How to improve the quality of dairy cows

TOF - Kenya dairy farming sub-sector is growing at 4 per cent every year, contributing 14 per cent of the agricultural Gross Domestic Product. This means that more farmers have joined the sector to cash in on the good returns from milk sales across the country. Increased milk production is needed to meet the needs of the rapidly growing population especially in our urban areas.

To keep pace with the increasing demand for milk and its by-products, farmers need to improve the quality of dairy cattle they keep. They have to continuously upgrade their animals in order to produce more milk and even meat. The days when farmers used to keep many animals for social prestige are long gone.

Adopt modern dairy farming

To succeed in dairy farming, farmers need to adopt the latest technologies in animal production. This includes proper use of Artificial insemination (AI) services in order to introduce the best traits in their milking herds such as the amount of milk a single dairy cow can produce in a day. The average milk production per animal in most small-scale farms ranges from 5 to 10 litres in a day depending on the region. Some small-scale farmers who have adopted modern production technologies are getting as high as 30 to 40 litres in a day; this is what every dairy farmer should aspire for.

Few animals registered

Kenya has more than 1.7 million head of cattle. Out of these, only 800,000 are registered under the Kenya Stud Book (KSB) which registers all graded cows in the country. Of these only about 500,000 are actually being upgraded. This shows that more than 1.2 million cows are yet to be upgrade because some farmers still rely on the traditional methods of livestock keeping. Many of these farmers still use village bulls to serve their cows while those who use AI services do not keep any records. In this and coming issues of The Organic Farmer we will educate farmers on steps they need to take to upgrade their dairy cows. Page 4

Page 3

The Organic Farmer
The magazine for sustainable agriculture in East Africa

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in this issue
Linking football to health
Controlling banana weevils

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Dear farmers,

Last month, The Organic Farmer visited farmers in the four Counties of the North Rift namely Elgeyo Marakwet, Uasin Gishu, Trans-Nzoia and West Pokot. It was very encouraging especially to see how farmers are putting into practice various technologies that we have featured in the magazine. Among maize producers, the incidence of the Maize Lethal Necrosis (MLN) diseases seems to be reducing, which shows that the Kenya Plant Health Inspectorate Service has improved the inspection of seed, which was one of the main causes of the spread of the disease in most parts of the country. Except for the yellowing of maize caused by the leaching of fertilizers due to heavy rains, this year’s crop looks healthy and unless the weather changes abruptly, farmers should be able to get a good harvest.

In most of the farms we visited during the trip, farmers have put to very good use the information we have been giving them in soil conservation, fodder establishment, dairy farming and poultry rearing among others. This will continue to encourage us to provide even more new upcoming technologies that will help them diversify crop production, improve dairy farming and income.

However with the devolution of agriculture to the counties, it is now easier for the county governments to identify priority areas where they can direct resources to accelerate agricultural development in their regions. Since independence, all decisions including the allocation of resources were centralised. Minimal attempt was made to develop infrastructure such as roads, industries for value addition or even assistance to farmers in terms of training and credit.

The counties now have very good development strategies, which if put into practice will not only transform agriculture and enable farmers to earn more, it will also enable the devolved units to generate more revenue that can be used to provide other services such as roads, health, education, medium and small-scale industries that will provide employment to the youth. But this will only be possible if the counties can reign in corruption, which is the biggest threat to development of the new devolved units and the country as a whole.
Adopting push-pull as a farming technology

It is important to ensure the land is cleared, ploughed and the soil broken down until it is fine.

**Joyce Wambui** | Over the years, push–pull farming technology has been addressing critical concerns of small holder cereal and livestock farmers. These farmers face many challenges including poor soils, managing pressure of pests and striga parasitic weeds (nick-named the witch weed), poor yields, and low milk production due to shortage of high-quality livestock fodder.

### Establishing a push-pull plot

- It is important to ensure the land is cleared, ploughed and the soil broken down until it is fine.
- Using pegs and ropes, measure the first plot of 21m × 21m. A push pull plot can be as small as 10m × 10m, or as big as any shamba.
- Use a string to measure and ensure you have a square. Put pegs at opposite sides of the square at intervals of 75cm each.

### Planting Napier grass

- Select healthy Napier grass for planting. Do not plant Napier grass that has stunt disease. Ouma and South Africa varieties are the best varieties of Napier grass for use in Push-pull because they are resistant to Napier stunt.
- Dig holes along the demarcated lines ready for planting. Dig holes at each peg on border of the marked plot.
- Apply 2 handfuls of well-decomposed farmyard manure in each hole.
- Place a three node cane into each hole at an angle of 30˚ to 40˚ all facing one direction.
- Cover with soil ensuring that two nodes of the cane are well covered.
- If you are using root splits, place them upright into the planting holes and cover the soil.

### Weeding and crop management

Early weeding is very important for the successful establishment of a push-pull plot. Carry out the first weeding when the maize is 3 weeks old, and second weeding when maize is 5 weeks old. It is important to distinguish between desmodium and weeds.

#### Harvesting Desmodium

You can harvest desmodium seeds for future use or for sale. Wear polythene over your clothes to prevent the pods sticking on your clothes. Thresh desmodium seeds on a stone using old rubber shoe.

### Harvesting Napier grass

Harvest the Napier grass one row at a time, starting with the inner row. Give the harvested row time to grow before harvesting the next row.

### Planting desmodium

- Mix 300g of silver leaf desmodium seeds with fine dry sand; in the ratio of one part desmodium to two parts dry sand.
- Drill desmodium in the furrows at 75cm row-to-row distance. Then drill farmyard manure along the furrows, mix with soil using a stick, without covering or disturbing the furrow.
- Plant maize in between desmodium rows.

### Winnow the threshed seeds.

- Harvest desmodium after harvesting maize from the field. During the first season, do not harvest desmodium until it has established well. Trimmed desmodium will regenerate for the next planting season.
- Do not allow livestock to graze in your push pull field after harvesting maize because direct grazing destroys desmodium and Napier grass.

Farmers can get desmodium seeds from Kenya Seed or any KALRO centre near them.

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Using football to promote health among slum youth

A pilot project is working with 500 youth in Mathare slum area in Nairobi where various football skills are linked to environment and health risk factors that affect them. The youth also learn organic farming methods for food security and nutrition.

Musulafa Lyaga | Football is the one activity that unites people of different ages, gender, social and cultural backgrounds. It is uniquely effective and affordable for promoting good health, while fighting hunger and poverty especially among the youth.

Sporting activities linked to health risk factors

In Kenya, a pilot project with 500 youth is being run in cooperation with the Mathare Youth Sports Association (MYSA). MYSA is a self-help youth programme linking sports with environmental clean-ups, AIDS prevention, leadership training and other community service activities involving approximately 20,000 young people in the slums of Nairobi.

‘Football for Health’ is an ‘11 Health’ programme that improves children’s knowledge, attitudes and behaviour towards diseases. Eleven simple messages on prevention, all based on scientific facts and linked to a specific football action, are practiced by youth group in eleven 90-minute sessions. The first half is called ‘Play Football’ and inducts a specific football skill. The second half is called ‘Play Fair’ and informs about the specific health issues and teaches children healthy behaviour that introduces healthy ways to protect themselves.

Youth transfer skills to families and peers

Biovision Farmer Communication Programme Outreach team has been working with one of MYSA’s teams known as Moreno, a slum football team where participating youth are shown how they can use their environment to improve their nutrition and food security. The young people share it with their families and peers.

Started with kitchen gardens

Ms. Njeri Kinuthia, Biovision Communication Programme Outreach Officer has taught one of the team members how to set up kitchen gardens. The initiative started with an indoor session where Ms. Njeri had a discussion with the team on different urban farm activities that can be implemented in the slum areas. The topics included poultry, rabbit keeping and kitchen gardening. The group chose to start with kitchen gardens, with support from a farmer training video they learnt how to set up a kitchen garden.

Biovision Africa Trust donated kitchen garden sacks, farm manure, soil, kale and spinach seedlings to the team. With the help of the outreach officer, the team planted their first kitchen garden within the grounds of MYSA Resource Centre as a demonstration plot.

Project to be expanded to other slum areas

It is hoped that this technology will be replicated in different slums in the country as it is not costly and does not need a lot of space yet the yields can be enough to feed a family, in this way enhancing food security in the slum areas.

Biovision Africa Trust intends to support and promote the Moreno team’s eleven popular players as Youth ambassadors in organic farming.

Prof. Dr Jiri Dvorak the chief medical officer of FIFA is spearheading the “Football for Health” initiative, a football-based health-education programme. The programme was launched in the context of the Football World Championship in South Africa in 2010. It was then extended to Namibia, Botswana, Zimbabwe, Malawi, Mauritius and Kenya.

For more information: Check out a new article by Fuller CW, et al, British Journal of Sports Medicine 2011. You can watch this video FCP Youtube channel www.youtube.com/watch V=U1EaYV2K3jH

Contact: MYSA 0708 11 92 27
Use locally bred semen to improve dairy cows

Most dairy farmers prefer buying semen from foreign bulls. The offspring (daughters) of these bulls usually have poor milk production, shorter calving and milking periods and are prone to diseases and pests since they are not adapted to local environment conditions.

Peter Kamau | Many companies and even individual farmers are now selling imported semen to small-scale farmers who have little knowledge of animal breeding. Farmers should be very careful where they source. Artificial Insemination (AI) services to avoid being cheated into buying breeds that may not meet their expectation. In order to have the best dairy cow breeds, farmers should upgrade their dairy cows by first registering them with the Kenya Stud Book (KSB). The KSB can then identify a qualified dairy cow inspector near you who will assess your dairy cows and identify the suitable cows that are good for upgrading.

Preference for imported semen

Most farmers choose to serve their little cows with imported semen with the hope that the high quality foreign bulls will eventually breed high quality animals that will produce more milk. Indeed most farmers are willing to pay more money for renowned international sires (bulls) to serve their animals with the best genetics in the world for the same reason.

But many of these farmers can confirm that cows from the foreign genetics often do not yield as much as they are made to believe by the suppliers of these genetics. Some of the farmers complain that such animals have less milk yields and their lactation period is shorter compared to local breeds.

The reason for the low production and shorter lactation period of dairy cows served with foreign sourced genetics is mainly due to that fact that the offspring (daughter and son) of the foreign breeds are not well adapted to tropical climatic conditions. These breeds are better adapted to temperate climatic regions and environment. Due to poor adaptability to local climatic conditions, such animals are even more prone to diseases and even pests (such as ticks which cause diseases like East Coast Fever or ECF, heartwater and baweosis).

Should Kenyan dairy farmers therefore stop using foreign genetics? The answer to this question is no. If you check breeders catalogue from the Kenya Animal Genetic Resource Centre (KAGRC) formerly Central Artificial Insemination Service (CAIS), you will notice that most of the sires (bulls) used by the centre have bloodlines of world renowned bulls.

What happens, however, is that the bulls at KAGRC are obtained from breeders in various parts of the country who import their semen from the best bulls in the world and serve their dairy cows. The breeds are then upgraded through selective breeding (see box below) until they reach the level of pedigree or pure breed. KAGRC then buys the young bulls from the breeders and then cross-bred them with other pedigree cows from other breeders to come up with high quality breeds that are better adapted to local conditions, have a longer lactation (milking) period, have more resistance to diseases, among other traits desirable in a dairy cow. In this way, local farmers are assured of improved milk production and income.

Selection of dairy cows for breeding purposes has to be done very carefully by a qualified inspector. The inspector first identifies a cow which is called the “foundation cow”. The farmer then goes through an AI catalogue to identify a pedigree bull with the characteristics that they want e.g. a bull that sires cows with high milk production, good udder placement, a good pregnancy rate and which has no history of birth complications. The “foundation cow” has to be registered with the Kenya Stud Book (KSB). When the foundation cow comes on heat, it is then served with semen from a different pedigree bull of the same breed.

When serving their animals, farmers should always take care not to use semen from the first bull which served the mother as this will lead to inbreeding. The granddaughter of the foundation cow is known as the “appendix” which is also registered with the KSB and served with semen from a high quality pedigree bull of the same breed. Finally, the great granddaughter of the foundation cow becomes a pedigree. The breeder can now maintain the pedigree line by continued use of high quality bulls from KAGRC. Farmers interested in acquiring training can contact the KSB on the address given below:

The Kenya Livestock Breeders Organisation Tel. 051 221 6996, 0702 251 249, Nakuru.

Email: info@klbo.co.ke website: www.klbo.co.ke

Read more on page 6
Many lifestyle diseases like High Blood Pressure and diabetes can be avoided if people grow and eat nutritious food in the right amounts.

Dr Peter Mokaya | Non-communicable diseases (NCDs) or chronic diseases are common in most parts of the world. Obesity, diabetes, cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and others are the leading causes of death in the world.

Organic farmers and consumers need to know how to prevent and manage these diseases because they are costly to manage especially for low income people who do not have the ability to pay for the high medical costs. In some developing countries, for example, care for diabetes alone consumes as much as 15% of the national health care budget.

Medicare involves costly consultations with health professional and doctors who treat the affected people, eventually leading to heavy costs to families and the society. Chronic diseases affect both the rich and the poor but they can be managed through consumption of healthy food that is grown organically.

Affordable and cost effective solution

Getting to know the best foods to eat when you have diabetes and or heart problems, for instance, is very much encouraged. It is very important to keep blood sugar levels well-controlled and blood pressure within the normal range. Households should therefore aim to eat foods that help prevent health complications. These foods include:

Fish: Fatty fish is one of the healthiest foods on the planet. All types of fish have immense health benefits, including Omega 3 fatty acids, lean protein and Vitamin D.

Cinnamon: Cinnamon is a popular spice with potent antioxidant activity. Several studies have shown that cinnamon can lower blood sugar levels and improve insulin sensitivity. Research has also shown that cinnamon can help lower levels of bad fats in the body and may be effective in the management of type 2 diabetes.

One should, however, limit intake of cassia cinnamon, the type found in most grocery stores, to less than 1 teaspoon per day since it contains coumarin, which is linked to health problems at higher doses. On the other hand, ceylon (“true”) cinnamon contains much less coumarin.

Eggs: Eggs provide amazing health benefits. In fact, they’re one of the best foods for keeping you full for hours. We have discussed the health benefits of eggs, especially organic eggs, in previous issues of The Organic Farmer Magazine (see TOF No. 122, July 2015) eating organic eggs regularly may also reduce your heart disease risk in several ways. Eggs decrease tissue inflammation, improve insulin sensitivity, increase your good cholesterol levels and reduce “bad” cholesterol. The benefits of eggs are primarily due to nutrients found in the yolk rather than the white.

Turmeric: Turmeric is a spice with powerful health benefits. Its active ingredient, curcumin, can lower tissue inflammation and blood sugar levels, while reducing heart disease risk. Curcumin may also improve kidney health in diabetics. This spice and the related plant turmeric root contain numerous health benefits.

Garlic: Garlic is a delicious herb with impressive health benefits. Several studies have shown it can reduce inflammation, blood sugar and LDL cholesterol in people with type 2 diabetes. It may also be very effective at reducing blood pressure. One clove of raw garlic contains only 4 calories and 1 gram of carbohydrates.

In addition to the above foods, there are other foods with numerous health benefits which include sweet potatoes, finger millet, yams, fruits, vegetables and herbs such as rosemary, thyme and stinging nettle. These will be covered, in future articles.

For more information contact the article author: Dr. Peter Mokaya, Director and CEO, Organic Consumers Alliance (OCA), Website: www.organicconsumers.co.ke Email: Peter.Mokaya@organicconsumers.co.ke or Mokaypm@gmail.com

Extra-Virgin Olive Oil: Extra-virgin olive oil is unrefined oil which is extremely beneficial for heart health. Its unrefined nature retains the antioxidants and other properties that make it so healthy. The oil contributes to reduction of high blood pressure. Be sure to choose extra-virgin olive oil from a reputable source, since many olive oils are mixed with cheaper oils like corn and soya. Be particularly careful and keep away from the GMO corn and soybean by products.
Eco-camp owner promotes organic farming

Visitors to Plover’s Camp are introduced to ways they can contribute to environmental conservation through recycling of organic and solid waste.

Veronica Wamiti | Five years ago, Wachira Kariuki, a farmer from Mwilohi village, in Murungarua County attended the World Environmental Day that was being commemorated on 5th June 2010 where he learnt that all polythene and plastic can be collected and recycled to make a Solid Waste Park to reduce environmental pollution. Having learnt this, Kariuki decided to take action immediately. He started collecting waste plastics and polyethylene material around his home and village, Murungarua Market Centre and even travelled as far as Naivasha, about 50 kilometres away to collect solid waste material that are plenty in Naivasha flower farms.

Using his experience as a volunteer with the Friends of Kinangop Plateau for Biodiversity (see table below) to be registered.

<table>
<thead>
<tr>
<th>Grade/Class</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool (Cross breed cow)</td>
<td>Ksh 200</td>
</tr>
<tr>
<td>Foundation cow</td>
<td>Ksh 250</td>
</tr>
<tr>
<td>Intermediate cow</td>
<td>Ksh 300</td>
</tr>
<tr>
<td>Appendix cow</td>
<td>Ksh 300</td>
</tr>
<tr>
<td>Pedigree cow</td>
<td>Ksh 400</td>
</tr>
<tr>
<td>Dairy bulls only pedigree</td>
<td>Ksh 1000</td>
</tr>
</tbody>
</table>

The duly filled application forms are then forwarded to KSB, which after approval issues a registration certificate.

The farmer then pays a minimal fee for each animal (see table below) to be registered depending on the class, breed and sex.

After registration of dairy cows with the KSB, farmers have also to register with the Dairy Recording Service of Kenya (DRSK). This is the country’s milk recording centre. Registered breeders have to do a systematic measurement and recording of daily milk yield of all their registered animals. This also includes a consistent sampling of the milk for quality analysis, all of which are summarised in the form of reports at the end of a lactation period.

The following are the functions of the DRSK:

- It collects and collates (examination and analysis) lactation (milk production) data from registered farms.
- It prepares lactation certificates of registered dairy cows.
- It prepares herd average reports.
- It maintains and avails relevant production data to the Bull Purchasing Committee for purposes of contract mating scheme.
- To avail relevant information or data to the Livestock Recording Centre for purposes of progeny testing (evaluation of genetic merit of insemination bulls) and recruitment of dams for contract mating.
- The Service also offers advice to farmers on good livestock management practices through its extension service.

Advantages of registering dairy cows with KSB

- Milk records reports help guide the farmers on monitoring the performance of farm management.
- They help the farmer to make decisions on selection, culling (selling of unwanted animals, insurance claims, feeding and breeding).
- Registered animals fetch better prices in the market.
- Consistency in breeding and milk recording guarantees, ownership of pedigree without having to buy expensive pedigree dairy cows from other farmers.
- Owners of registered dairy cows can be contracted by the Kenya Animal Genetic Resource Centre (KAGRC) to supply pedigree bulls and also progeny testing scheme (evaluation of daughters of registered bulls for quality control purposes).
- Registered farmers can take their animals to exhibitions, field days and the Agricultural Society of Kenya (ASK) and KSB shows where prospective buyers can view and give better prices than that offered in the market.
- Farmers also benefit from increased production in terms of milk and meat.

Elskanah Isaboke Read more on page 4
How can I control and eradicate weevils and nematodes in a banana plantation?

Weevils and nematodes are some of the pests that cause banana yield losses and a decrease in bunch weight. Farmers need to know how to control them to get good harvest.

**Banana weevils**

Adult banana weevils are brown in colour before emergence but they later turn black a few days later. Female adults lay their eggs in scars they make at the base of the banana plant. A female weevil can lay up to 200 eggs during its lifetime which is usually two years. Eggs hatch and become larvae after 6 to 8 days incubation period. The tiny larvae are white with brown heads. They feed and eat their way into the corms and banana pseudostems where they make tunnels, which is the most destructive stage of this pest. After 14 days in the tunnels, the larvae develop into pupa which feeds onrotting plant material.

**Symptoms:** The symptoms of banana weevil infestation include:
- Tunneling in the corm (root zone) and the pseudostem.
- Pseudostems snaps at ground level.
- Yellow leaves on stunted plants with weak stems.

**Nematodes**

Nematodes are tiny worms (usually less than 1mm long) that cannot be seen with the naked eye; they feed on the root and corm. They lay their eggs in scars they make at the base of the banana plant. A female weevil can lay up to 200 eggs during its lifetime which is usually two years. Eggs hatch and become larvae after 6 to 8 days incubation period. The tiny larvae are white with brown heads. They feed and eat their way into the corms and banana pseudostems where they make tunnels, which is the most destructive stage of this pest. After 14 days in the tunnels, the larvae develop into pupa which feeds onrotting plant material.

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**How to control weevils and nematodes**

**Break cropping:** In banana farms infested with weevils and nematodes, farmers can grow crops that do not host weevils and nematodes such as sweet potatoes; this can clear the pests from the field after 1½ to 2 years. Bananas can then be replanted again.

**Intercropping:** Mixing banana crops with other crops such as legumes minimizes weevils and nematodes movement. Inter cropping also prevents soil erosion and restores soil fertility. Do not intercrop with a crop such as sweet potatoes to avoid competition for nutrients.

**Cleaning planting materials:** Since weevils and nematodes are mainly located in the roots and corms (rot zone) of banana plants, farmers can remove roots and pare (cut off) the corms to a depth of 0.5 metres. All affected parts of the banana plant (scarred sections and the weevil tunnels) can also be cut off.

**Other measures**

The pest infestation can also be controlled by the following measures:
- Immense the suckers and corms in hot water (50°C) for 20 minutes.
- Sterilise the suckers and corms in a solarium (a room roofed with transparent material such as polyethylene or to expose material to sun’s rays) for 20 minutes.
- Dip the pared suckers and corms in a biopesticide for 24 hours.

**Deep planting:** Weevils prefer to lay their eggs on the corm at ground level. To discourage weevil egg-laying, the corm should be planted at least 60cm deep so that only the leaf sheath of the suckers are at ground level. This also reduces the emergency of too many suckers.

**Weevil trapping:** While adult weevils do not themselves damage banana plants, a single adult female can lay up to 200 larvae hatching eggs in two years, which can cause serious damage to banana plants. Since adult weevils are strongly attracted to freshly cut pseudostems and corms, this plant material can be cut and left on the ground near the bananas at all times. Farmers can use split pseudostem pieces, dish on stump or ground or leaf covering on the corms.

**Trapping helps to keep the weevil population low especially when it is done continuously. It also helps to lengthen productive life of the plantation.**

**Harvest hygiene**

The pseudostem of harvested bananas should be cut down at corm level. Soil should then be placed on the cut surface to reduce weevil attraction to it. The pseudostems can then be used for traps, livestock fodder or mulching (cut them into small dried pieces).

**Farming Tip**

**How to avoid potato pests and diseases**

With the spread of the Potato Cyst Nematode (*Globodera rostochiensis*) across the country, it is important that farmers take preventive measures to control the spread of the pest in their farms. The first step all commercial potato growers need to take is to be extremely careful where they get their planting material (seeds). Reports from KALRO and the Kenya Plant Health Inspection Service (KEPHIS) show that almost all seed production units, private seed producers and even companies inspected in a survey conducted two years ago are affected by the pest. Farmers therefore need to exercise extra caution when buying seed in future. Below are some of the measures they can take to control the spread of the disease in the farms:

- Start practising crop rotation to reduce the number of pests in the soil.
- Use your own potato seed if it is still giving good yields.
- Diversify to other crops that are not from potato family.
- Reserve a part of your land for future potato production. This is not possible for farmers with small parcels of land.
- Use a lot of manures in potato production since it is rich in nitrogen which attracts many diseases and dangerous pests such as the PCN into their farms.
- Never buy potato seeds from neighbours as this can transfer diseases or nematodes into your farm.
- There is no known biopesticide or nematicide that can control the PCN pest, so farmers should not fall prey to unscrupulous business people promising them that they have products that control the pest.
- It is difficult to tell which potatoes have the pest because it lives in the soil. Through these practices, farmers can stop the spread of diseases and dangerous pests such as the PCN into their farms.
How to improve milk quantity and quality

Maintaining hygiene during the milking Process ensures clean milk which does not contain dirt, soil or other contaminants that spoil milk quality. Farmers should always ensure their milking equipment are thoroughly clean and sterile.

*Musdalafa Lyaga* | Dairy farming is an important source of food and income for many households especially in the rural areas. For farmers to make good money, it is important for them to produce good quality milk and in large quantities. However milk can easily be spoilt or made dirty in large quantities. However milk to produce good quality milk and money, it is important for them areas. For farmers to make good households especially in the rural of food and income for many farming is an important source investments, make sure the

Discard all milk from sick animals

If the cow is on treatment with drugs, the milk should not be used until after the end of the withdrawal period for that treatment. Always seek advice from a veterinary officer. According to Ms. Judy Gicharu, a dairy farmer from Njoro, consistency in timing of milking is key in enhancing milk production.

Says Ms Githoro, “In order to get the most from your dairy investments, make sure the timings of your milking are consistent. It is very important to milk your cow the same time. Whether you do it in the morning or in the evening or three times in a day, make sure that those times are specific times. The other important measure is to remember to disinfect the cow’s teats so that the cow can be able to give you good quality milk and prevent infections.”

Avoid milking if sick

Mr. Peter Macharia, a dairy farmer from Kiambu, Central Kenya observes that increased income in dairy agribusiness especially for farmers who handle milk starts with prepa-

*Relax the animal*

Before you start milking, make sure that the animal is not in distress. Farmers have different ways of relaxing their cows. “For my cow to produce milk, I give it a good mix of feed or dairy meal. I know what she likes,” explains Macharia.

- Sit or squat in a position that will allow you to quickly move away if the cow becomes aggressive.
- Wash the udder and the teats gently with a towel and clean warm water to encourage milk let down.
- Use the other towel to dry the udder and the teats to prevent water from mixing with the milk. Be gentle when drying the udder to avoid irritating the teats.
- Apply milking jelly to lubricate the teats.
- Squeeze the first drops of milk from each teat one at time into a strip cup. This way, you can easily check for unusual colour or presence of clots, which might indicate that the cow is suffering from mastitis.
- Do not mix the first few strips of the milk from each quarter with the rest of the milk because this milk has a high amount of bacteria and it will contaminate the rest of the milk.
- Place the milking bucket underneath the cows udder.
- Use both hands to milk and choose diagonal teats for ease of milking although some farmers prefer to milk adjacent teats.
- Squeeze the base of the teats after gently gripping each teat between your extended thumb and first finger so that the teat feels your palm as you squeeze down.
- Squeeze to push down the milk while maintaining your grip on the base of the teat so that milk does not flow back into the udder.
- Make sure that you strip all the teats so that they are completely empty. This is to prevent the cow from getting mastitis. Mastitis is an infection of the udder.
- When you finish milking dip the teats in a teat disinfectant to prevent infection, some farmers prefer to use medicated milking jelly instead of the teat disinfectant. Teat disinfectant and the medicated milking jelly are easily available from your local agrovet shop.
- Measure and record the milk from each cow separately in order to keep proper records of the production of your cows.
- Sieve the milk into a clean dry place. This can to remove any dirt that may have gotten in during milking.
- As soon as possible, safely transport the milk to the market or to the milk collection centre unless you have your own cooler.

Remember good milking habits and good hygiene will make you get high returns from your milk. After milking all the cows, clean the utensils using clean warm water and soap or disinfectant and leave them to air in a clean dry place.