

The Organic Farmer

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The magazine for sustainable agriculture in East Africa

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Photo: Courtesy

Our dairy cow cross-breeding story on Makitasha farm in Kilifi has elicited a lot of feedback from farmers across the country. The farmers want the cross-bred cows from the farm to improve their herds. The Kenya Animal Genetics Resource Centre (KAGRC, formally CAIS) has picked ARBO (pictured above), one of the cross-bred bulls from the farm whom we featured in the article (TOF No. 163, December 2018). He will be transferred to KAGRC Centre, Kabete, Nairobi where farmers interested in the Gir bloodline from Brazil can buy its semen to improve their dairy cows. We will inform farmers when the semen is available to enable them place orders from their AI service providers.

Use natural fertilizers to maintain soil fertility

Peter Kamau | Over the years, we have reminded farmers on the importance of maintaining soil fertility. In organic farming, we put a lot of emphasis on the need for farmers to build the fertility of their soils by use of compost and other organic fertilizers to

such a level that whatever crops they want to grow, the soil will have received adequate nutrients to support production. This is a practice where we feed the soil so that the soil can feed the plants.

However, most farmers believe that their crops cannot do well without the use of chemical fertilizers. When you use chemical fertilizers you are only feeding the plants and this is not sustainable.

For example, if you plant maize using chemical fertilizers, only a small amount of the fertilizer is used up by the maize; nearly 70 per cent of the chemical fertilizer is lost through leaching and evaporation- that means that your crop can only use 30 per cent of the fertilizer.

Chemical fertilizer expensive

This year, all maize farmers will find it quite difficult to buy chemical fertilizers because the government is unable to offer them subsidized fertilizer as they have done in the past due to financial constraints. A bag of DAP fertilizer is now going for between Ksh 3600 and 4000

depending on where you are buying it.

Use organic fertilizers

Farmers need to change the way they practise farming, especially the inputs they use. Right now we have many organic fertilizers in the market that can be used to grow any crop and give very high yields. Combined with other methods such as minimum tillage (where you don't plough the land but just clear it and plant) it is very easy to maintain soil fertility and control soil erosion.

Adopt sustainable agriculture

Every farmer should now be working to restore soil fertility by digging terraces, planting trees in sloppy land and using methods that restore soil fertility through crop rotation, protection of water sources through tree planting and recycling of farm waste to make compost, which over time will build soil fertility and increase crop yields and income. This will help reduce the reliance on chemical fertilizers and cut the cost of production.

Dear farmer,

It will be another busy month for farmers as they start planting maize and other crops. The rush for inputs such as seeds and fertilizer will be as intense as it has always been in previous years, especially for many farmers who do last minute buying of these inputs. It is also another time when unscrupulous middlemen flood the market with fake seeds and even fertilizer.

This year, most farmers may not be able to afford fertilizer since the government failed to buy the subsidized fertilizer. A bag of DAP fertilizer now costs Ksh 3,600 to Ksh 4,000 depending on where you buy it. The prices may appreciate even higher due to various factors including shortage. In this magazine, we have always given farmers alternative ways in which they can improve their soil fertility using compost and other organic fertilizers in the market to stop their dependency on chemical fertilizers, which cause damage to the soil.

In this issue we give farmers alternative information on alternative methods that they can use to fertilise their soils for improved yields. Already many farmers are talking of planting without fertilizers especially in maize producing areas of Uasin Gishu and Trans-Nzoia Counties in North Rift.

Seeds are another challenge, every year we warn farmers to be careful when buying maize seeds, but many still end up buying fake seed from agrovets shops. It is now easy to tell if the seed you have bought is genuine or not.

All the 2kg packs of seeds have a scratch card similar to the one you buy for airtime; to find out if the seed you have bought is genuine, simply scratch the card and send the code number printed in it to the Kenya Plant Health Inspectorate Service (KEPHIS) number **1393**. A message will be sent to you indicating if the seed is genuine or not. If the seed is not genuine you can return it to the shop where you bought it and request a refund of your money.

Make sure to go with the receipt given to you when you bought the seed as proof you bought it at the same shop. You can report the case to KEPHIS or even the police if the seller does not cooperate. **Page 2 and 3.**

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Plant early to increase your maize yield

Every year, farmers incur huge losses for planting late and buying fake seed from unscrupulous dealers. The following tips can help.



Peter Kamau | Farmers are all preparing for the planting season which is expected to start in the second week of this month and continue into April. For farmers who will do it early, there are many benefits.

First, the rains that fall in the first week come with blessing for farmers. As they fall, the water droplets pick nitrogen in the air and fix it into the soil - this process is known as the "nitrogen flush." Any maize planted with the first rains benefits from this nitrogen, apart from remaining healthy, the maize grows very fast because of the extra natural nitrogen.

Reduced pest damage

Another big advantage of planting early is that at this time, most of the troublesome pests such as the fall armyworm, thrips, stemborers, aphids, whiteflies and cutworms etc are still in their young stages of development and therefore cannot damage the crops. Insects are also responsible for diseases such as the Maize Lethal Necrosis (MLN). Farmers who plant early

will have reduced infestation and hence a good harvest at the end of the year.

Low soil temperatures reduce germination rate

The soil temperature is another major requisite for germination and fast maize growth. For germination to take place, maize requires adequate moisture, temperature light and enough nutrients. Research shows that

high soil temperatures tend to hasten maize germination. When planted under low soil temperatures, the germination is slow and this affects the maize throughout the growth cycle. Farmers lose up to 2 bags of maize every week when they plant after rains have already started.

Practise dry planting

So it is important for farmers to plant early or even practise dry planting (planting before the rains have started) to give your maize a vigorous germination and fast growth. This is especially advisable this year since farmers will be affected by the lack of subsidized fertilizer. Farmers who plant early without fertilizer can apply foliar feeds from third week after planting to ensure that the crop has adequate nutrients to grow well.

Return crop residue

Farmers should also ensure that all crop residue from last year's harvest is not burned but retained in the *shamba*. The crop residue will stop water loss, prevent soil erosion in sloppy land and also release its nutrients back into soil for use by the maize when it decays.

Organic matter from the crop residue also protects a lot of soil microorganisms such as earthworms, and bacteria, which feed on the organic matter and release nutrients back into the soil for use by the crops grown on the land.

Make sure the seed you buy is genuine

Every year many farmers are duped into buying fake seeds. Some seed merchants and middlemen obtain packaging material from companies through collusion with seed company employees and then dye commercial maize with the same colours used by the companies. They then pack the maize into the genuine packages obtained from such companies which they sell cheaply to selected agro-veterinary shops and even seed distributors. Such seed when planted cannot do well and is responsible for huge losses that farmers incur through poor crop harvests.

What to do

Farmers can avoid being cheated by taking the following measures:

- Only buy your seeds from reputable and well-known dealers and stockists.
- Buy your seeds early enough

preferably in January or February when most seed companies have adequate stocks. Most of the fake seed is sold when there is seed shortage in March and April - most popular seed varieties are in short supplies. Most farmers who buy seed at this time end up buying fake or expired seed.



- All genuine seed of 10kg and 25kg packs have seed tags and inspection labels from the Kenya Plant Health Inspectorate Service (KEPHIS) inside the seed bag check the tags which show the variety and lot number. You can then call KEPHIS on Tel. 0709 891 000. If you give them the details, they can tell you if the

seed is genuine or not. Should you discover the maize is not genuine you can take it back to the shop you bought it and demand a refund of the money you paid for the seed. You can also alert KEPHIS and the police to make a follow up on the shop selling fake seeds.

- All genuine maize seed in 2kg packets now have a sticker label like the scratch cards that you buy for airtime. Remove the label and scratch it the same way you do for mobile phone airtime scratch cards. After scratching check the number on the label and send it to 1393. You will receive a message indicating is genuine or not.
- Always choose the right seed for your region. Seeds are developed for different agroecological zones. If planted in the wrong zone, they cannot perform well (See page 3 on seed varieties).

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

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Choose the right maize variety for your region

Each maize variety is developed for a particular climatic zone. Farmers who plant the wrong varieties face the danger of poor maize yields and poor earnings.

Lilian Maina | To get a good maize crop, farmers should be very careful on what type of seed they buy. Seeds are developed for every climatic zone in Kenya. The development of seeds considers the amount of rainfall and duration, average temperatures, soils and many other parameters.

If you plant the wrong variety, you can never get good maize

yields. For example if a farmer, plants a late maturing variety in the medium altitude or low altitude areas where the rain season duration is short, the maize will not do well since it will not be able to get adequate rainfall to grow to maturity.

In the same way if a farmer plants an early maturing variety in the high altitude zone, the maize will mature early and start rotting because these areas receive rainfall for up to six months. Unless an early maturing variety is meant for vegetable or green maize, it should never be planted in high altitude zones.

During their development, seed varieties undergo a lot

of tests to ascertain their characteristics. If they pass all the tests, then scientists or breeders recommend them for growing in the specific area they were developed for.

Good management of maize is very important in order for the farmer to get good yields, both for home consumption and for sale. Poor soils that have low pH (high acidity) cannot support good maize development since maize including many other crops require soils with high pH (low acidity). Late land preparation, late planting, poor weeding and even wrong spacing can lead to poor maize yields.



For more information on suitable maize varieties per region <https://www.infonet-biovision.org/PlantHealth/Crops/Maize>

Maize varieties farmers can plant in their zones

Late maturing varieties

These varieties are suitable for high altitude regions which have well distributed rainfall over a long growing season. They take over six months to mature and have a higher yield potential compared to other varieties.

Planting ← 180 Days → Harvesting											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Variety	Company		Days to maturity								
H614, H629, H6210, H213, H9401	Kenya Seed Company (KSC)		180-240								
WH699	Western Seed Company		180-210								
KH600-11D, KH600-14E	Freshco		160-200								
ADC600-23A	Agriculture Development Corporation (ADC)										
KH600-15A	East African Seed company		145-148								
KH600-16A	Freshco		140-180								

Suitable growing areas; Trans-Nzoia, Uashin Gishu, West Pokot, Keiyo, Marakwet, Laikipia, Nakuru, Kisii, Kiambu, Mt. Elgon Slopes, Nandi, Kericho, Taita, Upper parts of Nyeri, Lower Nyandarua, Bungoma.

Medium Maturity

Medium maturing varieties are more suitable for mid to high altitudes which have a bi-modal distributed rainfall permitting two well-defined growing seasons.

Harvesting ← 140 Days → Planting Harvesting ← 140 Days → Planting											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Variety	Company		Days to maturity								
H513, H515, H516, H517, H518, H519, H520, H521, H522, H524, H525, H526, H624,	Kenya Seed Co.		120-180								
WH403, WH502, WH504, WH505	Western Seed Co.		135-165								
Simba61, Duma41, Duma43	Seedco		100-140								
KH500-21A, KH500-33A, KH500-13A	Freshco		120-140								
WH507	Western Seed Co		120-150								
WH402	Western Seed Co		130-160								

Suitable growing areas; Kakamega, Busia, Bungoma, Kisii, Homa Bay, Suba, Bondo, Tinderet, Nandi, Kericho, Bomet, Narok, Sotik, Trans-Mara, Murang'a, Kiambu, Kirinyaga, Embu, Meru, Machakos, Kitui, Mwingi. **Source:** USAID Maize Improvement Programme

Plan well to get market for your farm produce

Apart from growing crops for food, never grow any cash crop without doing market research to know where you can sell it and at a good price.

Claudia Munuhe | Market for farm produce sector poses a number of challenges despite the agriculture sector supporting more than 70 per cent of Kenya's population. Apart from climate change, poor extension services, outdated technologies, poor pests and disease control methods, expensive inputs and poor infrastructure, lack of markets and market information remains a big problem for farmers.

This means that besides producing food for consumption, so many people also earn income through agriculture. Small-scale farmers consider marketing of their farm produce as one of their major problems. Therefore, most farmers whether they have a small or a large farm want to be able to access the markets easily to sell their produce at good prices to support themselves and their families.

Local markets

This is where the farm produce is sold in the region or area in which the commodities are produced. These could be their nearest towns, trading centres and even far away towns. In this category, the farmers personally take their produce to the market, use cooperatives, or even middlemen.

International markets

The farm produce is exported and sold outside the territorial boundaries of the home country. Mostly the produce is exported



Market Place: Farmers in many countries in Africa continue to face many problems in marketing their agricultural produce which is to blame increasing poverty. Governments and civil society are trying various ways to solve the problem.

by companies licensed by the government through the use of farmers cooperatives.

Online Marketing:

Online marketing is the art of using the internet to advertise, connect with customers and obtain sales leads. Today, online marketing is one the most efficient ways to market goods and services and agricultural markets are not left behind. It does not require technical knowledge as it is simple and can easily be understood by everyone. The online marketing is for both local and international markets. The only requirement is a smart phone or just a phone as some of these online platforms use USSD to link the buyers to the markets. In these platforms, you need to register to become a member and to access the services.

Lack of information

This is the major challenge facing the farmers until they end up selling their produce either at very low prices and to some extent not selling at all. This in regard to:

Poor timing and crop selection.

Certain crops fetch very high prices at a particular given time. This means that the farmer should always be aware of those crops that mature at a time when the market prices are good. There is also need to research on the market demand of any certain crop before planting. If the demand is low, then you need to change the business plan and select a crop that will fetch a good price at a particular time of the year.

Middlemen in the markets

Middlemen or brokers are groups of people who buy agricultural produce direct from farmers at farmgate and transport the produce to a main market or supply it as raw material to manufacturers. They act as a link between the farmer and the market. They may sell to shops, restaurants, markets, hospitals and even schools. Although they save the farmer the hassle of looking for markets for their produce, time and transportation costs, they are well known for exploitation of farmers in a big way by buying at very low prices while selling the same at two or even three times what they paid the farmer for the produce.

Market diversification

A farmer has to be informed and have a test of different marketing methods for their produce. A farmer who has used Good Agricultural Practices (GAPs) is flexible to sell his or her commodities both locally and internationally. Therefore, a farmer needs to always be alert of what is happening in the markets and also to look for alternatives of markets. For example:

Apply for supply contracts tenders:

- Contact your nearest schools, hospitals, restaurants and other organizations and look for tenders to supply your agricultural produce.
- Create your own market: Try and demonstrate to your community the importance of your product like if you are a mango farmer, you can be making mango juice and you will be surprised how people will love it and even ask for more.

Different agricultural online marketing platforms

Grower soft, Selina Wamucii:

This is a platform where you become a member and you are integrated into local and global supply chains. They sell and buy vegetables like broccoli, butternuts, carrots, cherry, tomatoes, spices like basil and avocados among many. <http://www.selina.wamucii.com>
Mobile No: 020 8 056 102

M-FARM: Connects buyers and farmers and gives the ranges of prices. <http://www.mfarm.co.ke>
Tel. 0707 933 993

Farmers Market Kenya: FREE online marketplace where buyers and sellers meet to trade farm related products and services <https://www.fmk.co.ke>
Tel. 0735 107 169

Soko-PePe: Offers market

information and farm records management services. It links the small scale farmers to end retailers and offers commodity prices. Sokopepe.co.ke 0728 606 916

Soko Freshi: It aims at linking the farmers with domestic and international markets through the use of mobile phones. Just dial *415*22#, activate your account with 100/- through lipa na mpesa till no. 979041 and manage your account by adding more products or download the application from your playstore and enjoy the services.

Tel. 0705 293 254

Mkulima Young: It is a community and marketplace to post your farm produce and get insights. <https://www.mkulimayoung.com>

mkulimayoung.com Tel. 0710 848 002

Daffodil: Daffodil buys organic produce from certified farmers groups and individuals. Their contact is Injore@daffodil.co.ke
Tel 0723 625 351

These are among many online marketing sites that are up coming. We will keep updating you on the new sites so that you are able to choose the best site for your produce and marketing will never be a challenge for you. We will also outline the price so different commodities from next month so that you are able to sell your produce accordingly and be able to track and keep records when prices are high.

Right food keeps pregnant mother and child healthy

A pregnant mother requires a balanced diet composed of all vitamins, minerals and energy. These nutrients ensure the mother and the growing child remain healthy during pregnancy and even after birth.

Mary Mutisya | According to recently released statistics, maternal (mother's) deaths are on the rise not only in Kenya but in many countries worldwide. As startling as this news may sound, the fact is that we are losing both our mothers and infants, and something needs to be done urgently.

The government is doing a lot in the maternal health by lifting child birth charges in public hospitals, but one would wonder why the situation is still not improving and ask why or what it is that we are doing wrong. Well, several factors may be contributing to this and key among them may be nutrition.

During pregnancy, as the foetus grows, the ~~mothers~~ body size increases, and ~~their~~ nutritional requirements ~~go high too~~ leaving the pregnant woman weakened more so during the second and third trimesters.

What one eats during pregnancy therefore is of importance as it not only affects the woman but also the developing foetus (the unborn child). By definition, maternal nutrition refers to the ability of a pregnant woman to provide nutrients and oxygen for herself as well as the developing baby. Below are some of the effects of maternal malnutrition to the mother and infant.

Effects of malnutrition to the mother

- Increased risk of maternal complications and death.
- Increased infections.
- Anaemia.
- Lethargy and weakness leading to lower productivity.

Effects of malnutrition to the unborn child

- Birth defects.
- Brain damages.
- Cretinism (Stunted growth).
- Increased risk of foetal, neonatal and infant death.
- Increased risk of infection.
- Intrauterine growth retardation, low birth weight and prematurity.

From a nutritional perspective,

nutrition plays a key role in this important phase of a woman's life and below are several food guides that pregnant women should take into consideration as they go ~~along~~ way in improving their health and that of their developing baby not just during pregnancy but also after the baby is born:

Eggs

It is a common myth in many communities that pregnant women should not consume eggs. This, however, remains a myth that needs to be discouraged. During pregnancy, many women develop strong aversions to meat, the most commonly used source of protein by many. Eggs are a first class source of protein as they contain all the essential amino acids that the body requires.

They are also a very good source of choline which is important for many processes in the body, key among them being brain development. Eggs are easy to make and when fixed with lots of vegetables and some cheese they become a super combination for any pregnant woman. In case one is having a problem with fried eggs, eating them boiled as a grab- and go-breakfast will equally meet their nutritional needs.

Eat green leafy vegetables

During pregnancy, folic acid is very important more specifically during the first 3 months of the foetus development as it helps prevent birth defects of the brain and spinal cord. Broccoli, and most dark green vegetables such as cooked spinach and kales are loaded with folate and folic acid. They are also a good source of fibre, vitamin K,

vitamin C, vitamin A, calcium and potassium.

Another advantage of leafy green vegetables is that they contain plant compounds that benefit digestion and the immune system. Due to their high levels of fibre, vegetables also help prevent constipation which is uncomfortable and a very common problem in pregnant women. Research has also shown that the consumption of green vegetables reduces low birth weight.

Fish liver oil

Fish liver oil is obtained from the oily liver of fish mostly cod. Fish oil is loaded with omega -3 fatty acids and EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) which are needed for eye and brain development of the foetus. The product is also very rich in vitamin D which many people do not get in sufficient amounts. The consequences of insufficient amounts of vitamin D in pregnant women are serious as they cause preeclampsia whose symptoms are increased high blood pressure, swelling of the feet and legs and protein in urine.

This is a very common problem ~~among~~ many pregnant women which in most cases ends up causing premature births and deaths. This can be avoided by making sure that one takes fish oil. The consumption of fish oil during pregnancy has been linked with high birth weight and lower risks of diseases later in the baby's life. Taking one tablespoonful of fish oil provides one with the recommended daily intake of omega-3, vitamin D and A.

Berries

Berries are generally classified

as super foods. They are packed with water, healthy carbohydrates, vitamin C and antioxidants. The fact that they contain vitamin C helps the body in absorbing iron which is of great importance during pregnancy. Also, the vitamin C in them plays an important role not only in the immune system but in skin health as well. The good thing about berries is that they are a snack, they contain a lot of flavour, fibre, nutrients and relatively fewer calories compared to other foods. For this reason, therefore, they can help pregnant women maintain a healthy weight while still nourishing the foetus.

Water

The blood volume of women increases by up to 1.5 litres during pregnancy. This therefore means that it is important for one to stay well-hydrated (take a lot of water). The foetus may get everything it needs but if the mother does not watch her water intake, she may become dehydrated. Dehydration in pregnancy often manifests itself through reduced memory, headaches, anxiety, feelings of tiredness and bad mood. Increased water may also help in reducing constipation and urinary tract infections which are common problems during pregnancy. It is recommended that pregnant mothers take at least 2 litres of water per day. As a rule of thumb, water should be taken not only when one is thirsty but as often as one can.

For more information on Nutrition during pregnancy <https://www.infonet-biovision.org/HumanHealth/Nutrition-Pregnancy>



A balanced diet provides all the essential nutrients that a pregnant mother and the developing child needs to grow well.

Know the right maize variety for your region

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Early Maturity



Variety	Company	Days to maturity
PH1, PH4, Katumani B, DLC1, DH01, DH02, DH03, DH04	Kenya Seed Co.	75-120
WS103, WS909, WS202	Western Seed Co.	100-120
Duma41, Duma43	Seedco	100-120
KDV-1 (OPV), KDV-6 (OPV)	Freshco	

Suitable growing areas; Taita Taveta, Mwatate, Lamu, Mpeketoni, Homa Bay, Unguja and Siaya.

Test new seed varieties first

A number of companies have released new seed varieties that farmers who want to try them can buy from seed dealers. The following are new varieties that have been released into the

Maturity: 130-140 days

Qualities: Late maturing (140-150 days) stays green longer (good for silage. making), drought tolerant, uniform ear placement, resistant to Maize Lethal Necrosis



Photo: IN

market:

High altitude variety

Variety WH 605

Company: Western Seed Company

Yield: 40-45 bags per acre under good management

Late Maturing: 6 months-150-170 days

Qualities: High yielding, heavy grains, large cob size, full cob filling, resistant to Maize Streak Virus (MSV), Grey Leaf Spot (GLS) and blight.

Suitable growing areas: Trans-Nzoia, Uasin Gishu, West Pokot, Keiyo, Marakwet, Laikipia, Nakuru, Kisii, Kiambu, Mt. Elgon Slopes, Nandi, Kericho, Taita, Upper parts of Nyeri, Lower Nyandarua, Bungoma.

Medium altitude variety

Variety: H6506

Company: Kenya Seed Company.

Yield: About 40-45 bags an acre.

(MLN), does not lodge (not prone to falling when mature).

Suitable growing areas:

Kakamega, Busia, Bungoma, Kisii, Homa Bay, Suba, Bondo, Tinderet, Nandi, Kericho, Bomet, Narok, Sotik, Trans-Mara, Murang'a, Kiambu, Kirinyaga, Embu, Meru, Machakos, Kitui and Mwingi.

Medium Altitude variety (also mid-high altitude) areas

Variety: MH (MH 501)

Company: East African Seed Company

Yield: 35-45 bags an acre

Qualities: Double cobbing (produces two cobs), good husk cover (does not open cobs), strong stalk (does not fall due to strong wind) good diseases tolerance to GLS, rust, MSV and blights, white semi dent-type, good protection against ear rot, bends cob on maturity hence does not rot.

Turning water hyacinth into compost manure

Antony Huha | The shores of Lake Victoria are usually a beehive of activities as fishermen, women and youths dock and off load fish from their nets to the market. However, this has not been the case lately due to the massive invasion of a deadly weed, the water hyacinth. Water hyacinth (*Eichhornia crassipes*) is a free-floating hydrophyte (a plant that grows partly or completely submerged in water).

Chokes marine life

Water hyacinth grows rapidly to form a dense, green mat of broad leaves that floats above the water surface with purple flowers. It reduces light and oxygen levels for other marine



Photo: IN

life such as fish, plants and animals. According to the Kenya Marine & Fisheries Research Institute (KEMFRI), about 10,360 hectares of the lake are covered by the weed.

Affects transport

Lake Victoria, Africa's largest fresh water lake continues to choke in the weed and the marine life is decreasing rapidly. The weed creates thickets too dense for fishing boats to navigate. Transport, fishing and tourism sectors in counties surrounding

the lake incur heavy losses when the weed re-emerges.

Fishermen and boat operators along the beaches in the counties of Kisumu, Siaya, Busia, Homabay and Migori, have been forced to seek alternative means of making a living.

Making compost manure

However, the weed has its share of advantages. Farmers in the lake region have taken advantage of the weed to make compost manure to grow their crops.

The weed can be used as green or compost manure. As green manure, the weed is harvested from the lake and let to dry for about 3 days and then used as mulch to cover the soil surface

in farms growing various crops around the lake. The weed not only covers the soil surface but it also releases nutrients into the soil as it decays in the fields.

As compost manure, the harvested weeds are left to dry for 5-7 days then mixed with green matter like maize stalks, wood ash, animal manure and top soil. Wood ash acts as a catalyst allowing for microbial decomposition of the manure.

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How to determine cow weight for feeding

Our just ended series of articles on heifer feeding has drawn a lot of reactions and feedback from farmers across the country. In the last issue, we forgot some important facts that farmers need to know in order to take care of their heifers in the right way. As we mentioned in the articles, your heifer is your next dairy cow, so the better you manage it, the more productive in terms of milk production it will be when it calves down. However, farmers have reminded us that we did not give full information, including a conversion table for determination of weight. Below, we try to answer some of issues raised by farmers:

Although farmers feed their dairy, they do not know whether they are underfeeding or overfeeding; in most cases underfeeding is the most common especially among our small-scale farmers due to lack of pasture and information on how much to feed depending on the weight of the animal and its production potential.

Most of the local breeds of cattle are small in size and hardly exceed 450kg mature weight. So it is important that farmers adopt the following tips to ensure their heifers and dairy cows get the right quantity of feed:

- If you are giving your animals fodder shrubs such as leucaena, sesbania, gliricidia, or legumes such as lucerne, desmodium or purple vetch, then they would require an additional dairy meal not exceeding 2kg of concentrates per cow per day.
- If a farmer has released their

heifers on grass forage, then they require supplementation with concentrates at the rate of 1 per cent of the body weight (that is about 1-3kg depending on their body weight).

- Farmers should give good quality forage (calliandra, leucaena, desmodium, purple vetch etc) as recommended above and can add 6 kg of forage to every cow per day. Fodder shrubs cannot replace dairy meal, they are just a form of supplementation to a dairy cow's diet.

Steaming up: For heifers that are about to be served (inseminated), farmers should provide adequate feed. It is recommended that they give 4kg of concentrates per day (2kg in the morning and 2kg in the afternoon).

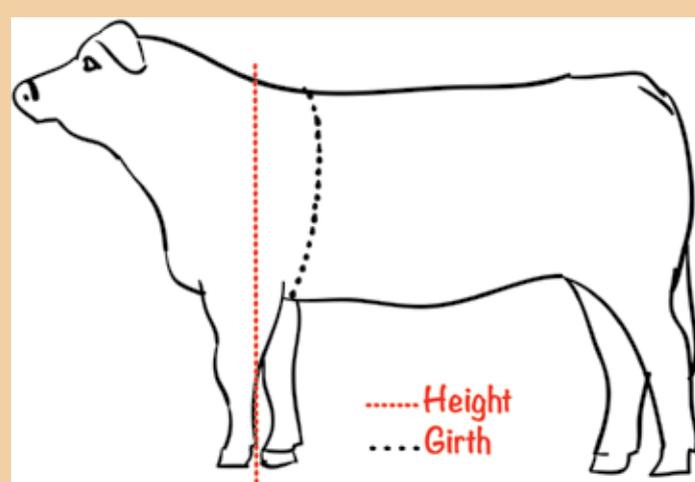
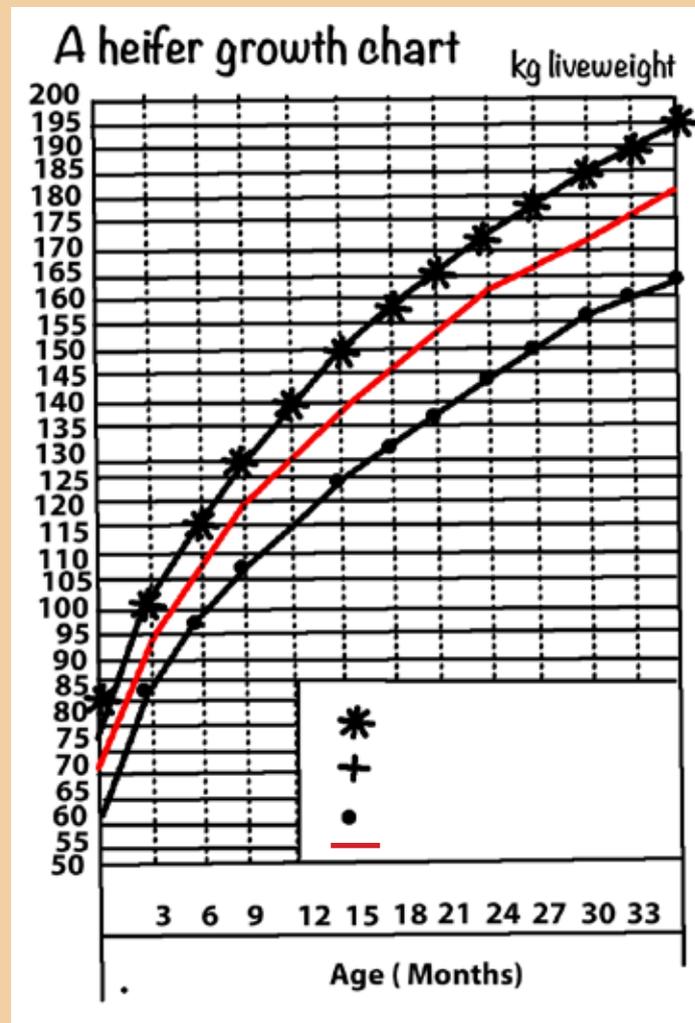
- Mineral supplements should also be provided for growing heifers since they need calcium (Ca) and Phosphorus (P) to maintain fertility (reproductive performance).
- As far as feeding is concerned, we consider large breeds to be pure bred cows such as Friesians, Ayrshire, Gurnseys, Jerseys, which due to their genetic make-up, it is important to give them more nutrients since they have higher nutrient requirements. Small-bodied breeds that most farmers keep are usually improved cross-bred cows- so their genetic makeup can cope with lower nutritional levels. The correct feeding for local heifers is given in the table below:

Daily nutrient requirements (on Dry Matter basis) for local small breeds (mature weight 450kg).

Body weight (Kg)	Dry Matter (DM) intake (kg)	Crude Protein (%)	Net energy (m/cal/ day)
100	3.0	12.4	0.47
150	4.0	11.0	0.63
200	5.0	10.3	0.79
250	5.9	9.8	0.93
300	6.7	9.5	1.07

Source: Dairy farming in East Africa (Dr. Lukuyu, et al)
 DM (Dry matter): Dry matter means any fodder that has been dried to a moisture level of 10%.

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



Answers by Elkanah Isaboke

Continued from page 6 ➡

The mixture is then left to compost for about 9 weeks, producing a manure rich in nitrogen, potassium and phosphorus which can be applied directly into the soils. Compost manure improves soil fertility, increasing

crop yield and the quality of the soils.

Increases crop yields

Farmers have increased food production, boosting food security and also increase on their income leading to improved livelihoods. Harvesting the weed

from the lake and transporting it to farms has created employment for the youth. This way, the lake is cleared of a hazard and the farmers benefit from the weed as a cheap source of fertilizer for their farms. Water hyacinth is also used in the production of biogas, making of ropes and also

as traditional medicine.

TOF Radio answers your questions

TOFRadio is broadcast on KBC on Thursday at 7:30pm and Mbaitu FM on Friday at 8.30pm. Tune in and listen to farmer experiences and expert advice on agribusiness and eco-friendly farming methods. On this page, we respond to some of the issues raised by farmers in their correspondence to the radio program. Send your questions and comments via SMS 0715 422 460, email: admin@theorganicfarmer.org

Farmyard manure at the heart of organic agriculture

Farmer Aggrey Chanzu from Vihiga County responds to TOF Radio program on manure. "I enjoyed listening to your radio program on manure though it was very short. I am very much interested to know how I can make my own manure to use it in my maize this season."

Musdalafa Lyaga | Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It can immensely contribute to robust growth of your maize and other crops leading to higher yields.

Natural fertilizer provides the food needed for a plant to grow after a seed has germinated in the soil. This food consists of plant nutrients. The most important of these nutrients are nitrogen (N), phosphorus (P) and potassium (K).

Understanding composting

Composting means piling up crop and other farm wastes in layers to make them decompose quickly. The final product is a uniform, black mass of nutrient-rich manure.

What you need to make good manure

What can be used to make good manure include plant residue from maize and beans, millet, potato vines, sorghum, banana, cassava, leaves, weed, kitchen waste or even slurry from your biogas. You will also need ash which is rich in potassium (K) and lime.

How to make manure

For you to have good quality manure, first select an area in your farm that is protected from strong wind and sun, for instance, under the shade of a tree.

Then measure a rectangle 120 cm (4 feet) wide and 150 cm (5 feet) or more long. The length depends on how much composting material you have. Do not make the rectangle wider than 120 cm, as you have to be able to work on the compost without stepping on it.

You can now dig a shallow pit about 30 cm (1 foot) deep. Put in the bottom most layer dry plants material such as small



A Farmer Ms. Florence Muganda prepares compost at Tembatemba village in Bungoma county with help of her farm worker.

tree branches, maize, millet or sorghum stalks. Chop the plant material into small pieces. Spread the dry material evenly over the bottom of the trench to make a layer of 30cm. Sprinkle ashes then water making sure all the material is moist but not wet.

Now add a second layer of dry vegetation, weeds or grass. This layer should be about 15 cm thick (6 inches). Sprinkle water on this layer too. You should sprinkle water on each layer as you add it. The pile should be moist throughout.

Put on a third layer of animal manure. The manure contains micro-organisms which are vital for decomposition.

Sprinkle some ash or lime on this layer. The ashes contain valuable mineral including potassium, phosphorus, calcium and magnesium. The ashes also neutralise the acids produced during decomposition, especially by the animal manure.

The next layer should be green leaves from high-protein leguminous trees like calliandra, leucaena and sesbania. You can also use hedge cuttings of plants like *Tithonia diversifolia*.

Sprinkle on a little topsoil or old compost. The topsoil contains bacteria which are useful in the decomposition process.

Add more layers in turn, starting with dry vegetative materials, then animal manure or biogas slurry, followed by wood ash, green vegetation and topsoil. Remember to sprinkle water on every layer.

Cover it all over with a layer of topsoil about 10 cm (4 inches) thick. This layer prevents plant nutrients from escaping from the

compost pile. To reduce moisture loss through evaporation, cover dry vegetation such as banana leaves.

The finished heap has to be protected from the sun or animals or anything that might interrupt the decomposing process. Cover it with a polythene paper secured by weight of stones.

Monitoring your decomposing progress

Take a long, sharp, pointed stick and drive it in at an angle so that it passes through the pile from top to bottom. This stick will act as your "thermometer." After 3 days, decomposition will have started in the pile, and the stick will be warm when you pull it out.

Pull the "thermometer-stick" out from time to time to check the progress of the pile. If it has a white substance on it and has a bad smell, it means the decomposition is not going on well. You can turn the compost further and sprinkle some more water to make it moist but not wet.

You can also tell from the thermometer stick how dry or wet the pile is; it should be moist but not wet. Sprinkle water on the pile occasionally (about every 3 days, depending on the weather). If it has been raining, you may not need to water the pile.

After 2-3 weeks, turn the pile over. Do not add any fresh materials except water. You must turn the pile if the "thermometer-stick" is cold when you pull it out as this shows that decomposition has stopped. Turning the pile is important because it mixes the different layers, making the decomposition faster and more

complete.

When the compost is ready

The compost should be ready after 4 weeks. Finished compost should have a dark brown colour or black soil, which has a nice smell if the decomposition process went on well.

Using your compost

When you plant crops such as maize, use one palm for each hole (about 100 grams). Well-decomposed compost should be applied at the rate of 5 t/ha (2.5 t/acre): about two large handfuls per square metre, or enough to barely cover the ground with a layer 1 cm (0.4 inch) thick.

Storing

If you are not ready to start using your manure then you can store by covering it with a layer of banana leaves or polythene. Organic farming is almost synonymous with organic manure as this is where life begins - in the soil.

For more information on Manure <https://www.infonet-biovision.org/AnimalHealth/Manure#simple-table-of-contents-2>

Radio Taifa frequencies for our TOFRadio programmes

TOWN	FM FREQUENCIES	MW (MEDIUM WAVE FREQUENCIES)
Nairobi	92.9 MHz	
Mombasa	100.8 MHz	
Kisumu	104.5 MHz	
Kakamega	104.5 MHz	
Bungoma	104.5 MHz	
Eldoret	88.6 MHz	
Nakuru	104.1 MHz	
Meru	90.4 MHz	
Nyeri	87.6 MHz	
Kisii	103.3 MHz	
Malindi	90.1 MHz	
Kapenguria	93.3 MHz	
Kitale 9	3.3 MHz	
Voi/Kibwezi	96.9 MHz	
Namanga	89.9 MHz	
Lodwar	88.6 MHz	
Lokichoggio	89.3 MHz	
Garsen	93.1 MHz	
Kajjado	92.9 MHz	
Kitui	92.9 MHz	
Lamu	96.3 MHz	
Maralal		1107 KHZ
Wajir		1152 KHZ
Marsabit		675 KHZ
Garissa		567 KHZ