

Dear farmer,

Locusts have currently invaded over 70,000 hectares of land in Kenya, destroying crops and devastating many farmers. Nevertheless, most producers are resilient and continue preparing to plant this season.

This edition gives you a step-by-step guide on how to prepare compost for better soil fertility and structure. Use it to prepare your compost pit and enjoy the benefits!

Discover the opportunities in avocado farming that are making farmers ditch their tea and coffee bushes to plant avocados.

Learn about water retention ditches, a simple and effective technique to harvest rain and road water runoff.

Black Soldier flies provide cheaper, protein-rich feed for poultry, pig, and fish. Learn how to rear them.

Also, read about the Foot and mouth disease, a disease that is affecting farmers countrywide.

For radio lovers, listen to informative agricultural programmes on Coro, Ingo, Minto, and Mwatu radio stations in your local language, thanks to our partnership with the Kenya Broadcasting Corporation (KBC).

We hope you enjoy the edition and welcome your feedback and suggestions, as we strive to make you better farmers.

*From the editor*

## Vital tips for successful farming this rainy season



**The start of the rains comes with pests and diseases that include locusts, fall armyworm, stem borer and anthracnose in beans**

By Charles Kimani

During the last planting season, most parts of the country experienced above average rainfall as reported by the Kenya Meteorological Department. However, it was a bag of mixed fortunes for farmers as this rainfall meant a bumper harvest for some and for others, damage to farm produce due to an increase of pests and diseases.

As farmers prepare for the March to May planting season, most parts of the country are expected to receive rains beginning from the first and second week of March, and ending in the second to third week of May. The rains are expected to peak in April. Here are some things to consider:

### Pests and diseases

The start of the rains comes with pests and diseases that include locusts, fall armyworm, stem borer and termites in cereal crops and anthracnose in beans. Farmers should report such outbreaks to agricultural extension officers. Livestock farmers should lookout for lumpy skin and foot & mouth disease. In poultry, look out for the dreaded Newcastle disease (NCD) and vaccinate your birds in time. It is important to note that NCD vaccines expire if stored for one or two hours at room temperature; hence, farmers should seek information on where to get genuine vaccines from the area agricultural extension officers.

### Proper field sanitation and monitoring

Field sanitation is the process of collecting and destroying all infested fruits. For fruit farmers (mangoes, avocados, oranges) ensure proper sanitation as infested fruits host eggs that eventually develop into maggots. Infested fruits should be collected and buried as a preventive measure. Farmers can also use a solar bag that uses sun heat to manage pests and diseases.

### Water harvesting

To ensure rainwater is tapped for future use, farmers in arid and semi-arid areas are advised to repair their terraces and desilt existing water dams before the onset of rain.



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## Making good compost

While plants and other organic waste can decompose naturally and get incorporated into the soil, composting hastens the process **Pg. 3**



## BvAT renews partnership with KBC to air radio programmes in local languages

By Musdalafa Lyaga

Rural farmers in various parts of Kenya, will continue to enjoy informative, live and interactive vernacular farmer radio programmes through KBC's regional stations, following the renewal of a partnership between Biovision Africa Trust (BvAT) and KBC on March 2, 2020.

This will expand the reach of BvAT's Farmer Communication Programme, as content produced by its radio station, The Organic Farmer (TOF) Radio, will be aired on multiple platforms. The stations Coro (central), Ingo (western), Minto (southern Nyanza) and Mwatu (lower eastern) will broadcast programmes on sustainable farming, allowing farmers to learn farming techniques that will increase their yields.

Speaking at the signing ceremony, KBC's managing director, Dr Naim Bilal Yaseen, said the partnership will leverage on each other's experience and expertise, to advance the farming agenda in Kenya.

"Farmers can now get information on ecological sustainable agriculture in their local languages. They can also call in with questions that will be answered on air, assisting other listeners facing similar challenges," said Dr Yaseen.

Dr David Amudavi, BvAT's executive director, said the partnership would further cement the relationship between the two organisations.

"This partnership demonstrates the desire by government and nongovernmental organisations to support each other to deliver on their mandates. BvAT's vision is a food-secure African continent, with healthy people, living in a healthy environment. This resonates well with KBC's aim of using radio and television as tools for national development," said Dr Amudavi.

The two organisations have been in partnership since August 2008.

## Kenyan scientist honoured for revolutionary research on fruit

Dr Fathiya Khamis's findings have been instrumental in developing biological interventions such as the use of parasitoids to control the fruit fly menace

By Caroline Mwendwa

A Kenyan scientist, Dr Fathiya Khamis, recently won the prestigious TWAS Abdool Karim 2019 award for her revolutionary research on the fruit fly.

Dr Khamis, who works at Icipe, holds a Master's degree in biochemistry and a PhD in molecular biology. Her research has helped in the control of the dreaded fruit fly (*Bactrocera invadens*), benefiting numerous farmers in Africa.

The pest, which was first detected in 2003, reduces the market value and yield of fruits resulting in over 80 per cent fruit loss.

"I began my research to identify the pest's original environment in 2005. I wanted to find natural biological agents that could control the insects. Knowing the point of entry and how they spread in the environment gives scientists an advantage," says Dr Khamis.

Her findings have been instrumental in developing biological interventions such as the use of parasitoids. These are natural enemies that when released into orchards, attack the fruit fly at the egg or larva stage, suppressing its population. Another novel development is a protein-food bait that attracts female fruit flies. Also known as fruit fly mania,



**I began my research to identify the pest's original environment in 2005. My aim was to find natural biological agents that could control and possibly suppress the insects**



the locally made bait captures the flies when placed in a trap.

"Before female fruit flies can lay eggs, they like ingesting proteins. This bait lures them to feed on it and kills them," she says.

The research showed the trail of these pests from Southeast Asia (Sri-Lanka) to Kenya and Tanzania. Dr Khamis is also involved in research on entomopathogenic fungi, which is key in the manufacture of bio-pesticides.

"Our research in the use of entomopathogenic fungi to make bio pesticides has borne fruit. Through these studies, Icipe, in collaboration with private partners, has produced biopesticides such as Real Metarhizium 69, which are now retailing in the markets for use by farmers on fruit flies.

"These are either smeared or sprayed on the breeding grounds of the flies, where they pupate," she adds.

The scientist also teaches about orchard sanitation. "Do not allow infested fruits to decompose on your shamba. An infested fruit left to decompose in the garden, spreads the pest," she cautions. Farmers can use a tent-like structure called an augmentorium to dispose of rotten fruits. It ensures that they decompose away from the rest of the garden. Dr Khamis sees this award as recognition of the work that Icipe is doing in promoting IPM and is convinced that it presents the organisation with greater opportunities to create an impact in the world of science.

More information of fruit flies can be found here; <https://www.infonet-biovision.org/PlantHealth/Pests/Fruit-flies>

Through these studies, Icipe, in collaboration with private partners, has produced biopesticides such as Real Metarhizium 69, used by farmers



# How to make good compost

While plants and other organic waste decomposes naturally, composting hastens the process

By Emmanuel Atamba  
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Compost is organic matter made of mainly plant materials that have decayed. Compost manure supplies soil with both macro and micronutrients. Inorganic fertilisers often provide a few nutrients per product. Therefore, for more sustainable production, compost works well. While plant materials and other organic waste can decompose naturally and get incorporated into the soil, composting hastens the process. It also builds soil structure through the addition of humus, enhances moisture absorption and retention, and reduces soil erosion.

Composting utilises all available organic materials - Brown materials, including dried plant residues, grass, leaves, maize stover, and so on, green plant materials such as kitchen waste and green plants, and animal manure.

There are two main ways of composting: Heap and pit. The difference between a compost heap and pit is that a heap is done on the ground surface, while a pit is dug 2-3ft in the ground. Pit composting is suitable in areas with less rainfall/water, as it helps to conserve moisture. The heap method is suitable in areas with significant rainfall, as it prevents logging/excess water entering the compost, which would affect the process. Apart from the location of the pit or heap, the rest of the steps for composting are the same for both methods. What you need to do:

- Select the best method that will suit your prevailing/current weather.
- Select the site for your compost pit

Select a site that is not exposed to wind, rain/runoff - preferably where the compost material is not exposed to direct sunlight. Choose a site close to where the compost manure will be used to reduce the hassle of moving it.



## Establishing a compost heap/pit:

For pit composting, avoid digging the pit deeper than 2-3ft, as this may result in the materials placed deep in the ground not decomposing properly. This is because, some microorganisms cannot survive under such circumstances.

The compost site should always be 1-1.5m wide and can be as long as needed based on available material for composting. This width enables you to easily turn the material as you can reach the entire width of the pit/heap.

The compost pit can be smeared with fresh cow dung to reduce leaching of nutrients. The heap on the other end is supported by small poles and droppers around it on both corners to ensure that it is stable.

## Make the compost layers:

**The foundation layer:** This is the layer that sits at the very bottom of the heap or pit of the compost. It includes larger plant materials (dry) such as dried maize stalks, grass, dried leaves, and so on. Cut the materials into small pieces and spread them until they are about 25cm high from the base. Sprinkle some water on this layer - ensure the material is MOIST but not WET.

**The first layer:** This includes green plant materials such as green grass cuttings, kitchen waste and other green planting materials. It is recommended to include shrubs such as tithonia

(Mexican sunflower), glyricidia, leucaena, sesbania, crotalaria and lantana to increase the Nitrogen content. Apply this up to about 30cm.

**The second layer:** Includes animal manure. Also, add slightly decomposed manure to introduce microorganisms to the compost for faster decomposition. The animal manure may be mixed with some soil. Apply this up to 20cm only to allow for good air penetration.

**Cover layer:** Add a cover layer with either banana leaves or other broad leaves or polythene cover to prevent exposure to rain, direct sunlight and animal disturbance.

## Check the site every two weeks for temperature and moisture.

This is done by inserting a stick in the centre of the heap. Feel the stick with your fingers to get the temperature and moisture. If the composting is going on well, the stick will be moist and warm.

If the compost is not moist, sprinkle some water evenly as you turn it. Add enough water to make the material moist - not wet. High temperatures can be corrected by suspending the cover for a while to allow the hot air to escape. Low temperatures mean slow composting and can be corrected by adding covering and allowing sunlight to reach the heap, so it can be heated up.

**Turn the compost after three weeks:** Add some water to make it moist (only when necessary).

**Your manure should be properly composted within six weeks:** You will be able to tell from the sweet smell it produces and the uniformity of the final material.

More on composting can be found here; <https://www.infonet-biovision.org/PlantHealth/Composting>



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# What are the opportunities for avocado farmers?

**Dr Fathiya Khamis's findings have been instrumental in developing biological interventions such as the use of parasitoids to control the fruit fly menace**

**By Clifford Akumu**  
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Avocado farming is not new to Kenya. In many homes, one is likely to find one or two trees. However, growing the fruit is a 'new craze' that is headed into a solid investment league. It is the quality of the fruit that Kenya exports that has earned it international recognition, ranking the country as the sixth largest producer in the world and the largest in Africa. A 2019 half-year survey shared at the World Avocado Congress in Colombia indicated that Kenya has overtaken South Africa in the production of the fruit.

According to statistics from International Trade Centre in 2017, Kenya produces an average of 191,000 tonnes of avocados per year and exports about 51,507 tonnes while South Africa exports 43,492 tonnes annually.

In 2018, avocado exports earned the country Ksh10.8 billion. The signing of a trade deal between Kenya and China to see 40 per cent of all the avocados produced in this country exported to the latter, is a clear sign of

the opportunities in store for farmers. Increasing consumption of the fruit in Russia, Egypt, Spain, The Netherlands, Qatar, Iran, Libya, France, Germany, Saudi Arabia, UAE, and Singapore has seen demand hit the roof. The fruit is rich in proteins and minerals, and is also a source of healthy fats.

Kenya has 7,500 hectares under cultivation of the fruit, but more farmers in Uasin Gishu, Kiambu, Trans Nzoia, Kakamega, Meru and Embu are joining the gravy train. Avocado Society of Kenya chief executive officer, Mr Ernest Muthomi, says the Kenyan crop has become more marketable, following tough measures put in place by the

## 191,000

**T onnes of avocados that Kenya produced in 2017, as well as exporting 51,507 tonnes while South Africa exports 43,492 tonnes annually, According to statistics from International Trade Centre**

government to protect its quality.

"Avocado fruits from Kenya have continued to dominate the international market due to their high quality," he avers. To export avocado to the international market, farmers must be certified by government bodies including Kenya Plant Health Inspectorate Service and Exports Promotion Council. For smallholders, the best place to start is by vetting the export company to partner with and verifying its registration at the Horticultural Crops Directorate (HCD) as an exporter. Researching on set standards for Kenyan exporters including the fruit size, uniformity

and recommended dry matter is also critical for aspiring avocado farmers or investors. It is also critical to uphold the recommended maximum residue levels of chemicals. Organically produced fruits fetch premium prices thus, most farmers have embraced integrated pest-management measures, and reduced the use of synthetic chemicals.

But even amidst these stringent measures, unscrupulous exporters who have contracted farmers across the country, are being accused of putting pressure on farmers to harvest the fruits prematurely. Premature harvesting can ruin Kenya's reputation in the international market and lead to wholesome rejection of our avocados.

In mid-February this year, Kenya's avocado exports resumed with high prices, after being starved of cash for three months, following rampant cases of traders harvesting fruits prematurely.

Want to join the avocado train? Here are some ideas:

### Seedlings propagation

This involves grafting seedlings for sale. Seedlings have been in high demand. For example, by the end of last year, the Nakuru County government had distributed more than 113,000 avocado seedlings to 6,200 farmers. Seedlings of grafted Hass and Fuerte varieties are sold for between Ksh150 to Ksh400, depending on the location.

To do this business, it is advisable to register with the Kenya Plant Health Inspectorate Service (Kephis), which handles the global gap certification.

### Avocado contract farming

Farmers can form co-operatives to grow avocados for sale to companies involved in the export business. This is already happening. Companies such as Sunripe, Shanghai Greenchain, Kakuzi and EPZ are active here. Some processors buy a four-kilo carton of quality fruits at Ksh420, which is higher than what the middlemen offer.

### Avocado fruit aggregation

This is where an individual farmer, farmers' group or co-operative society buys and aggregates the produce from several farmers and later sells to exporters or processors. However, the aggregator needs to be aware of the phytosanitary conditions imposed by the import market to meet the unique requirements.





# Making water retention ditches on your farm

They enable farmers in the dry areas to grow crops and increase the moisture levels of soil

By Clifford Akumu  
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In the last edition, we explained the different ways in which you can collect and save rainwater for use on your crops during the dry season. One of the methods was digging water-retention ditches. These are an ideal way to harvest rain, and collect runoff water from roads or tracks.

They enable farmers in the dry areas to grow crops and increase the moisture levels of soil. Mr Edward Ndolo, a retired police officer and farmer in Kitui County, has used water-retention ditches for more than 20 years. His soil, unlike that on his brother's farm that borders the river, is always moist and his mangoes are never starved of water.

"I use these techniques to harvest rainwater and road runoff water, and then plant crops with it," he says.

"I also train and teach other farmers, using my farm as an example, of how to harvest rainwater," he adds

Steps to follow when making a ditch  
Retention ditches are best used on flat or gently sloping land with permeable, deep soil, not prone to landslides. Ensure they cut across your shamba and not along the slope. This is how to do it:

- Use a hoe to dig a ditch 0.3-1.5m deep by 0.5-1m wide (can be bigger, if you prefer it that way). The spacing between ditches should be 20 metres for flat land and 10 to 15 metres for sloppy land;
- Remove soil using a shovel and place it



Earthen dikes can be left in the ditches so that more water infiltrates the soil and is not diverted outside the field. (Pic source FAO)

six to nine inches below the lower edge of the ditch, to prevent loose soil from going back in. Plant grass, for example Napier grass, on the mounded soil to hold it in place;

- Walls at each side of the ditch should be slanted so that the top is wider than the bottom;
- Plant crops above the upper edge of the ditch to prevent it from filling up with soil. Try to plant the top barrier crop one season in advance so that the ditch will be sufficiently protected once built;
- Plant banana trees at the bottom of the ditch;
- Close the ends of the ditch with stones to stop water from flowing out. However, if it overflows, open the barrier so that excess water can exit.

### Advantages

- They reduce soil erosion and improve soil moisture;
- Water collected helps farmers to grow healthy crops with increased yields.

### Disadvantages

- Heavy rainfall may cause the ditches to break and overflow, washing away your

crops;

- Construction is labour-intensive;
- Remove silt at the bottom of the ditch regularly;
- On unstable land, there may be risk of landslides.

**Note:** Plant indigenous trees at the edges of your farm. Their branches, when pruned, will provide firewood and their leaves can be used to make rich compost or left to rot in the shamba. This adds nutrients to your soil and works as mulch.

### Caution

Ms Luwieka Bosma, a researcher from the MetaMeta research foundation, which guides communities and governments on how to harvest water safely, in a previous interview with the *Smart Farmer* magazine, emphasised the need for proper guidance and advice, especially when attempting to harvest water from the roads.

"Runoff water can be dangerous especially during heavy rains, as it can destroy your whole farm in one night," she says.

Continued from page 7

## Individual avocado farming

Farmers, who have ensured best agronomic practices on their trees, term the avocado as 'gold'. Indeed, some now want every space on their farms to have an avocado tree.

Mr Ayub Gitobu, a farmer in Meru County who has planted 2,800 seedlings on 14 acres, knows this well.

Last year, he sold Ksh145,000 worth of avocados from

only 15 trees, with one piece going for Ksh10.

However, it is difficult for a small-scale farmer to get into the export market due to bureaucratic red tape, taxes, permits and approvals needed unless they are contracted by an export company.

More information on avocado farming can be found on the infonet website here; <https://www.infonet-biovision.org/PlantHealth/Crops/Avocados>



## The black soldier fly management

**These flies can be a cheaper and a source of excellent food for your chickens, pigs, and fish. Their larvae which are dark flat grubs provide quality protein**

**By Elkanah Isaboke**

They consume large quantities of food waste and can transform various types of organic waste into valuable proteins and organic fertiliser.

The black soldier fly (BSF) known scientifically as *Hermetia illucens* also reduces potential pollutants such as organic chemicals in manure, prevents houseflies from laying eggs in the waste, and inhibits them from flying around. It also reduces *E. coli* and *Salmonella enterica* in cow and chicken manure.

These flies can also be a cheaper and easier source of excellent food for your chickens, pigs and fish. Their larvae which are dark flat grubs are a good source of quality protein. Fortunately, unlike the regular housefly, this common and widespread fly of the *Stratiomyidae* family is not a nuisance to humans.

The adults, which look like tiny wasps, are not attracted to human habitats or foods and do not bite or transmit diseases. They spend most of their adult life mating and laying eggs.

The International Center of Insect Physiology and Ecology (Icipe) has researched a lot on these flies and is promoting them as an alternative source of proteins for animal feeds.

### Stages of black soldier fly

Climatic factors do influence the lifespan of BSF.

**Eggs:** They take about four days to hatch into larvae.

**Larvae:** This stage lasts about 21 days. The larvae pupates around the seventh day. During this time they consume huge quantities of food waste or manure and can eat practically anything, except high cellulose items like grasses, leaves and paper.

A few days before pupating they turn brown, and this is the best time to feed them to your animals.

When they are ready to pupate, they secrete their digestive system, lose their mouth, and produce an antibiotic coating.

Therefore, unlike house flies, they cannot carry diseases between wastes and foods consumed by humans which makes them perfectly safe for animal consumption.

**Pupae:** They take 14 days to emerge as adult BSF's.

**Adults:** Live only for about six days, but can survive for 16-40 days if maintained in a controlled environment with water, or supplied with 30-50% sugar solutions.

### Breeding cage for mating process

BSF require well-lit cages. Two bulbs in lamp holders can be fitted inside the cage. Make cages with mesh to allow proper ventilation and protect the flies from predators.

### How do you set a production unit and attract flies?

Use bins to prepare your production unit. The bin should have holes on the

sides to allow the pre-pupae to climb out of the front side of the bin, into a collection container, where they hatch into larvae which can then be collected as feed.

### How to trap flies in the bins

- Leave the bin with the lid open to attract the flies, especially the female ones, which can be recognised from their pointed abdomen;
- Pour coffee powder waste around and within the bins to attract the flies;
- Supplement the coffee waste by adding kitchen waste;
- Add more coffee grounds, or rotten fruit or vegetables ;
- Keep vigil until female soldier flies are drawn into the bin;
- Close the lid immediately the BSF female flies are inside the bin;
- Fruit flies and house flies will be drawn to the bin first. Their eggs hatch faster than those of BSFs. But, once the BSF larvae are established, they dominate their competitors;
- The bin can be two meters long, one meter wide and one meter high;
- Ensure all the food waste is put in the bin;
- Your bin should have a dark lid with an internal ramp inclined at an angle of 30 degrees to ensure the larvae remains caged;
- Take the larvae as feed for your poultry, fish and pigs.

### Caring for the production unit;

- Maintain bins by sterilising every two weeks with any detergent.
- Clean the breeding cage using cotton wool and water.

Adult BSF lay eggs in rotting fruits, vegetables, manure or other agricultural waste. How much compost a bin produces depends on the available waste, and the size of the composting bin. BSF larvae decomposes food waste faster than worms.

**BSF Opportunities:** Mass production of BSF as a novel source of protein for poultry, fish and pig production in enya would lead to the creation of new jobs for youths and women in our communities.





## Foot and mouth disease: What you need to know

**Early detection is important and can make the difference between death and survival of your animal**

**By Dr. Nderitu Nyagah**

In primary school, we had a bad habit of moving from class to class, making noise when the teacher expected us to be seated studying. One particular teacher would tell us that we were suffering from foot and mouth disease. Foot, because we were moving up and about and mouth because we were making noise. This was obviously with a light touch.

On a more serious note, late last year, Uasin Gishu County suffered from an outbreak of foot and mouth disease, which led to a ban in movement of animals in an effort to contain the disease. Recently, other cases were reported in Central Kenya. Foot and mouth diseases (FMD) wreaks havoc on many farmers from time to time. Early detection is important and can make the difference between death and survival of your animal. What you need to know:

### **What causes it?**

FMD is a viral disease. A virus is a small infectious agent that only multiplies

inside living cells and requires a host for continued survival. There are seven types of the virus – O, A, C, SAT 1, and SAT 2. The causative agent is vital because outbreaks in various regions are caused by different types, alone or in combinations. Further, vaccination against one kind does not give protection against infection from other types.

### **Which animals are affected?**

The disease afflicts all cloven-hooved animals. These animals have a split so that they have an even number of hooves. They include cattle, sheep, pigs, goats, antelopes, gazelles, and deer. However, most outbreaks affect cattle and pigs.



### **Early detection can make the difference between death and survival of your animal**

### **How is it transmitted?**

Animal-to-animal contact with an infected animal and aerosol spread in the air. Additionally, objects such as fodder, clothing, motor vehicles, among others from infected farms will spread the disease. Semen from infected bulls can also transmit FMD.

### **What are the clinical signs?**

A drastic drop in milk production for lactating animals is the first sign. Affected animals develop a very high fever, followed by an eruption or sores on the

tongue, lips, gums, muzzle, and cheeks. Consequently, the animals salivate profusely, causing drooling. Lesions also develop at the junction between the skin and the hooves, and the space between the hooves. These cause difficulty in walking (lameness).

### **What to do when you suspect FMD?**

Under the laws of Kenya (Animal Diseases Act), FMD is a notifiable disease. This means that any person who fails to report the occurrence of the disease is guilty of an offence. As is the case for any other disease on your farm, always contact your veterinarian for a diagnosis. You can also contact your sub-county veterinary office.

### **How do I treat or prevent?**

Being a viral disease, there is no effective treatment. However, your vet will institute supportive treatment. Vaccination is the best preventive measure.

Your veterinarian will advise you on the frequency of vaccination and the type of vaccine to use. Equally important is to institute bio-security measures such as having a footbath at the entry to your farm and avoiding areas with the disease, including when sourcing fodder.

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*For more information on Foot and Mouth Disease (FMD) in poultry, visit the Infonet web database at; <https://www.infonet-biovision.org/AnimalHealth/Paralysis-Stiffness-and-Lameness#simple-table-of-contents-1>*



| Location                     | Frequency |
|------------------------------|-----------|
| Nairobi                      | 102.7     |
| Kakamega<br>Bungoma<br>Busia | 91.5      |
| Malindi                      | 106.3     |
| Location                     | Frequency |
| Webuye                       | 95.9      |
| Garissa                      | 88.7      |

| Location                     | Frequency |
|------------------------------|-----------|
| Taita                        | 107.4     |
| Narok                        | 102.3     |
| Nyeri                        | 105.7     |
| Machakos<br>Makueni<br>Kitui | 93.8      |
| Meru                         | 105.1     |
| Marsabit                     | 88.3      |

| Location         | Frequency |
|------------------|-----------|
| Nakuru<br>Gilgil | 104.5     |
| Kisii            | 91.3      |
| Kisumu           | 105.3     |
| Mombasa          | 105.1     |
| Kericho          | 90.5      |
| Eldoret          | 91.1      |

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

## TOF Radio answers Alfred Sumba on growing maize for an extra income

By Naisiae Lempushunah

*My name is Alfred Sumba. I am a civil servant working in Nairobi and would like to venture into maize farming to generate extra income. I have rented land in Lurambi area, Kakamega County. Where do I start?*

Selection of good seeds is the first and most essential step. Quality seeds come with high germination rates and vigor, and guarantee healthy crops capable of resisting diseases and high yields. Be deliberate on the variety you choose to avoid frustrations. There are two main types of maize:

- Hybrid
- Non-hybrid

Hybrid varieties are often high producers. However, avoid planting the seeds harvested from the cobs of hybrids as they will not have the characteristics of the mother plants and the yields will differ. Non-hybrid (open pollinated) varieties (traditional seeds) can be harvested from healthy plants.

When choosing a seed variety, consider:

- The amount of rainfall in your area
- The time it takes to germinate
- Your elevation from sea level

In addition, ensure the seed packet is not expired and has not been interfered

with. The amount of seeds to be purchased depends on the recommended seed rate, and the size of your farm. On average, one hectare requires 25kg of certified seed.

### Ecological requirements

- Requires well drained loamy or alluvial soils, with a pH of 5.5 -7, that are not water logged
- Temperatures should range between 15- 30 degrees centigrade with an altitude of between 0 -2000 meters above sea level
- A well distributed average rainfall of between 600 and 900mm is sufficient to grow the crop. Rain is especially critical during the first six weeks of germination and at the flowering and silking stage

### Steps to follow when planting maize

#### Ploughing:

- Harrow farm to fine tilth for easier planting and easier shooting of the crop.
- Sow at the onset of rains when the soil is moist.

#### Spacing:

- Maintain spacing of 60-75cm between rows and 20- 25cm between plants. This ensures good growth, easier weeding, and reduces the spread of pests and diseases.
- Planting holes should be about 3-5cm

deep depending on the soil type.

- Apply manure or compost to the soil before planting the seeds.

### Harvesting:

Maize matures in about 3, 5 or 10 months. Dry well before storage.

### How to test your maize moisture level:

Add 1 teaspoon of salt to a dry jar or bottle. Pour maize into the jar but leave enough empty space to shake the seeds and salt. Shake the jar and roll gently for 2 to 3 minutes.

If the salt forms lumps or sticks to the sides of the jar then your moisture level is too high. If it doesn't then your seeds are dry enough.

### Storage:

Hermetic storage bags will keep all insects at bay. They cost between 100 and 150 for each 90kg bag. Hermetic metallic storage tanks are also available but are more expensive. They however allow the farmer to remove the amount of grain he wants leaving the rest intact.

### Common pests:

Include the fall armyworm, maize stalk borer, cutworms and aphids.

### Common diseases:

Include Maize smut and Maize Lethal Necrosis Disease (MLND), common rust and maize streak disease.

*The February issue 175 featured maize seed varieties and compost manure preparation in detail*

### Partner organizations



To contact us on the "tusemezane" platform or ask a question, kindly call or sms +254 715422460

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