 million with an initial payment of Ksh 6.8 million to be made in the first year, 2011. Small-holder farmers and small-scale business entrepreneurs are trained in diverse cropland management techniques such as cover crops, crop rotation, compost management, and agro-forestry. How do carbon credits work? *Page 3*



A reforested area in the Aberdares

Aflatoxin level in maize too high

TOF - Most of the maize flour in the market from some of the major commercial millers in Kenya is highly contaminated with aflatoxins. Samples taken from 20 of the major maize millers in December from six provinces were found to contain levels of aflatoxins that were unsafe for human consumption.

The research carried out by the US Centers for Disease Control and Prevention and the Kenyan Ministry of Public Health found that 65 per cent of commercial maize meal was contaminated with aflatoxins. According to University of Nairobi researcher Sheila Okoth, people were not dropping dead from the poison, but there was evidence of secondary health problems. The study showed high levels of aflatoxin in breast milk, cow's milk and the traditional alcoholic brew, busaa. It emerged that much of contaminated maize from last year's bumper harvest was already in the food chain, with the most spoilt being turned into animal feed.

However, a technology that could reduce aflatoxins by up to 80 per cent will be available locally as soon as trials and regulatory issues are sorted out. *Page 8*

How to control chicken diseases
Page 4



Modules are ready

The modules on various topics in organic agriculture are ready. They are easy to understand and explain every topic with a lot of pictures and graphic illustrations. They contain all the basic information that farmers need to know. The 21 modules, packaged in a spring file and are a useful handbook for farmers. Interested farmers can send us Ksh 50/= for each module via SMS to the following mobile number 0717 444 405, or pay Ksh 700 for all 21 modules. Please do not forget your full name and postal address. You will get it as soon as possible.



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Dear farmers,

Every farmer in the country, at the moment, is preparing to plant. According to the weather reports released at the beginning of March, the outlook is not very good. The weather reports indicate that the rains will be depressed and erratic in most parts of the country, an indication that 2011 is going to be a difficult year. The situation in Northern Kenya is already very bad following a severe drought that has killed thousands of animals. Many pastoralists are already starving and have to rely on relief food.

This is ironical considering that no other economic sector needs more focused planning in agriculture. But, it seems that we never learn anything. Last year, weather forecasts for 2011 clearly predicted low rains for many parts of the country. Of course, we can blame the government because of its lack of planning and preparedness, for instance, why did the government wait for so long to put in place the livestock off take program for the pastoralists? Why was it unwilling to buy surplus maize from farmers in 2010?

These are questions that both the Ministries of Agriculture and that of Livestock Development and relevant agencies have to answer. They must show more commitment in addressing the plight of the farmers, lack of funds notwithstanding. Otherwise, people will continue to suffer from inadequate food.

While it is easy to blame the government, the problem of changing climatic patterns will also need attitude and behavioural change on the part of the affected people: For example, why can't the pastoralists sell their animals before the drought strikes while the animals are still in good health?

To avoid total crop losses, farmers can plant drought resistant crops like sorghum and millet. They can also diversify and grow different types of crops on the same land, instead of relying on only one crop. Water conservation techniques such as tumbukiza, non-tillage and terracing when planting maize or fodder for animals can also help.

It is now becoming clear that the era of climate change is here. We have to learn to adapt in order to cope with these changes. Its time to change both our thinking and way of doing things. Lamentations will do us no good!

Starting a business needs proper planning

It is a good sign that we get more and more questions from farmers who would like to start a business with their farm products. "How shall we go ahead?" they ask.

John Cheburet Kibor

In recent years, there has been a move by government and stakeholders in agriculture development to encourage farmers to look at their farming as a business. Those who have embraced this shift and employed prudent business management skills in their farms are now reaping the benefits. They have more money going into their pockets and they are able to seal the loopholes that waste money.

Such benefits do not come easy. Identifying a viable agri-business idea is not enough. It is only the beginning. Money has to be mobilized to fund the activities of the business idea so that at the end of the day the sale of goods or services brings in money. This is where a business plan comes in.

What is a business plan?

When applying for a loan, your potential financiers, who in most cases are banks, will ask for a plan of your business. A business plan spells out the objectives of your enterprise, why you

Ask yourself if ...

There are some important personal questions everyone has to answer before beginning a business:

- Do I have time to devote to this new enterprise?
- Does the workload correspond with the time of year I want to work?
- Will the new enterprise complement my current activities?
- Do I have written objectives describing the desired outcome?
- Do I have the skills and experience necessary to do this?
- Do I like to supervise people in case I need employees?
- Have I managed a business before?
- Do I have enough personal energy to do this?
- Can I count on my family members for support?
- Do I care what the neighbors think about my new enterprise?
- Why do I want this enterprise?

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.

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think these objectives are achievable, and contains the strategies for reaching them. Unfortunately, many farmers are not literate in this area of planning for agri-business. Without this document then it will be difficult to convince a person or institution to put money into your enterprise.

A business plan will vary according to the size of the business, technical complexity and whom the plan is intended for. Generally, a business plan will contain the following:

Executive Summary: The purpose of this part is to provide an overview of the business venture. It includes a description of the business, the products and/or services, brief analysis of the market, your marketing strategy and also a brief financial plan. This part should be clear, so as to give a good impression of your business idea. You should make as clear as possible, the purpose of the money you are seeking. End the executive summary with a strong statement to persuade your reader that your business will be a success.

The best time to write this overview is after you have completed the entire proposal and then insert it at the beginning of your business plan.

The business idea: This gives information about what product/service you are going to sell or provide.

The marketing plan: This includes everything that you do to find out who your customers are, what they need or want and how to reach them. This section will describe your product or service in detail. It will also contain what prices you are going to charge, where your business is going to be located and what method of distribution you are going to use as well as

how you are going to promote your business.

Form of business: This describes the legal status of the business, the form you have chosen based on the advantages and disadvantages that each legal form has. The choices are sole proprietorship, partnership, limited company and cooperative. You should also include in this section a demonstration of how you have thought through the legal requirements for your business and factored them into your business processes.

Management: This section answers the questions about what skills and experiences your staff need, how of them you will need and how their skills and experiences will be focused to achieve the business objectives set out.

Financial planning: You will need a budget for your business. And so, this section helps to plan both your profits and your cash flow for your new business i.e. money that is coming in (income) and moving out (expenditure). Once you have drawn up a budget, you can use this information to calculate the amount of money that you need to start your business. This is called 'start-up capital'. Indicate the sources of this start-up capital i.e. what sources will contribute what amount and percentage of this money.

Note

- A business plan is a guideline. Coming up with a business plan that suits you and your ground situation can be very helpful.
- Writing a good business plan cannot guarantee success, but it can go a long way towards reducing failure.
- Practice makes perfect. Start writing today and get first hand experience.

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Earning money from climate change

Planting trees that absorb carbon dioxide in your shamba can earn you cash. But it is not all that simple.

Anja Bengelstorff

The way farmers use their land, changes the climate of the world. Those might be strong words, but they carry a lot of truth. If you cut down your trees to make space for planting more crops, you destroy the instruments that turn carbon dioxide, the biggest contributor to global warming, into oxygen which



both humans and animals need to live. The more deforestation, the more harmful emissions cannot be neutralized. Up to 25 per cent of all human-related greenhouse gas emissions result

from release of carbon through forest losses, mainly in developing countries. Carbon emissions from the next five years of burning rainforests will be greater than that for the entire history of aviation up to 2025. Something needs to be done.

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. It sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. Recognizing that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations. Under the Treaty, those countries must meet their targets primarily through national measures. However, with the so-called voluntary carbon market, the Kyoto Protocol offers them additional means of meeting their targets, of which developing countries can also benefit from.

This alternative is the trading of carbon credits. A carbon credit is a term for any tradable certificate or permit representing the right to emit one tonne of carbon or carbon dioxide equivalent which can be traded in the international market at their current market price. (One tonne of carbon dioxide gas is produced by burning about 385 kg of coal.) Buyers are commercial and individual customers who are interested in lowering their carbon footprint.

Carbon Standards

In line with the Kyoto Protocol, independent organisations have developed standards for the carbon market, for example the Plan Vivo Standard and

the CarbonFix Standard that are particularly interesting for small-scale, low-income farmers. Those standards focus for example on forestry, land-use or community-based projects. The standards used by a project developer determine the prices of voluntary carbon credits. Simply put: A project developer, together with a community, comes up with a project of, for example, reforestation of at least 100 hectares of land, or small biogas plants on the farms. The project needs to be both validated and verified by accredited personnel to be certified for trading (receiving carbon credits), unfortunately for a rather high cost of around Ksh 2.5 million (for validation and verification only).

The project must be set out for at least 30 years, the time in which to generate the reduction of carbon dioxide. For reforestation, indigenous or naturalized multi-purpose trees (like fruit trees) are preferred, exotic species, eukalyptus in particular, are discouraged.

However, standards are constantly being developed and improved, and not every intended project might find the appropriate standard at the moment.

Plan Vivo Standard

The Plan Vivo Standards are designed to verify the carbon, social and environmental benefits of rural community land-use projects. Plan Vivo provides the standard and carbon credit registry to project developers/co-ordinators, which tend to be aid and environmental NGOs. The standard verifies a wide range of activities such as afforestation & reforestation, agro-forestry and avoided deforestation for which credits can be generated. Projects are small-scale initially. They tend to start with a community or group of landholders with the project boundary widening to include more land and communities over time, potentially reaching large scale. Independent verification of carbon, social and environmental project benefits is required every five years after validation. However, credits are issued annually based on internal monitoring of implementation.

Plan Vivo has developed procedures to link small-scale farmers to carbon buyers. Farmers sign carbon sale agreements stipulating the targets that they have to meet. Payments are made in five installments over a period of 10 years and accounting is done in metric tons of carbon dioxide sequestered. An average farmer is paid Ksh 850 (USD 10) per metric ton of carbon dioxide sequestered by the on-farm planted trees. Farmers have an option to choose the land use types/combination to apply considering the size of

land (for both tree planting and food production). From the sequestered carbon dioxide, 10% is deducted to act as a security to the buyer in case a smallholder fails to comply with the carbon sale agreement. Smallholders open individual accounts in the local financial institutions through which they are paid. The organisation aims to see at least 60 per cent of carbon revenues flow to communities

and says a minimum of Ksh 500 (USD 6) per tonne in credit revenue is needed to achieve this and cover costs.

CarbonFix Standard (CFS)

CarbonFix is one of the smaller standards emphasising extra social and environmental benefits attached to their projects. The CFS serves the purpose of ensuring high-quality afforestation projects. CarbonFix certified projects sequester carbon, restore forests and bring benefits to local people and the environment.

A carbon project basically should result into a reduction in emission levels compared to the baseline, additionally no negative effects in areas outside the project boundary (leakages) and achieves the set goals and targets.



Useful information

General information on the carbon trading system: www.ipcc.ch
www.carbonpositive.net
<http://climatechange.worldbank.org/>

Standards applicable for small-scale farmers:

Plan Vivo Standard:

www.planvivo.org

CarbonFix Standard: www.carbonfix.info, www.climateprojects.info

Project Developers in the region:

- Swedish Cooperative Center & Vi Agroforestry, Regional Office for Eastern Africa, P.O. Box 45767, Nairobi, Tel: 020 580 201
www.sccportal.org/africa
- Camco Global, Muringa Road, P.O. Box 76406-00508 Nairobi, Tel: 020 387 5902, www.camcoglobal.com

Deal with poultry diseases

I have 60 chickens, my main problem is disease prevention, control and management. I need assistance. Farmer Cheruiyot, Bomet, 0728 876 656

It is unfortunate that you did not indicate which disease has affected your chicken; there are many diseases, caused by microorganisms, parasites (internal and external), malnutrition and even injuries. Without knowing the exact problem affecting your chicken, we cannot give a detailed answer. So, please, when sending us a question, be precise.

What causes diseases?

Disease outbreak and eventual death of the animals depend on their age, nutrition and hygiene in their housing. It is important that you observe your chicken regularly; here are some symptoms of unhealthy and sick birds:

- Tired and lifeless, • Dull eyes and comb, • Sit or lie down, • Eat and drink less, • Lay less or stop laying eggs, • Ruffled and loose feathers, • Wet droppings with blood or worms, • Cough, sneeze and breathe noisily.

Poultry, that are well fed, managed and effectively vaccinated against known diseases, usually remain healthy. In case of disease outbreak, sick birds should be isolated and dead birds

The vaccination regime, here below is recommended for commercial chicks, but also applicable to improved management of indigenous chicken. (Source: infonet-biovision)

Age	Vaccinate against	Application
1st week	Marek and Newcastle disease	Subcut (neck)
2nd week	Gumboro	In drinking water
3rd week	Lasota + IB (Newcastle)	In drinking water or eye drops
4th week	Deworming, IBD forte	In drinking water
5th week	Lasota + IB	In drinking water
6 - 8th week	Typhoid	Injection
9th week	Deworming (every 2-4 weeks)	In drinking water
8 - 10th week	Fowl pox	Wing stab
12 - 14th week	Typhoid	Injection
16 - 18th week	Newcastle (if noticed)	Optional

Breeding of indigenous chicken

I need more information on breeding indigenous chicken.

Feeds: The feeds should be balanced in terms of vitamins, proteins, carbohy-



Learn about Chicken! Order TOF-module No. 20. Send us airtime worth KSh 50/= to 0717 444 405 and in a separate sms your address; we shall send you the module.

removed, burnt or buried. Strict sanitary measures in all houses is important.

Rules for disease prevention

- Vaccinate the chicken as recommended by the vet (see table below)
- Give access to the right feed and clean water, in particular for small chicks
- Build shelters against wind and rain and predators
- Clean houses regularly and apply lime wash/disinfect the floor and walls
- Provide dry litter regularly where applicable
- Do not put too many birds together
- Different species of poultry for example hens, turkeys, ducks and guinea fowls should be kept separate
- Separate chicks from adult birds except from the mother hen
- Vaccinate chicks against the most important diseases and revaccinate if necessary
- Isolate and treat sick birds. If medication is not available then kill the sick birds
- Burn or burry culled birds (do not eat sick birds that have been killed - diseases can sometimes be transferred to human beings never mind how well they are cooked).



Kinyenji or indigenous?

What is the difference between kinyenji chicken and indigenous chicken?

There is no difference, it is only a matter of language difference.

Kenbro chicken

I have recently ventured into poultry farming (indigenous chicken). Please let me know if the kenbro chicken is classified as indigenous. In addition, inform us more about kenbro chicken.

Kenbro is not an indigenous breed - it seems it was imported from France where it was used in organic production. According to experienced chicken farmers, Kenbro chicken are much more active than hybrid broilers and they gain weight more slowly, but they nevertheless mature quite quickly and males and females can be distinguished early. They are also very hardy and mortality is usually lower compared to hybrid birds. They have longer legs and a more red meat than conventional broilers, and their taste is very similar to indigenous chicken. Dual purpose hens like Kenbro will not lay as many eggs as hybrid layers.

Kenbro chicks are available from Kenchic Ltd. P.O. Box 20052, 00200 Nairobi Tel. 020 354 08 09, 206 04 36. You have to make an order because the company does not produce enough to meet the demand from farmers. Some farmers have to wait for up to three or four weeks to have their order delivered

Causes of infertile eggs

My hens lay eggs that do not hatch, what could be the problem?

This unfortunate situation can be caused by various reasons:

- Poor mothering ability that is genetical.
- May be the eggs are not fertilized – so select your eggs carefully!
- Lack of enough feeds that forces the hen to spend more time away from her eggs.
- Uncomfortable environmental factors, for instance:
 - If the hen has no enough warmth.
 - If the hen is attacked by pests.
 - Check egg fertility before setting.

Improve your soils with organic fertilizers

Overuse of chemical fertilizers such as DAP has led to depletion of soils and reduced crops yields,

Peter Kamau

Any farmer who wants to improve their soil, cannot avoid using organic fertilizers. Soil organic matter is formed when crop residues, dead leaves and farmyard manure decompose, forming stable structures that bind nutrients which are released to the plants slowly.

Soil with adequate organic matter is fertile. If compost is prepared properly, it provides organic matter that improves soil structure and fertility. The soil is softer and has a better texture, nutrients and water are stored better, and more of its soil organisms are active.

Why do we use organic matter or compost? In some soils, especially on acidic ones, chemical fertilizers are sometimes not effective and do not improve crop yields. Acidification can be a natural process especially in humid climates, but is it often promoted by use of chemical fertilizer in farming: When crop residues and other organic matter are not returned to the soil and ammonia fertilizers (e.g. DAP) are used, soils become more acidic. This changes the chemical properties of the soil, making it difficult for plants to take up nutrients, resulting in poor growth. Any addition of these fertilizers only makes the soil condition worse.

Material for compost

One way farmers can solve this problem is to apply compost, gradually to restore soil fertility. All farmers need to do is to collect crop residue, weeds, dead leaves and trimmings; cut tree branches, leaves and grasses. From the cattle *boma*, they can collect farmyard manure, beddings, and feed waste. From their houses, farmers can get kitchen waste such as food leftovers, eggshells, drain water and wood ash (avoid polythene and plastic material).

All the above material can be put together in a heap or preferably, in a pit where it can retain some moisture for composting purposes. Compost usually needs between 3 and 5 months to mature, depending on the climate and the care by the farmer; a compost pile needs to be turned regularly. Many farmers use compost activators such as EM1. With this, they are convinced that they can reduce the decomposing time to three months.

Faster method

However, there is a quicker method well known in the US, Europe and especially in Japan that makes compost ready after only 14 days. This method has been introduced to farmers in parts

of Murang'a and Meru through the Long Term Farming Systems Comparison in the Tropics project, a 20-year project that is comparing crop production under organic and conventional agriculture. If you need a limited amount of compost urgently, you can use this method.

Compost in 14-days

1. Prepare a 1 cubic metre box (from wood or any other material).

2. Collect enough farmyard manure, green material and dry plant material. Chop the plant material into small pieces. Chopping increases the surface area for compost microbes to work on. It also provides an even distribution of air and moisture in the materials.

3. Mix this organic matter well with the farmyard manure. Add kitchen waste such as wood ash, fruit and vegetables residues etc.

4. Add some topsoil; microorganisms in the soil are able to speed up the decomposition process.

5. Mix the material well and fill it in the box; You can prepare the material using the box or even without.

6. Add adequate water, this mixture has to be moist.

7. Place a piece of carpet or plastic cover over the top of the compost to help trap the heat produced by the pile. Covering the pile with black plastic sheets reduces the need for frequent watering; it also prevents rainwater from leaching out the nutrients.

8. Drive a stick into the compost heap until it reaches the bottom of the pile and leave it there.

9. Pull the stick after every 3 days; feel it with the back of your hands, if it is still warm, this means that the compost is not ready. If the stick has a dusty-white colour, it means the pile is too dry. Add more water until it is moist and cover it again.

10. Turn the compost on the 5th and 10th day to ensure it is adequately mixed. Keep checking the heat with the help of the stick (also called thermometer stick). More frequent turning results in faster decomposition of the compost.

11. Instead of using a stick, you can dig



Three methods of 14-day compost: (1) Use of wiremesh, (2) use of wood, (3) use of concrete basin; it shows fresh mixed materials for compost (left) and ready compost (right). The shovel's handle is used as a stick thermometer.

into the pile and remove a handful of material from the centre. The material should be warmer and darker than the material at the outer edges of the pile. If all is well, the internal temperature should rise within the first 24 hours. If the compost is too dry, you need to add some water.

12. You will notice that the material will be warm or even hot during in the early stages after composting. This means that bacteria are actively decomposing it. After cooling down, the heap should have a nice earthy smell and is ready for use.

Note: For an organic farmer, compost making is a continuous process because compost is never enough. To be successful, the farmer has to ensure they have a permanent place for compost next to their cattle *boma*. Here, they can throw farmyard, kitchen waste and finely chopped plant material to make small compost heaps. This ensures that there is a continuous supply of compost for use at all times when need arises.

i-TOF

Information Centre of The Organic Farmer magazine

Following the increasing demand from farmers for our training and information services, we would like to inform farmers that we have expanded our i-TOF services. Farmers' groups can book for training in their areas of interest.

i-TOF Centre Western Province
Location: Kamukuywa (near Kimilili)
Extensionist: Alfred Amusibwa,
Contact: 0724 331 456

Email: itof7@organickenya.org

i-TOF Central Province
Location: Gatuto/ Kagio
Extensionist: Peter Murage
Contact: 0724 331 375
Email: itof2@organickenya.org

i-TOF Eastern Province
Location: Kangundo town
Extensionist: Victoria Mutinda
Contact: 0724 331 405
Email: itof1@organickenya.org



Info-centre for Gilgil and Naivasha

With some assistance of Infonet-biovision, initiative organic farmers in Gilgil and Naivasha have set up a meeting place and information hub: The Gilnas Farmers Resource Centre, at the junction along the Naivasha-Nakuru highway. It will stock information mate-

rial and provide farmers with training on sustainable agriculture. Farmers can also access information from the Infonet and *The Organic Farmer* magazine. More than 100 farmers attended the opening ceremony on March 12, 2011.



New organic farmer's market at Karen

Organic farmers now have a new marketing opportunity to sell their organic fresh fruits, vegetables, pulses, cereals and value added products. The organic market will be held every Saturday at the Rusty Nail Restaurant at Karen, Nairobi. Organic farmers who want to sell their organic produce have to register with the Farmer's Market Com-

mittee (call Lilian Maremma 0721 654 683 or 0720 428 246) or Kenya Organic Agriculture Network (020 261 0863) giving details of their produce and the dates they wish to participate. All farmers planning to participate have to be certified. Farmers are allowed to set their own prices and to bargain with customers.

Answers in brief

How to prepare plant teas

Does the amount of materials used in making both liquid and plant tea affect the water level and even reduce the solution at the end of the process?

Plant teas are helpful. It is recommended that for every 40 kgs of materials used, you add 200 litres of water, at a ratio of 1:5, this applies to both the plant and manure teas.

My cow likes soapy water

I give mineral supplements apart from other feeds yet it likes soapy water. What could be the reason for this? Mary Nanyama, Kimilili.

A healthy cow will certainly prefer clean and pure water to soapy water. The only explanation could be that the cow is suffering from a serious lack of good water. Give her enough water after feeding! A dairy cow requires between 30 and 60 litres of water every day depending on her size, the level of milk production, the type of feeds and the temperature.

Ratio of goat bucks to does

What is the recommended number of does that one buck can comfortably mate? George. Ongata Rongai

Taking in consideration your word "comfortably", we can say: A young buck can serve 20 does (female goats), a fully mature one 40. According to experts, a young buck can serve up to 25 does, an old one up to 50.

Tephrosia teas must be diluted

Since the white flowered tephrosia is weaker in effect as compared to the purple flowered Tephrosia. Can I dilute the concentration to a ratio of 1:1 instead of 1:2 to at least maintain its strength that is for the white flowered tephrosia alone?

All tephrosia extracts are poisonous if in high concentration. It is advisable to apply it where necessary, e.g. in tick control or when applying it as a top dressing. A 1:2 ratio is recommended even when using white flower.

Milky plant sap is not milk

Can I feed my cow on plant feeds that are producing milky sap to add value to my milk? James Murunga, Namaki group.

Formation of milk is based on the nutritional value of the feed you give. May be if the plant has a strong smell being able to be felt in the milk, it will affect the flavor.

Don't worry about milking time

How can I delay the hormone released by a cow that is about to be milked, in case I am found running out of the normal time for milking?

The hormone oxytocine is produced when the animal is ready to be milked. The milk let-down is a natural reflex that cannot be stopped or delayed or reversed. Maintain a healthy udder and apply cream/salve when milking.

How to divide a bee colony

How can I divide my bee colony? (Francis Ndegwa, Sagana, 0722 644 968)

Bee colony division is normally done to prevent emergence of new queen in the hive. When the number of bees in the hive increase, bees start building queen cells to make a new queen, which might result in swarming (queen cells are usually long thumb-shaped cells protruding from the edge of the combs). A good beekeeper always examines the hive on weekly basis during the honey period to detect any abnormality or progress within the hive. Queen cells should either be slashed completely using tool hive or transfer the comb with the queen cell to a new hive to make a division as follows:

1. Break down all the queen cells except one.
2. Transfer the queen cell, one comb with brood and two combs of food (honey and pollen), into a catcher box of the new hive.



Remember to put the brood combs in the middle and the honey combs either on the side to insulate the brood nest.

3. Transfer the catcher box and new hive to a new site at least 2 kms from the old site. These bees will become a new colony. The rest of the bees will continue working and a new queen will hatch out in the new colony.

Most of the adult bees will remain in the old hive and make honey. However, try and avoid making divisions during the honey making season because it reduces the amount of honey produced. Make divisions after the honey flow to increase colony number.

Udder size and milk quantity

Some cows have a huge udder holding capacity but they do not produce milk in relation to their udder capacity, others have small udders but produce more milk as compared to those with big udders. What brings about this difference? Miriam Naliaka.

Milk production is affected by several factors. Among them are the nutritional value of the feeds, the amount of feeds offered, the stage of lactation, genetic make up of the animal, the general health status of the cow, and even the milking technique. A large udder usually indicates a good potential for high milk production. But if the cow is sick or infested with parasites or undernourished, she will not be able to realize it. In this case, a healthy, well fed cow with a smaller udder may actually produce more milk.



Why does my cow urinate during milking?

My cow must urinate during or some minutes to milking and also after milking, what brings about all this? I fear it normally prepares itself to cut down on the daily milk production. Hellen Nafula, Kamukuywa.

Urination of the cow just before and after milking is a reflex action associated with relaxation of the body muscles which means that the cow is feeling ready to receive the tender touch and feeling good for the milking massage. It has nothing to do with cutting of milk. It means your cow gets sufficient water, which is important for milk production. It is normal that dairy cows urinate often. If your cow is in good shape and healthy, you do not have to worry!

Protect yourself against tetanus

Some people say that if you step on a donkeys waste, your legs get ugly-looking cracks. Is this true and if yes, why does donkey waste cause this?

Let me make some initial remarks to your question, the donkey host *Clostridium tetanii* - an organism responsible for causing tetanus. It 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. This problem is not restricted to donkeys alone. Cattle, goats, sheep, pigs, dogs and birds are equally affected. But man and horses (donkeys belong to the horse family) are more sensitive and will die from tetanus more easily.

If the affected donkey's faeces get entry to human body, they can cause tetanus as well. It is important to note here that not all donkey's faeces contain the organism. Donkeys that live in dirty condition can be affected; those that have wounds caused by poor harnessing also easily get contaminated with tetanus. But if you are vaccinated against tetanus or you are well protected, donkey waste cannot infect you.



The best solution however, is to get a tetanus vaccination for yourself, your family as well as your donkeys.

The right way to use farmyard manure

Why do some people keep on applying raw cow dung to their farms – but still the farm cannot produce?

Applying raw cow dung on your farm is not enough to make the *shamba* produce, it also depends on how well the application is done. Broadcasting traces of animal waste haphazardly will not enable you know which area received more or less nutrients, hence imbalance in soil fertility in your *shamba*.

Some farmers just throw their organic manure or even fresh waste on the soil surface without mixing or covering it with the soil. This leads to loss of nutrients. During a hot sunny day, the nutrients will evaporate, leaving nothing

but organic matter residue. This cannot help you to get the desired crop yields.

One must also consider planting leguminous crops, those that help the soil in adding nutrients, practice crop rotation with different crops like light feeders and heavy feeders and this will slowly by slowly improve the fertility of your soil.

You can start with one section of your farm and seriously work to improve the soil for a period of time; later move on to the other part of the farm so that by the time you finish, the whole farm will be equally fertilized. One can then maintain the soil fertility levels by applying additional manure every year.



Biological control of aflatoxin

TOF - Scientists have identified several strains of a fungus that can control and neutralize *Aspergillus flavus*, the fungus that is responsible for aflatoxin poisoning in maize and other cereal crops. Aflatoxin poisoning, caused by poor handling and storage of maize, is a major problem in Kenya especially in parts of Eastern province. More than 60 per cent of stored grains in Sub-Saharan Africa is exposed to aflatoxin poisoning.

Beneficial fungus used

The method involves the introduction of beneficial strains of *Aspergillus flavus* (atoxigenic fungi) that does not produce aflatoxins in maize fields. The beneficial fungi establish themselves in the soil, in the process suppressing the aflatoxin causing strains of *Aspergillus flavus*. The biological control method, which was developed in the United States, has been successfully tested in Nigeria and Eastern province in Kenya and found to reduce aflatoxins

by between 80 to 90 per cent.

The beneficial strain of fungus is broadcast on fields with maize or other cereal crops while the crop is still growing. Once it establishes itself in the soil, it can neutralize aflatoxin development in treated fields for up to two years. The US Department of Agriculture is working with KARI and other organizations to introduce the new technology to affected areas in the country.

Aflatoxin poisoning is said to be responsible for various health complications such as increasing cases of liver cancer, suppression of immunity and recovery from malnutrition in children. Studies conducted in parts of Nandi by the university of Nairobi have established very high levels of aflatoxins among children under 5 and even among breast-feeding mothers. The US government has set aside US Dollar 500 million for the control of aflatoxins in Sub-Saharan Africa.

Rock phosphate now available

TOF - A new company is now selling rock phosphate in all farming areas. Rock phosphate is an organic fertilizer that has a high phosphate content (28 - 32%). Rock phosphate reduces soil acidity, it is natural and environmentally friendly and, unlike other fertilizers, it is cheap and has other beneficial minerals in it. Rock phosphate is a slow release fertilizer that takes up to 5 years.

Research carried out by KARI in Nyamonyo and Nyatike areas of Kisii indicated that the use of rock phosphate increased maize yields from 13 bags to 33 bags per acre.

Rock phosphate fertilizer is now available in all the major towns in the country. It is being sold under the Mijingu Organic Hyper phosphate brand. A bag is selling at Ksh 2200. Farmers can enquire by calling 0733 443 333.

selling & buying

Organic sweet pepper ready for sale, call 0724 950 180.

Tree seedlings: I would like to buy mukau seeds or seedlings, 0725 995 202.

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Kenbro chicks for sale, call 0720 045 560

Kenbro eggs, cockerels contact Francis Kuria 0722 401 139

Cotton seeds and sesames seeds for sell, contact: ahmelazeez@hotmail.fr

Sweet potato flour (500 kg) and banana flour (400kg) to sell at ksh 500 each per kg. Contact Murimi, 0727 203 477 or 0732 82 0895 or 0723 595 717, email naftaly.waruhiu@gmail.com or nwaruhiu2007@yahoo.com

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