

The Organic Farmer

The Organic Farmer

Do you value TOF? Can you pay for your copy

Dear Readers,

The Organic Farmer (TOF) has continued to reach you with valuable information and knowledge on sustainable agriculture every month since 2005 with sponsorship by the Biovision Foundation of Switzerland. However, due to rising production and distribution costs and growing demand for the magazine, Biovision can no longer continue supporting production of TOF without your contribution.

Starting with the July 2017 issue, we expect all our esteemed readers to pay a modest cost charge for their copies of this magazine.

Should you wish to continue receiving it, please let us know your readiness to pay for your monthly copy. On the other hand, we will be happy to send you an electronic copy free of charge if you provide us with your email address. We will appreciate receiving your feedback via office telephone +254 20 863 21 86, mobile number 0715 422 460 or via email: tofmagazine@biovisionafrica.org by end of April 2017. To reduce costs, group subscriptions will be most encouraged. Thank you very much for your interest and support.

This magazine is invaluable, I'm ready to buy it

Venter Mwongera | Many farmers have benefited from reading *The Organic Farmer* (TOF) magazine and they are even ready to pay for a copy. Below is an account by Samuel Ndung'u, a farmer from Kaimbaga, Nyandarua County.

Reading TOF magazine has many rewards. With many trial and error methods of conventional farming, my search



Samwel Ndung'u harvests his carrots

for rewarding and sustainable farming methods was concluded when I came across into TOF magazine. I found a copy on the table in the District Agricultural Office (DAO) in Ol Kalou town over seven years ago.

I persistently followed conventional practices but the yields continued to decrease year after year. This was caused by decrease in soil fertility and use of expensive chemical fertilizers and pesticides.

When I first saw TOF magazine, the title of the publication drew my attention. I took the copy, skimmed through and I liked the information published in it. I requested the officer at the office if I could have a copy. My request was granted. I read word for word and page by

page. Since then, I have always collected a copy of the magazine at the Sub-County Agricultural Office (SCAO). I have applied the knowledge and shared it with other farmers especially on poultry farming, bee-keeping, compost manure preparation, briquettes preparation and dairy farming. In fact, I have even purchased a briquette-making machine. I have also bought charcoal dust and soon I'll purchase all other ingredients to prepare briquettes for sale. I'd like to read more on how to prepare slurry, fodder formulation and food formulation for the local poultry.

The magazine is a small pamphlet with detailed information, well-illustrated with clear guidelines. Ecologically sustainable agriculture has helped me to reap many benefits from farming activities in my 12-acre land. Today, I have made good profits from the sale of my farm produce. I'm ready to subscribe in order to continue receiving a monthly copy of *The Organic Farmer* magazine. I shall pay via M-Pesa which is easier for me rather than enduring a long journey to the bank and the queues in the banking halls. I thank Biovision Africa Trust for publishing educative articles in a farmer-friendly language.

Dear farmer,

The planting season has already started, but there is a lot of uncertainty in the country on whether the rains will start in time or not. Weather forecasts indicate that the rains will be insufficient in some farming areas. However, this should not discourage farmers. As we mentioned last month, farmers can plant a portion of their land this month and then observe the rains. If the rains fail, then they can wait to plant the other portion from mid-April while working to buy inputs to replant the first portion. This will at least save some inputs that would otherwise become wasted.

The country is currently experiencing a serious drought that has led to widespread famine and food insecurity. Although the government has tried to provide food for starving families, it is the farmers who will save the country if the rains come. This is a clear indication that the government needs to support the farmers even more, to enable them to increase food production. Instead of spending billions of shillings in big irrigation schemes such as the stalled Galana-Kulalu project along Tana river, farmers in maize producing areas can produce more food for the country if they are supported through training on soil fertility management and use of inputs such as certified seeds.

Farmers have been victims of fake seed racket every year where unscrupulous businessmen pack commercial maize seed in seed bags obtained from seed companies and sell it to farmers as genuine seed. This disguised malpractice has led to huge losses on the part of farmers and the country.

The practice may be discouraged if farmers check if the seed they have bought is genuine. The Kenya Plant Health Inspectorate Service (KEPHIS) has come up with a special scratch card, which is attached to certified seed bags. All a farmer needs to do is to scratch the card the same way they do for mobile phone airtime scratch cards. Farmers can then send the number revealed to 1393. It is very sad that **KEPHIS** and even seed companies have not launched a campaign to educate farmers on this new method to detect genuine seed from fake seed. We wish farmers a successful planting season.

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Use certified maize seed to increase your yields

To find out if the seed you are buying is genuine, every bag of certified maize seed has a label from the Kenya Plant Health Inspectorate Service (KEPHIS). Scratch the label and send the number shown to 1393. It will respond with a text showing if the maize is genuine.

Peter Kamau | As we approach the planting season, the choice of seed is very important. In rural farming areas, many farmers still plant traditional maize varieties that give very low yields. According to a study conducted by Egerton University's Tegemeo Institute (*Enhancing Small-holder Productivity in Kenya, 2016*) findings show that maize yields have been declining at the rate of 10 per cent. The same study shows that in some regions in the country, only 0.72% of the seeds used are certified hybrid seeds; a very small proportion indeed.

Maize yields have been going down in regions where farmers use traditional varieties although the area under maize has increased. Farmers interviewed in the study indicate that the high cost of certified hybrid seed and the increase in fake seeds in the market had forced them to use traditional open pollinated maize varieties or recycled seed.

Another problem that faces farmers is buying their maize seed or planting late due to lack of proper preparations. Ideally, all maize should be planted by mid-March. But due to the impacts of the changing climate sometimes, maize planted in March may fail if the rains are insufficient. So, it is advisable for farmers to subdivide their land into two portions with one portion planted in March while the other portion is planted in mid-April. This will help prevent loss of inputs such as seed and even labour if the rains fail.



Using certified seed increases maize yields and income

Due to the high demand for seeds, especially the popular varieties, farmers who buy their seeds late face the danger of either buying fake seed or getting none. However, the problem of fake seed is likely to reduce following new measures introduced by the Kenya Plant Health Inspectorate Service (KEPHIS), which enables farmers to verify if the seeds they have bought is genuine or not (see box on the right on how to identify genuine seed).

Avoid planting uncertified maize

Due to lack of money, some farmers in rural areas use commercial maize (harvested the previous year) for seed. Commercial maize cannot produce good maize yield. It is important for farmers to know that maize seed is produced in a special way that enables it to produce high yields when planted only once. After it is harvested, commercial maize cannot be used as seed as it loses most of the characteristics or vigour once it is planted again.

Control diseases and pests

Besides, commercial maize when replanted can transfer diseases and pests such as the Maize Lethal Necrosis (MLN),

leaf inflammation, stalk and the Larger Grain Borer (LGB).

Currently, there are many diseases and pests that threaten maize production in the country. The most serious disease is the Maize Lethal Necrosis (MLN) diseases. The main vectors of the disease transmission are insect pests such as thrips, stemborer and flea beetles. To avoid the disease, farmers are advised to plant only certified seeds from established companies to avoid transferring the disease to their farms through infected maize.

Practise crop rotation

Maize is a heavy feeder, which means that it takes a lot of nutrients especially Nitrogen, Phosphorus and Potassium (NPK) from the soil. Unless the farmer has very little land, it is always advisable to practice crop rotation. Farmers can also prevent diseases such as MLN or head smut and pests. Farmers can rotate maize with beans, peas, potatoes, cabbages, onions, carrots, kales (*sukumawiki*), sunflower or any other crop that is not in the maize family. Crop rotation with leguminous crops such as beans and peas help replenish important nutrients such as nitrogen into the soil.

Maize Streak Virus (MSV)

In mid-altitude areas, most of the maize varieties are prone to diseases such as the MSV. The disease is devastating and can cause up to 80 per cent maize loss. In affected areas, farmers are advised to buy maize seed varieties that are tolerant to the virus (see page 3).

New method to identify genuine maize seed

- Buy your seed only from stockists licenced by KEPHIS (insist to see the licence before buying the seed).
- Expired seed cannot do well. Always check to ensure the seed is not expired.
- Genuine maize seeds in small packages of 2kg and below now have a new inspection label from KEPHIS attached to each bag. Remove the label and

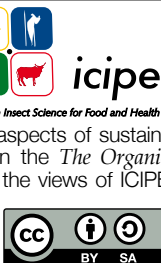


scratch it the same way you do for mobile airtime scratch cards. Type the number in the label and send to 1393. You will receive a message indicating the seed is genuine and certified.

- For 10kg and 25kg seed packages farmers are advised to check for the KEPHIS tag that is inside the seed bag from where they can check the maize variety and lot number. You can call or text KEPHIS using the telephone number given in the tag to confirm if the seed is genuine.

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. The articles in the *The Organic Farmer* do not necessarily reflect the views of ICIPE nor Biovision Foundation or BvAT.

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Publisher *icipe*-African Insect Science for Food and Health, P.O. Box 30772, 00100 Nairobi, KENYA, +254 20 863 20 00; icipe@icipe.org; www.icipe.org

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Choose the right variety when buying maize seed

The choice of maize seed will determine how much maize you will harvest. If you want to try a new variety buy a small package and plant it on a small portion of land. Go into full production next season only if the variety has good qualities that you like.

Peter Kamau | Every year, seed companies release new varieties of maize seeds. Although it is good for the country to have diverse maize varieties that have different characteristics such as tolerance to drought, diseases or pests, farmers should be careful when selecting which seed varieties they can plant in their different climatic regions.

It is always wise to go for maize varieties that are tried, tested and proven to do well in your climatic zone rather than planting a new variety that may fail to give you the desired yield. All seeds varieties are developed on the basis of altitude, amount of rainfall, type of soil, temperature and other conditions. To meet the needs of farmers in each climatic zone, scientists develop varieties that grow well and give good yields in those regions.

If they are not sure about which varieties can do well in their regions, farmer should always seek advice from agricultural extension officers in their regions. Never seek advice on which seed variety you should buy from an agrovet unless it is a reputable one. Most agrovet shops will often recommend varieties of any stock they have which may not be moving, in most cases selling you the wrong variety.

If farmers are to buy a new variety, they should isolate a small portion of land or a few lines where to plant the new variety and then observe its characteristics, check if the variety is prone to lodging (easily falling if blown by wind), if the maize cob (ear) opens early before maturity, which leads to accumulation of water and rotting. Once you have proved that the variety is good, then you can go into large-scale production.

Below we provide farmers with maize varieties including new varieties that have been released by seed companies:

High altitude areas (Rainfall 1000-1500mm Altitude 1700-2300 metres above sea level)

Variety: ADC 600-23A

Company: Agricultural Development Corporation (ADC)

H614D maize breeder passes on

Kenya has lost one of the most prominent maize breeders in the Country. Dr Joseph Ogot Ochieng (*right*) died on January 6 at his home in Asiro village Nyandiwa Sublocation in Siaya town.

Dr Ochieng headed the team that developed the H614D maize variety in the 1980s at KALRO Kitale.

The variety is recognized as the flagship of all maize varieties in the Country with a demand of over 60 per cent.

His effort was recognized by President Kenyatta who honoured him with the award of Order of Grand Warrior (OGW) on December 12, 2016 for his contribution to food security in the country. His Colleagues described him as a humble, bright and dedicated scientist who turned down many lucrative offers of jobs from International organizations and seed companies to remain at KALRO where his research duties led to the development of other maize



varieties such as the 500 series. The 500 series are tolerant of the Maize Streak Virus (MSV) and are popular in medium altitude areas.

"Dr Ochieng is recognized as the father of all maize breeders at KALRO. To him maize breeding was an art and he did it with great passion and commitment. It will be very difficult to replace him," said Dr. Victor Wasike, a KALRO scientist.



Photo: IN

Maize seed is dressed before packaging to control pests and soil borne diseases

Qualities

- Average yield 43-68 bags per acre
- Sweet in taste
- It does not lodge (fall easily)
- Produces double cob
- Resistant to rust
- Resistant to Grey Leaf Spot (GLS)
- Out yields H614D by 43.3%

Suitable growing areas: Trans-Nzoia, Uasin Gishu West Pokot, Keiyo Marakwet, Laikipia, Nakuru, Kisii, Kiambu.

Variety KH 600-14E

Company: FRESHCO

Qualities

- Improvement of H614D
- Average yield 45-50 bags per acre
- Tolerant to GLS,
- Sweet to taste
- Flinty (hard cover, not easily attacked by weevils)
- Heavy (like original H614D)
- Droops (cobs face down at maturity)
- Outyields original H614D by 13.3%

Suitable growing areas: Trans-Nzoia, Uasin Gishu, Kericho, West Pokot, Keiyo Marakwet, Laikipia, Nakuru, Kisii, Kiambu.

Variety: KH 600-16A

Company: FRESHCO

Qualities

- Yields 35-50 bags per acre
- Very good standability (does not lodge)
- Tolerant to GLS and leaf blight

- Has good husk cover
- Droops when dry (no rotting)

Suitable growing areas: Trans-Nzoia, Uasin Gishu, Kericho, West Pokot, Keiyo Marakwet, Laikipia, Nakuru, Kisii, Kiambu.

Variety: KH 600-15 A

Company: East African Seed Co. Ltd

Qualities

- White semi-flint (has hard outer layer) grains
- Very high yielding variety, 35-45 bags per acre
- Has a very strong stalk hence good standability
- Good husk cover preventing ear rotting
- Drooping of cobs on physiological maturity to prevent rotting of kernels
- It is a stable performing hybrid
- Double cobbing (produces two cobs)
- Tolerant to most common leaf diseases e.g. GLS,MSV and blights

Variety: Prestige HI 16A

Company: Elgon Kenya Limited

Qualities

- High yielding
- Matures in 160-180 days
- Very good standability
- Tolerant to grey leaf spot (GLS) and leaf blight
- Cob has good husk cover and droops when dry

Continues on page 6

How to improve productivity of indigenous chickens

Indigenous chickens are becoming popular with consumers. Good selection of parent stock, eggs and proper feeding and housing can help increase income for poultry farmers.

Felix Opinya | Indigenous chicken is one of the most abundant livestock species among smallholder farmers in Kenya, especially among rural populations who rely heavily on these chickens for food and income from sales. The birds are known to be resistant to a wide range of poultry diseases, able to adapt well to different management systems including free-range, and extensive systems. Their eggs are nutritionally superior to those from both commercial layers and improved indigenous chickens. Further, demand is shifting towards traditional indigenous chickens due to consumer health awareness and sensitivity and the many benefits of organically produced food products. Citing these, there is also need to conserve genetic resources associated with the indigenous breeds of chicken; achievable through breeding.

Normally, hens start laying at 22-32 weeks of age depending on their breed, health and development. Indigenous chickens often start much later compared to the commercial exotic breeds. At the time of laying they should have easy access to calcium-rich feed sources while providing clean egg laying nests. As a rule of thumb, one cock should be allowed for every 10 hens for a period of about 2 years. Selection is one of the tools of breeding that is very important in any breeding programme.

Selection

This applies to the selection of cocks for natural breeding and eggs for hatching through artificial incubation. It is important in determining cocks desired in breeding/parental stock. Cocks for breeding should be healthy, alert, protective in nature, shiny with normal feathering, have clean and dry beak and nostrils, clean feathers around the vent and have straight legs and toes with no signs of scaly legs and of large size relative to the hens.

Natural incubation and hatching

Eggs can also be set for hatching naturally for birds using dif-

ferent approaches; for instance through serial and synchronized hatching. The former is where hens are continuously made to sit on eggs by withdrawing chicks each time they are hatched, to replace them with new eggs.

Synchronized hatching is whereby if hens that started laying eggs in the same week reach broodiness, the first hen to brood is delayed by being given only one egg to sit on. This should be done repeatedly for the other hens such that they all sit on eggs on the same day, but destroying the dummy eggs by the time all other eggs are set.

Hens hatch perfectly under right conditions. One should provide good management conditions. Research has shown that indigenous hens raised under good management reach optimal egg production and the cocks attain sexual maturity with good weight.

Reducing reproduction cycle

Shortening the reproductive cycle of hens also enables them to lay eggs earlier and double the number of clutches annually. To shorten the reproductive cycle of hens, you simply need to cut all forms of stress. Improve on feeding, offer protection against predators and rodents, do timely vaccinations, control both internal and external parasites as well as getting rid of aggressive and unproductive birds. Indigenous chicken are good layers, if well-protected and kept comfortable during brooding, she can easily hatch 15 eggs per sitting.

During brooding, fresh feed and clean water should be given to the hen. This way, she will only walk out of the eggs shortly to avoid keeping the eggs cold and possibly not hatch. As a consequence, high hatchability is realized with healthy and lively chicks of high survival ability. She can also be separated from the flock to reduce disturbance from other hens.

A brooding cycle takes a minimum of 18 days after which the first eggs start hatching, averaging to 21 days to hatch. A higher hatchability rate of between 80-100% can be realized from indigenous chickens provided they are kept well; a percentage higher than artificial incubator where small number of eggs are to be hatched.



Proper housing is important for any successful chicken rearing



A hen with her chicks

Artificial incubation and hatching

Success of hatching eggs using incubators depend on a number of egg factors as well as incubator conditions. To obtain best results using egg incubators, eggs selected should be fresh and not more than 10 days after they were laid. They should be of average size and normal shape, smooth and free from cracks. Cracks allow loss of moisture from the egg or bacteria into the egg resulting to embryonic death.

During incubation, always check the eggs and separate the fertile from non-fertile ones. Fertile eggs have blood vessels developed with a dark spot indi-

cating a developing embryo. Dead embryos can be seen with a ring of blood around it. All these can be identified through egg candling, first done between 7-10 days.

When setting eggs inside the incubator, the broad end which has the air sac should face upwards. Also note that the shell of an egg is porous and care should be taken not to block the pores, lest you suffocate the embryo/growing chick. Incubators in the market range from kerosene, solar to electric powered ones.

Mr. Felix Opinya (Department of Animal Science, Egerton University Email: akatchf@yahoo.com).

Eating mangoes regularly has many health benefits

Mangoes are packed with vitamins B6, C, K and A which are essential for improved health and disease prevention. They also contain nutrients that control most diseases associated with lifestyle such as cancer, high blood pressure, blood sugar bone and eye health.

Dr. Peter Mokaya | Mangoes are in season all over the country. Many consumers of mangoes may not know; but this fruit has many nutritional benefits for consumers. As we have mentioned before in (TOF No. 87 of July 2012), it is possible to grow mangoes using organic approaches, including use of organic disease, weed and pest control.

Mangoes have many benefits

Other than the vitamin C and beta carotene (which gives mangoes their yellow colour) and sugar, there are many other health benefits of consuming mangoes. More recently, mango consumption has been linked to the lowering of blood sugar among obese adults. Although they do not lead to weight loss, regular consumption of mango has a positive effect on blood glucose.

Blood pressure management

Lowers blood pressure: Since mangoes are a food rich in magnesium and potassium and low in sodium, they are another natural way to lower blood pressure. High blood pressure is called "the silent killer" and it is an increasingly common non-communicable disease, which affects all sections of the popu-



Mango juice



Mangoes have many vitamins that maintain health and vitality

lation, including farmers.

Promotes brain health and concentration

Mangoes are packed with vitamin B6, which is essential for maintaining and improving the functioning of the brain. Vitamin B6 and other B vita-



Mango jam

mins are crucial for maintaining healthy brain neurotransmitters, regulate mood and sleep patterns. Mangoes contain glutamine acid which aids in concentration.

Promotes eye health

Eating mangoes protects and helps the proper functioning of eyes. Mangoes contain the antioxidant zeaxanthin that helps filter out harmful blue light rays, thereby playing a protective role in eye health.

Boosts bone health

Mangoes contain good levels of bone-building vitamin K; vitamin K is also important for proper calcium absorption, another important function of bone health. Mangoes also provide calcium, which is a major bone nutrient.



Dried mango chips: Drying mangoes can reduce wastage

Prevents cancer and heart disease risk

Mangoes contain high amounts of pectin, a soluble fibre that can naturally lower cholesterol levels in the blood. They have a low sodium level, high potassium and B vitamins levels. Combined, they help lower the risk of heart disease and related blood vessel diseases. They also offer protection against prostate cancer.

A compound within pectin combines with galectin 3, a protein that plays a strong part in all stages of cancer. Additionally, high dietary intakes of beta-carotene, of which mangoes contain a lot, can help protect against prostate cancer. Of interest to women, recent research shows that mangoes may be beneficial for fighting breast cancer.

Combats anaemia

Mangoes are rich in iron and may be part of the answer to treating iron deficiency anemia, which is common in many places, especially among children and pregnant women. Mangoes can contribute to slowing down of the natural ageing process due to their high amounts of vitamins A and C,

which help produce collagen proteins within the body. Collagen is known to help slow down the skin's natural ageing process by protecting blood vessels and bodily connective tissue. The extra beta-carotene derived from mango consumption is converted into vitamin A inside the body. A further function of vitamin A is to help the body to fight free radicals that can damage your body and lowers its immunity.

Relieves constipation

Mangoes are a source of good fibre, which is an important component for proper digestion to take place, including its skin. The skin is a good source of pectin and other phytonutrients-plant chemicals of great value to the human body. An average-sized mango can have up to 40 per cent of your daily requirement for fibre.

The fibre offers many health benefits, including acting as a natural remedy for constipation. Mangoes prevent asthma and reduce related allergic reactions. (See more on mangoes on page 8).

Dr. Peter Mokaya (email: Peter.Mokaya@organicconsumers.co.ke).

cont'd from pg.... 3 ...Maize seed varieties

- Cob does not rot in heavy rains

Variety: SC Twiga 81 (KH600-20A)

Company: The African Seed Company

Quality

- Best in attitudes of 1800-2300 metres above sea level
- Matures in 6 months
- Flint to semi flint grain quality
- Good resistance to blights
- Yield potential 50-53 bags acre
- Has high density grains making it good for weight selling

Variety: H614D

Company: Kenya Seed Company

Qualities

- A very stable variety
- 30-45 bags an acre
- Good standability
- Droops when dry
- Heavy
- Good husk cover
- Resistant to GLS, Leaf blight

Variety: H6213

Company: Kenya Seed Company

- High yielding 45-56 bags an acre
- Opens ear (prone to rotting)
- Resistant to GLS, leaf blight
- Heavy
- Good standability
- Does not lodge

Other popular high altitude varieties from Kenya Seed Company include H629, H628 and the new H6218.

Medium altitude areas

Variety: H513

Company: Kenya Seed Company Ltd

Qualities

- Recommended for the coffee zones altitude (1000-1700m)
- Partially resistant to maize streak virus
- Yields 24 bags per acre

Variety: SC Tembo 73

Company: The African Seed Company

Qualities

- Produce very big and very

long cobs

- Very tolerant to MSV, GLS and common leaf rust
- Maturity 5-5.5 months
- Good for silage
- Yield potential 48-58 bags per acre under good management

Suitable growing areas:

Western Kenya: Kakamega, Bungoma, Busia, Kisii, Nyanza region: Homa Bay, Suba, Migori, Rongo, Siaya, Bondo, South Rift: Tinderet, Nandi, Kericho, Bomet, Narok, Sotik, Trans-Mara, Central Province: Muranga, Kiambu, Kirinyaga, Eastern Province: Machakos, Kitui Mwingi.



Farmers working in a maize field

Variety: KH 500-43A

Company: East African Seed Co. Ltd.

Qualities

- A medium maturing hybrid maize suitable for growing in medium to high altitude areas (130-150).
- Yields about 28-32 bags per acre under good crop husbandry.
- Plants produce two cobs which have tightly packed semi flint grains with good husk cover.

- Green coloration of leaves is less in early stages of growth and increases as the plant matures.

- It is sweet tasting maize.

- It is tolerant to Maize Streak virus.

- It is heavily leafed and thus is a good dual purpose variety for fodder and food.

- Recommended for planting in Central and upper areas of Eastern and also parts of Western Kenya.

Suitable growing areas:

Western Kenya: Kakamega, Bungoma, Busia, Kisii, Nyanza region: Homa Bay, Suba,

Migori, Rongo, Siaya, Bondo, South Rift: Tinderet, Nandi, Kericho, Bomet, Narok, Sotik, Trans-Mara, Central Province: Muranga, Kiambu, Kirinyaga, Eastern Province: Machakos, Kitui Mwingi.

Variety: SC Punda Milia 529

Company: The African Seed Company

Qualities

- Matures in 4 months
- Good for green mealies
- Good standability leading to reduced lodging
- Deep grain length resulting to high grain percentage
- Good tip cover
- Yield potential 38-45 bags per acre

in taste.

- Good tolerance to all major diseases and pest especially stem borer.

Variety: SC Sungura 301

Company: The African Seed Company

Quality

- Ultra heat and drought leader
- Matures in 80-90 days
- Stable in different environments
- Yields 33-50 90Kg bags per acre
- Tolerant to heat stress
- Good husk/Tip cover
- Fast dry down rate
- Strong stocks hence less lodging
- Optimum yield received within 300-1200 metres above sea level

Variety: Tosheka MH401

Company: East African Seed Co.Ltd

Quality

- White maize suitable for medium and low altitude areas.
- Matures in 100-110 days.
- Yields 28-30 per acre.
- Drought tolerant.
- Resistant to GLS(rust and blight) and viral diseases (MSV).
- Heavy grain good for milling and roasting.

Dry land Varieties

Dry land varieties mature between 90- 120 days. The varieties perform well in arid and marginal areas with a mean annual rainfall of 200-500mm. The most suitable regions are: DH01, DH02, DH03 and DH04 (Kenya Seed Company), KDV-1 (Open pollinated Variety) KDV-6 (OPV) From FRESHCO. Areas where the seeds can be planted include Taita Taveta, Mwatate, Lamu, Mpeketoni, Homa Bay, Rongo, Unguja and Siaya.

Striga resistant varieties

In areas with striga, parasitic weed that chokes maize reducing their ability to produce maize, resistant varieties have been developed for these areas. One of the varieties developed for striga resistance is FRC 425R (FRESHCO) which produces 30-35 bags an acre. Another variety is WH303 from Western Seed Company.

LOW ALTITUDE AREAS

Variety: Prestige 02 WE 1101

Company: Elgon Kenya Limited

Qualities

- Developed for best performance in stress/drought conditions of Kenya.
- Extremely successful in current changing climate due to global warming.
- Better yields in well managed as well as stress conditions.
- Capacity to yield up to 35-40 bags (90Kg) per acre.
- Matures in 90-95 days and dried cob can be harvested in 120-125 days.
- Excellent stay green property with average height of 7-8 feet without lodging.
- Good for storage and sweet

Improve your breed with Fleckvieh genetics

I have local breeds and I would like to improve them with Fleckvieh semen. How much does it cost? My next question is, how can I cross-breed Fleckvieh with any ordinary breed? After how long will I get a 70-80% breed after crossbreeding? Julius.

Dear Mr. Julius, improving your dairy cows with Fleckvieh breed is possible. But you will need the services of a qualified breed inspector to do this successfully. The inspector will carefully examine your dairy cows and advise you if there is an appropriate dairy cow in your herd that is suitable to accommodate a Fleckvieh breed. By its characteristic, Fleckvieh is a dual-purpose breed that has a big body frame, which is why you will require the services of an inspector to examine your dairy cows and decide which one will accommodate the big size of a Fleckvieh calf. If your cows have a small body frame, then, they will have problems calving down.

After the inspector identifies the right cow, the dairy cow will be called the **Foundation**. He may then identify for you a good Fleckvieh Artificial Inseminator (AI) provider near you (some AI providers for other breeds also have Fleckvieh semen that can be used to serve your dairy cow). The AI provider will show the various Fleckvieh bulls from a catalogue (a booklet with the best Fleckvieh bulls in the world).

It is from this list that you will select the bull with the characteristics or traits in a dairy cow that you want. Traits like high milk production, good udder placement, a good pregnant rate and longevity or ability to remain productive for a long time. Once you have selected the bull, your dairy cow will be served with semen from the bull you have selected when it comes on heat (keep the semen straw that has been used to serve your cow for future reference—each semen straw has the name and code of the bull that produced the semen).

If your dairy cow conceives, the calf it will produce is called the **Intermediate**. The intermediate dairy cow will have a 50% Fleckvieh gene, so it will be 50% Fleckvieh. If the calf is a heifer, you will need to take good care of it until it is ready to be served. If the heifer comes on heat, you will call the AI service provider who will advise accordingly.

For instance, you can ask him/her to show you the bull catalogue from which you can select



A Fleckvieh dairy cow: The Fleckvieh is a hardy breed with a large body frame



AI Semen is obtained from high quality bulls



Cross-bred Fleckvieh-Friesian dairy cows



Udder size and placement is important in dairy cows

another Fleckvieh bull with superior genetics (Ensure you check the semen straw you kept when serving the mother of this heifer that semen from the same bull—her father is not used to serve her because this will amount to inbreeding).

If the heifer conceives, the calf will be the granddaughter of the first dairy cow that you served and it is called the **Appendix**. This calf will have 75% Fleckvieh genetics in its blood. Should the heifer grow well and go on heat at maturity, you will ask the AI service provider to serve it with another Fleckvieh bull of superior genetics (ensure you check the semen straw used to serve its mother to be certain it is not the same one that was used to serve its mother to avoid inbreeding).

Should the granddaughter mature and go into heat, it will be served with semen from a fourth Fleckvieh bull. If it conceives, the calf it produces will have 87% Fleckvieh genes or pure Fleckvieh (any animal with 87.5% genes from any breed is a **Pedigree**). If you serve any heifer it produces with other high-quality Fleckvieh bulls that are not in the same family line, all the calves will be pedigree.

If the Foundation, Intermediate, Appendix and Pedigree cows are registered with the Kenya Stud Book (KSB) you can qualify to become a Fleckvieh breeder and sell to other farmers with the same breed at prices higher than ordinary Fleckvieh breeds that are not registered with the Kenya Stud Book. (See TOF No. 76 of September 2011 for more information.)

Answers by Elkanah Isaboke

To get more information, you can call Fleckvieh Genetics (EA) on +254 0727 665 885.

TOF Rad answers your questions

TOFRadio is broadcast on KBC on Thursday at 8:45pm 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 916 136.

Mango farmers benefit immensely from collective marketing

Musdalafa Lyaga and Joseph Mbithi | Mango is the king of fruits. It is one of the most popular and nutritionally rich fruits with unique flavour and health promoting qualities, thus making it the most popular seasonal fruit grown in the tropics.

Mango is a valuable fruit tree grown in arid and semi-arid regions in Kenya where income generating activities available to the resource poor farmers are limited. "I prefer planting mangoes because they are drought resistant, have a long lifespan, yield more than any other produce, they are easy to plant and to manage, and require less water," says Mrs. Mary Wayua Kyule, a farmer from Mutulani village in Makueni County. However, despite the economic importance of mangoes in Kenya, market access is facing three main constraints:

Mango farmers lack organisation

Unlike the dairy milk sector which is more organised and has fewer players, a majority of small-scale mango farmers are not organized in any form of marketing groups, instead, they rely on brokers to sell their mangoes. This results in low farm gate prices for the farmers.

"Over the years I have been forced to sell to brokers despite the low prices to meet my immediate financial needs. I am not able to reach far-away-markets which I know could offer better prices because it is too costly to transport mangoes. Brokers collect the mangoes right at the farmgate though I know they exploit us," laments Mary Wayua.

Lack of market information and transport

Due to the perishable and bulk nature of mangoes and lack of market information and organized marketing farmers' groups have a weak bargaining position. However, in Mutulani village in Makueni County, things are different. Members of Pamoja Mango Farmers Group are reaping the benefits of collective selling.



Mangoes in a market stall

"Access to market for our mangoes has been our biggest nightmare in this village for some time- but with us coming together; we can now sell our mangoes to big buyers without worry," says Mary Mbula, a member of the farmer's group.

"Markets are not the only major challenge in the mango industry in Kenya in general. Other challenges include lack of organised marketing groups, insufficient aggregation centres where traders and exporters can easily collect sufficient mango quantities and inadequate market information, all of which have significantly contributed to the poor performance of the mango industry," observes Mr. Josephat John Nzui, the Chairman of Pamoja Mango Farmer group.

Lack of external markets and value addition

When farmers are together in a group it is easy to train them on both improved mango production farming techniques and post harvest losses. Kenyan mango farmers continue to lose out on the lucrative European market because of the mango fruit fly which can be controlled. Many farmers who belong to groups have benefitted from organisations like ICIPE who conduct trainings on Integrated Pest Management (IPM) practices that have impact in controlling mango fruit flies. Farmers' groups like the Pamoja Farmers Group now have a bargaining position to access markets that pay well unlike

what the brokers pay. Pamoja Farmers Group sell collectively to a processor. "We sell our produce to a processor who then processes the mango fruits into different semi-finished and or ready-to use products like juices, dry mango chips, and mango pulp," says Mr. Josephat John Nzui the group's chairman.

Opportunities

Selling to processors: The Pamoja Farmers Group, which has 40 members has been selling mangoes collectively to a processor since August 2011. The members of the group are small-scale farmers with an average of 2 acres. Unless farmers sell their mangoes collectively, they will continue to be further constrained by poor road network and lack of modern market structures, thus a big proportion of the fruits will be sold at throw away prices or end up rotting on the farms.

Training: "Farmers should get organized into formal groups for higher production and quality. This will enable them get more information on production and markets. Lack of information is one of the aspects traders use to exploit farmers", advises John Nzui. "Farmers who receive information from buyers at the farm-gate are not guaranteed of the legitimacy of this information," cautions Mr. Nzui.

About 20km away, from Mr. Nzui's farm is the Kipawa Farmers' Group which has even gone a step further by adding

value to their mangoes. "We have been engaging in mango processing to decrease post-harvest losses and extend shelf life, create variety and hence widen the market, add value, thereby generating extra income, creating new investment and employment opportunities, and improving the nutritional quality of mangoes", says Ann Nduku, the group's organising secretary.

The mango farming community has now realized that working together really makes good profits. There is a big difference between farmers who sell collectively and those selling as individuals to brokers. With the good income from mangoes, rural farmers are now able to send their children to school and even build better homes for their families while investing in improved livestock breeds.



farmers forum

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Beehives for sale: We make beehives for sale. Interested farmers can make orders on any quantity they require. The following are prices for various hives: Langstroth Ksh 4,500, Kenya Top Bar Hive Ksh 3,800, Stingless bee hives cost Ksh 400 and Ksh 1,500 depending on size. Interested farmers can call Stephen on 0734 371 557.

Stingless bees for sale: I have stingless bees for sale to interested bee keepers. Contact me on Tel. 0710 155 415.



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