

Dear Reader,

The planting season is here and as the short rains approach, we urge you to incorporate what you have learnt from the previous TOF magazines in preparing your shamba.

Having harvested produce from the last season, remember that how you store your produce determines their nutrition quality and market value. In this edition, learn about proper grain storage methods to protect your well earned produce from deadly moulds (aflatoxins), and reduce post-harvest losses.

We tell you about toxin binders and how using them in animal feed preparation, to protect your cows from fungi that contaminate and make feeds such as silage poisonous.

Read about rabbit keeping. The meat is highly nutritious, the animals reproduce quickly, making them a ready and easy source of income and meat.

Discover the important poultry vaccines to protect your flock against common diseases.

Finally, every dairy farmer wants to increase milk production and we explain to you how to do this. Read for these nuggets of information and much more.

As usual, we look forward to your feedback and suggestions on what you would like to see covered in upcoming issues. Our contacts are listed below.

From the editor

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Is your farm produce free of aflatoxins?

These fungi can be passed on to humans through the consumption of contaminated milk and milk products from livestock fed with contaminated animal feeds

By Caroline Mwendwa

Aflatoxins are poisonous substances produced by certain kinds of fungi (moulds) that contaminate food crops. They pose a serious health threat to humans and livestock. Some 25 per cent of the world's food crops are destroyed annually due to aflatoxin contamination.

There are 14 types of aflatoxins but four – B1, B2, G1, and G2 are particularly dangerous to humans and animals. Aflatoxin M1 (AFM1), a product of aflatoxin B1 (AFB1) metabolism, can be found in milk. These fungi can be passed on to humans through the consumption of contaminated milk and milk products, from livestock fed with contaminated animal feeds.

Major factors contributing to aflatoxin contamination, include drought stress, insect damage and poor storage of grains. Food crops can become contaminated both before and after harvesting. Pre-harvest contam-

ination is mainly limited to maize, cottonseed, peanuts, and tree nuts. Post-harvest contamination can be found in a variety of other crops such as coffee, rice, and spices. Storage in warm and humid environments that favour mould growth can lead to higher levels of contamination compared to those found in the field.

Health effects of aflatoxins in humans

Aflatoxins are carcinogenic (can cause cancer) and long-term exposure to them affects all organ systems, especially the kidney and liver. They can cause liver cancer and birth defects (they affect the DNA). As a result, children may become stunted. They also suppress the immune system, decreasing resistance to diseases such as HIV and tuberculosis.

Aflatoxin effects in animals

Aflatoxins damage a chicken's liver, impairing productivity, decreasing egg production, weakening eggshells, and increasing the likelihood to contract diseases. Cows and pigs experience liver and kidney damage, lose weight and milk production drops.

Preventive measures against aflatoxins

- Ensure safe storage of grains by drying them to a level of 12 per cent before storage.
- Store produce in spaces with controlled moisture, temperature, mechanical or insect damage, and aeration.
- Pre-harvest measures such as promoting good agricultural techniques and providing livestock with quality feeds also ensure that the produce is free from aflatoxins.



Poultry Vaccines

Poultry farmers who do not vaccinate their birds risk incurring losses due to disease outbreaks. Pg. 6

Minimising postharvest loss through proper storage

Poor handling of grains can compromise their quality and quantity, and lead to massive postharvest losses

By Dennis Rapongo

A large percentage of the world's population consumes grains, which include cereals and pulses. However, even when all the factors of production remain constant, poor handling can compromise quality and quantity of grains, and lead to massive post harvest losses.

Loss in quantity leads to reduction in the amount available for sale, while poor quality results in reduced market opportunities and nutritional value. Proper post harvest handling, conservation and storage enable grain quantity and quality to be maintained. Tips to protect your grains from contamination and spoilage:

Harvest in good time

It is critical to harvest maize once it shows signs of maturity. Maize left in the field for long is prone to pest attacks and rotting, especially in wet conditions. The moisture absorbed during this extended time will contribute to spoilage and growth of fungi and mycotoxins harmful to the body.

Dry your maize

Once maize is harvested, it should be dried before storage. The sun's heat rids maize of moisture and kills pests and their eggs.

Stir your grains so that they dry evenly. Maize should have a moisture content of 13.5 per cent before storage. Use a moisture metre to check the moisture level. If not available, farmers can use an empty soda bottle and salt, as explained below:

How to test for content moisture:

- Put a handful of dried maize in a dry soda bottle and add ½ handful of salt.
- Shake the bottle for 2 to 3 minutes. Allow the grains to settle at the bottom of the bottle. If the salt sticks onto the sides of the bottle, the maize is not dry enough for storage.
- Dry the maize again and repeat the test until no salt sticks on sides of the bottle. The maize can now be stored and there is no danger of it developing mould (or aflatoxins).

60-90cm

Height above ground that grains should be placed to allow for air circulation. Clean the store to get rid of pests and their eggs from previous stock



Storage

The store: For sustained dryness of the grains, ensure your store has 40-50 per cent free space. Place grains on a raised platform 60-90cm above the ground, to allow for air circulation. Before storing the next season's yields, clean the store to get rid of pests and their eggs from the previous stock. Some pests hide in wood cracks, while others remain in the bags for long periods. To get rid of such pests, soak the bags in hot water.

Storage techniques

How to conserve grains organically:

Use of plant extracts and/or parts

Extracts from plants such as neem and pyrethrum play a major role in grain storage and preservation. Chilies, too, can be used.

Procedure:

- Get the plant extracts and/or foliar and dry in the sun. Grind and crush the plant to a fine powder or small particles.
- Put your well-dried grain in bags, add the plant extracts and mix well by shaking them.
- Seal the bags and place on wooden surfaces away from sunshine, rain and water.

Use of diatomaceous earth (diatomite)

Diatomite is a natural white mineral that helps in the conservation of grains. It is ground into a powder called diatomaceous earth for use as a grain preservative:

- Ensure that your grains are well-dried;
- Get high quality bags;
- Apply the diatomaceous earth at the bottom of the container or bag. Put a layer of 3-4 inches of grain on top of the mineral. Add a second layer of the element, and another layer of 3-4 inches of grain until the bag is full;
- Tightly close the bag and shake thoroughly. If the bag is heavy, roll it for a few minutes to ensure the diatomaceous earth mixes well with the grains;
- Open the bag and add the final layer of the mineral. Close it to ensure that it is air-tight and store on top of a wooden surface, away from rain and sunshine;
- Diatomite absorbs extra moisture from the grains and prevents buildup of mould;



How to control mycotoxins using binders

Dr. Paul Kahire

Mycotoxins are toxic carcinogenic compounds produced by various fungal species, which grow on various agricultural commodities. The fungi, which produce toxins in the field and during storage, are of the strain *Aspergillus*, *Penicillium*, and *Fusarium*. Mycotoxin producing moulds are found everywhere in nature and are commonly in contact with forages and cereals in the field, before and during harvesting. The contact goes on through drying, transportation, and storage. Ruminants such as cows are fed complex diets that generally include both forages and concentrates, which may have an increased probability of multiple mycotoxins' contamination.

Conditions that encourage mycotoxin contamination

Conditions such as high moisture content above 13 per cent in grains, poor storage, high humidity, crop stress, and insect attacks, create an environment for mould growth that subsequently produces the toxins. Humans get doses of the toxins through the consumption of contaminated animal products like milk. Toxins such as aflatoxin B1 are metabolised quickly and transferred into the milk as aflatoxin M1, which can cause cancer in human beings. Mycotoxins also damage animal organs, reducing their performance and production. When toxins from different fungi species interact, their effect is more damaging. Mycotoxins are harmful to all animal species, including poultry, dairy, pigs, pets such as dogs and cats, horses, and humans.

Mycotoxins in Silage

Silage is a key fodder in dairy production. Meticulous preparation is therefore required. Exclusion of air through compaction is very important because when poorly compacted, pockets of air create 'hotspots' for mould growth. Also, during feeding out, opening the silage bunker allows air to get in, which attracts mould growth. Signs that your animal could be affected by mycotoxins are:

- *Diarrhoea and metabolic disorders;*
- *Poor digestion due to disruption of gut microbes;*
- *Poor performance and production;*
- *Immune suppression (poor immunity);*
- *Reduced feed intake;*
- *Swollen legs.*

Controlling Mycotoxins

Mycotoxins are a global challenge. The first discovery of aflatoxins in 1960, which decimated an entire turkey flock in England, was traced to a consignment of contaminated peanuts imported from Brazil. Today, Kenya imports most of its key feed ingredients such as maize germ, cottonseed cake, sunflower, wheat bran, soya cake, and wheat pollard from Uganda and Tanzania. Maize germ from Uganda is high in moisture due to their wet milling that creates good conditions for mould growth. When farmers purchase such products, they should dry them completely. Farmers should also use mycotoxin binders when preparing feeds, whether sourced from abroad or grown on the farm. There are var-

- *Ensure that you use food grade diatomaceous earth, which is available at African Diatomite Industries Limited. Tel: 0700-189733, Email:info@africandiatomite.com. Ask for Duncan or the sales department.*

Metallic silos

Use of affordable and portable metallic and plastic silos for storing grains can reduce post-harvest losses by 30 to 50 per cent. You can obtain them from the Kenya Agricultural and Livestock Research Organisation (Kalro) and private companies such as Kentainers.

For proper use of silos, the following procedures should be followed:

- *Buy your plastic or metallic silo from a reputable organisation. Place it on a wooden surface to prevent corrosion, and protect it from rainfall and excess sunshine;*
- *Clean your grains and dry them to a moisture content of eight to 10 per cent before loading into the silo;*
- *Fill the silo but leave a small space close to the opening;*
- *Put a candle into the silo and light it, then close it with the candle inside;*
- *The candle will burn for three to four minutes and use the little available oxygen, after which it will go off. Any insects such as weevils in the grains will die due to suffocation;*
- *One metallic silo can store 1,000kg to 1,500kg of grains.*

With good post-harvest handling and storage techniques, we can save a lot of grains and boost food security.

<https://www.infonet-biovision.org/PlantHealth/Pests/Storage-pests>

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Creating a supplementary revenue stream through commercial rabbit rearing

Rabbits give birth three or four times a year, producing about eight kits each time. With these numbers, your enterprise can expand very quickly

By Susan Njugi

Stories of farmers making a killing from keeping rabbits is not news, but rarely do you hear of a farmer doing it for many years or on a large-scale. This has led to an unstable rabbit market as supply is inconsistent. However, rabbit rearing can empower farmers and requires little financial investment and space. Rabbits are clean, silent, and easy-to-feed animals, which can be comfortably housed close to the home. They can tolerate temperatures of between zero and 30 degrees Celsius, and thus, can survive almost anywhere.

How to rear rabbits successfully

Building a good structure

- It must be clean, dry, well-ventilated and warm. There should be adequate space to avoid overcrowding them.
- Build cages of 80cm (L) X 60cm (W) X 45cm (H), and which allow sunlight in, using wood and wire mesh. Nesting boxes for pregnant does should be 30cm x 30cm. Ensure that the cages are strong to deter predators.
- Floors can be made of wire mesh to make cleaning easier, but they should be firm to avoid rabbits breaking their legs or suffering injuries on their hocks. Wooden floors can also be used but regular cleaning must be done as they accumulate a lot of dirt quickly.
- Cages can be located in or outdoors. For outdoor cages, extend the roof to protect against adverse weather.
- They can be placed on top of each other but avoid having more than two tiers for easier management.

Feeding

Rabbits require nutrients such as proteins, energy, minerals, vitamins, and fats to grow well.

Foods include:

- Green forages such as sweet potato vines, grasses, desmodium, alfafa, vegetables like sukuma wiki, cabbage and weeds. Allow the green forages to wilt before feeding to avoid diarrhoea.
- Root crops like carrots, cassava and sweet potato tubers. Provide grains such as maize, wheat, barley and sorghum. Avoid rotten grains, which could contain aflatoxins.
- Provide dry forages such as hay and protein supplements
- If resources allow, farmers can also buy commercial feeds, including pellets; Choose reputable manufacturers and never feed your rabbits on mouldy feed or concentrates. A portion of 130g of pellets for adult rabbits per day, is enough.
- Salt can be mixed into the feed at the ratio of one per cent or salt blocks placed at accessible points.
- Provide clean drinking water.
- Your rabbits may also eat their faeces, but this should not worry you as it provides them with extra nutrients.



NB: Introduce new feeds gradually. If they affect your rabbits adversely, discontinue feeding.

Characteristics of healthy rabbits:

- Smooth, shiny coats and bright eyes.
- Easy and free movement and silent, even breathing.
- Appetite should be normal.
- Droppings should be normal in amount and appearance.
- Body should be healthy. Thin or pot-bellied rabbits may be an indication of disease.
- Weight and growth of adults should be consistent.
- Any discharge from the eyes, nostrils, mouth, vent, teat and anus are signs of disease.
- They should not have sores and swellings.
- Should have a temperature of 39 degrees celsius.

Breeding

Male rabbits are referred to as 'bucks', females as 'does' and their young ones as 'kits'.

Have a breeding plan: They attain slaughter weight in three months, and can be bred at five months. A breeding plan is important, given that one doe can give birth four to five times a year, getting up to eight kits per kindling (birth). Good planning will help you to avoid having more weanlings than you can cope with.

Keep records: Place a sheet with each doe's or buck's name and number at the top of each pen. Cover with a plastic bag to avoid damage. The sheet should have a record of its date of birth, service and kindling, buck used, number of kits, number of kits reared, deaths, dates of deworming. (Include a column





litter later.

Caring for the kits and expectant mother:

- A rabbit gestates for 31 to 33 days, then gives birth. Rabbits born around the 28th to 34th day after mating, often survive. However, gestation periods can be affected by the time of year, size of the doe, or size of the litter.
- Isolate the pregnant doe from fourth week and provide good bedding.
- Some days before giving birth, the doe will begin collecting hay in her mouth to make a nest, and pull hair from her chest and under her neck to line the nest.
- Giving birth takes about 15 minutes. Kits are born blind, naked, and at night; After birth, the mother will lick her young, pull out more hair and cover her babies then suckle them. The earlier this happens the better their chance of survival.
- Avoid disturbing or frightening the doe, as it can make her eat or abandon her litter. Shortage of water before kindling, can also cause a doe to eat her young one. If she repeats this behaviour, cull her as this trait can be passed on to future generations.
- If a mother dies or abandons her litter, they should be given to another mother with less kits. A doe has eight teats, where possible, extra kits should be placed with a doe with fewer babies of the same age (fostering).

Caring for the nursing doe and litter:

- Reduce the feed for the doe by half on the day of kindling then gradually increase it again from the third to the seventh day. After the seventh day provide the doe and its litter with food at all times.
- For the first 20 days, the kits feed on their mother's milk. The mother nurses them once in 24 hours, for three to five minutes only. Provide plenty of food and water so that she has enough milk for her litter. If she gets too hungry, she may nibble on her kits and hurt or kill them.
- Mothers sometimes carry their kits out of the nest after feeding. Return them to the nest and ensure they are warm enough. Cold kits will feel cold to the touch and, their skin will be wrinkled and 'sticky'. Wrap them in a cloth and put them on top of a hot-water bottle until they become a healthy pink colour and warm to the touch;

for 'comments' on the far right of the sheet).

Production period: Does and bucks can be kept for four to five years. However, if the doe is still producing good litters with healthy kits after this, she can be kept for another year, and then retired and kept as a pet. Older bucks that begin producing small or weak kits, should also be retired.

Mating: When your doe is on heat, she becomes restless, and nervous and might have a red and swollen vulva. Take the male to the female unit. A receptive doe raises her tail and allows mating. The buck makes a growling noise and falls to one side after mating. Remove the female after mating. If mating has not taken place in 15 minutes, remove the doe and return her later. If left with the buck, they will both become bored and the buck will lose interest. A pregnant doe will develop prominent teats and may begin gathering bedding to make a nest.

Pseudo Pregnancy: A doe may also behave as pregnant when she is not. The symptoms, however, do not last beyond the 18th day. To confirm pregnancy, palpate her abdomen gently on the 10th -14th day.

Miracle births: A doe can produce young one when she has not been to the buck. Such does sometimes retain sperm from a previous mating, to produce another

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Rabbit diseases

Coccidiosis: It mostly affects young rabbits. Symptoms include white or blood-stained diarrhoea, poor appetite, and dehydration. Pregnant does can infect their unborn kids, where it causes liver coccidiosis. If left untreated the disease can cause death. Treat with coccidiostats in feed and drinking water and isolate affected animals.

Ear Canker (mange): This is caused by mites. A scab or crust develops inside the ear. Affected rabbits shake their heads and scratch their ears. Heavy infestation can cause ears to drop downwards. Rats, which are the main

vectors for mites should be controlled. Pneumonia is common during cold weather. Build warm houses. Internal worms mostly occur in animals fed on greens. De-worm every three months and avoid using roadside forages. To reduce the incidence of disease

- Buy animals from reputable breeders;
- Provide proper, clean housing;
- Consider floors made of wire-netting that allow urine and droppings to fall through. Ensure they are strong to protect your rabbit's hocks and feet from injury;
- Quarantine sick rabbits, and isolate new arrivals for two weeks.

How to control mycotoxins using binders

Continued from page 3

ious binders in the market, including Mycosorb A+. This is a natural yeast-based binder developed by Alltech Products East Africa, which is added to animal feeds. It binds the multiple mycotoxins found in grains and fodder like silage. Mycotoxin binders work inside the GIT (digestion tract). This is an organ system within animals that takes in food, digests it to extract and absorb energy and nutrients, and then expels the remaining waste as faeces.



Mycosorb A+ has a high affinity for mycotoxins both in low and high concentrations. It is not digestible and is stable throughout the gut. The product binds toxins before they are absorbed in the bloodstream to the liver and milk secretory system, thereby reducing organ damage and toxin transfer to the milk, improving the animal's performance, immunity and production.

Application:

It is a powder and is recommended for mixing with dairy meal or any other powdery concentrate at a ratio of 0.5-1kg/ton of dairy meal or 10g/cow/day.

For more information contact:
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What you should know about poultry vaccines

Poultry farmers who do not vaccinate their birds risk incurring losses due to disease outbreaks

By Nelson Barasa

Vaccination is the introduction of an inactivated disease-causing agent (vaccine) into an animal to stimulate the production of antibodies within it and create immunity. Poultry farmers who do not vaccinate their birds risk incurring losses due to disease outbreaks. Common diseases vaccinated against in poultry include Mareks, Newcastle disease, Infectious bronchitis, Gumboro disease, Fowl pox, and Fowl typhoid.

Every vaccine has an appropriate method of administration to ensure that adequate protection is developed in the birds. The type and schedule of vaccinations are also different for broilers, layers and all-purpose (kienyeji) chicken.

Vaccine administration

Eye drops

This method is effective with small-sized flock. It targets diseases that manifest in the respiratory tract such as Newcastle and Infectious bronchitis.

Drinking Water

This is the easiest method of giving vaccines to chickens. It is commonly used against Gumboro disease, which infects the digestive tract of the birds, and Newcastle disease. Boiled or distilled water that is free from impurities should be left to cool in a covered non-metallic container for mixing with the vaccine. In case you are using clean tap water, leave it to stand uncovered overnight to allow the chlorine to evaporate. Add a buffer such as skimmed milk at a ratio of two grammes of milk per litre of water to neutralize impurities.

Do not use disinfectants to clean water receptacles; they will inactivate the vaccine virus. Remove drinking water from the chickens for one to two hours or even the whole night, before administering the vaccine. Mix the vaccine with the amount of water that the chickens can drink in one or two hours (about 5 to 7ml per bird). The mixed vaccine can be used for only two days. Avoid applying the wrong dosage that is, vaccine to water ratio.



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Wing stab

A special needle is used to inject the vaccines through the wing web. The administrator should be careful not to injure blood vessels. This method is used with Fowl pox vaccines.

Intramuscular Injection Method

Newcastle, Fowl typhoid, and Fowl pox vaccines can be administered in several locations, including the breast, thigh, and wings of the birds by injection.

Spray vaccination

A spray pump is used for spraying the reconstituted vaccine to the birds. It can be used with Newcastle vaccine, Infectious bronchitis, Coccidiosis and Mareks disease, especially where flocks are large.

Vaccination programme

There is no standard vaccination programme. It varies from one hatchery to the other. Some hatcheries sell pre-vaccinated chicks, however, always request for the recommended vaccination regime from the hatchery that you are buying your chicks from.

Mareks disease vaccination should be administered to chicks at the hatchery, on the first day.

Causes of vaccine failure

Vaccine failure is when your birds get the disease you wanted prevented.

The causes include:

- Stress due to poor nutrition, disease, or adverse weather;
- Improper handling and administration of vaccine;
- Failing to observe the cold chain-when transporting a vaccine for long distances. It should be placed in a cool box or wrapped in a damp cloth in a weave basket, away from direct sunshine;
- Wrong dosage, for example, over-diluting with water and;
- Vaccinating sick birds.

Below are the common regimes used:

Broiler vaccination programme		
Age	Vaccine	Ways to administer
Day 7	Newcastle and Infectious bronchitis	Drinking water or eye drop or spray
Day 10	Gumboro	Drinking water
Day 18	Gumboro	Drinking water
Day 21	Newcastle Disease	Drinking water or eye drop or spray

Layers and kienyeji vaccination programme		
Age	Vaccine	Ways to administer
Day 7	Newcastle and infectious bronchitis	Drinking water or eye drop or spray
Day 10	Gumboro	Drinking water
Day 18	Gumboro	Drinking water
Day 21	Newcastle and Infectious bronchitis	Drinking water or eye drop or spray
Day 28	Newcastle Disease	Drinking water or eye drop or spray
Week 7	Fowl pox	Wing stab
Week 8	Fowl typhoid	Intramuscular injection

<https://www.infonet-biovision.org/AnimalHealth/New-Castle-disease>

Supplementary revenue streams through rabbit rearing

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- Kits will start coming out of the nest after 15 days. They will try to chew green matter and concentrates;
- Wean kits at four to six weeks by giving them weaning pellets twice a day. Try to give the amount of pellets that they can consume in 30 minutes to avoid over-feeding. Introduce wilted greens, a little at a time, to avoid diarrhoea. Provide a little hay daily to improve digestion;
- Separate the males from females at weaning to avoid them breeding too early. To determine the sex of the kits, lay it on its back and gently blow on the hair around the genital area. With two fingers, separate the genitalia towards the tail gently to avoid injury. Males will show a small upwards protrusion while females will show a small opening. This should be done by two people. One holds the kit and the other does the examining;
- At weaning, treat weaners with coccidiostat (the same one used for chicken), 1ml dawa/litre of water for 3 days, to protect them from diarrhea and stress. Deworm them one week later with 1/4ml of Albendazole, using syringe without a needle. Avoid putting it too far into the mouth or you may damage the throat. Giving preventive treatments in organic rabbit production is not allowed;
- Separate the kits and their mother between the sixth and eighth week; Remove the mother and not the kits, to avoid stressing the young ones;
- A 90cm x 180cm double pen, can house 6 young rabbits. However, remember to increase the food and water, because of the increased number of rabbits.

<https://www.infonet-biovision.org/AnimalHealth/Rabbits>



Tune to Radio Maisha every **Thursday at 7.30 PM** through any of these Frequencies to receive Kilimo Hai, TOF Radio Swahili farmer programs. TOF Radio and Radio Maisha partner to bring you these educational programs.

Location	Frequency
Nairobi	102.7
Kakamega	91.5
Bungoma	
Busia	
Malindi	106.3
Location	Frequency
Webuye	95.9
Garissa	88.7

Location	Frequency
Taita	107.4
Narok	102.3
Nyeri	105.7
Machakos	93.8
Makueni	
Kitui	
Meru	105.1
Marsabit	88.3

Location	Frequency
Nakuru	104.5
Gilgil	
Kisii	91.3
Kisumu	105.3
Mombasa	105.1
Kericho	90.5
Eldoret	91.1

Tuko Mbele Pamoja!



TOF Radio answers farmers' questions

Noah Kibet seeks to increase his milk yields

By Charles Kimani

On July 9, 2020, TOF Radio's Kilimo Hai programme, which airs on Radio Maisha every Thursday, at 7.30pm, featured Mrs Mary Muchai, a dairy farmer in Githunguri, Kiambu County in central Kenya. Noah Kibet from Bomet seeks to emulate Mrs Muchai and increase his milk yields. Below, are some basic things farmers should consider to improve milk production:

Feeding: The quantity and quality of milk that a dairy cow produces is directly linked to the quantity and quality of feeds fed to it. Dairy feeds should be rich in proteins, carbohydrates, vitamins, and minerals. On average, a dairy cow should be fed on 12kg-18kg of wilted pastures, which depends on the body weight of the cow and moisture content of the feeds. Feeds such as Napier and Rhodes grass, Lucerne, Desmodium, and Vetch are recommended and provide 80 per cent of the animal needs.

For a balanced diet, supplement the feeds with dairy meal, which boosts milk production. Give dairy meal after milking to keep the cow standing until the teat canal closes. This prevents infections such as mastitis. Also, provide your dairy cow with clean drinking water, one of the components that make milk and affect the cows' consumption of dry matter.

Conserve fodder: The last thing you want to deal with is decreased milk production in times of drought when there is a scarcity of forage. Fodder conservation should be ongoing. It is important to learn basic fodder conservation techniques such as making silage or hay (Please read more about conserving fodder in the upcoming September issue of TOF).

Animal health: Dairy animals should be healthy, disease-free and well looked after. Have an effective health care programme, which is more preventive than curative. Consult a veterinary officer if you notice a change in your cow's behaviour.

Animal welfare: Cows require a safe, comfortable, and clean shed. Dirty surfaces are breeding grounds for pathogens that



can cause illnesses, which lead to reduced milk production, and losses due to the treatment of diseases.

Milking and hygiene: Dairy cow should be milked two or three times a day depending on the breed. Ensure that your animal is comfortable, as a stressed cow will hardly produce to its potential. Maintain high standards of hygiene to avoid milk contamination, which results in losses. Keep all cleaning materials clean. After milking, store the milk in a cool place and dispatch to the customer or milk depot within the shortest time possible.

<https://www.infonet-biovision.org/AnimalHealth/Animal-nutrition-and-feed-rations>

Farmers' forum

Looking for pumpkins, lemons, cabbages, onions, kales, sweet potatoes, beans and peas, contact Contact **Nicholas Katua on 0708637703, Machakos**

Yellow and red capsicum available: @Ksh180 per 1Kg, tomatoes @Ksh100 per 1Kg, and Basil @Ksh300 per Kg **Contact Emily Mwende on 0714884447**

For flux seeds, chia seeds, Moringa and honey. **Contact Wachira Kinuthia - 07168428648**

For rabbit urine to use in composting call. **Contact Robert Mukaya on 0717932446, Kapsabet, Nandi County**

My name is Joyce from Marakwet. I am looking for stingless bees. If selling please contact me through **0718383889**.

Partner organizations



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