

Dear reader,

The Organic Farmer magazine continues to provide practical, field-tested knowledge to help farmers stay resilient in the face of changing climate and market conditions. In this edition, we place strong emphasis on climate preparedness.

With increasingly erratic rainfall and extreme weather events, timely decision-making is critical.

Our weather advisory and technical guidance highlight the importance of early planning, appropriate crop and variety selection, and practices such as soil conservation, water management, and fodder planning to reduce risks and optimise production throughout the season.

We further explore innovations shaping the future of agriculture, from climate-smart crop varieties to dryland farming techniques and emerging agribusiness opportunities such as avocado farming.

As always, TOF remains committed to translating research into simple, actionable insights equipping you not just to cope with change, but to farm with confidence and resilience.

This year, we have introduced a digital version of the TOF newsletter to keep you informed throughout the year.

Click here to access a wide range of practical information on organic farming and markets: <https://newsletter.theorganicfarmer.org/>



FARMING TIPS

Incur less production costs and harvest more by adopting these techniques

Conservation agriculture offers a different path that restores soil health while reducing labour and costs

By Caroline Mwendwa

For many farmers, the planting season begins with one familiar activity: ploughing the land until it is bare and smooth. For years, this has been seen as the right way to farm. Yet over time, many have noticed that yields keep dropping because the soil becomes hard and prone to erosion. Conservation agriculture offers a different path that restores soil health while reducing labour and costs.



Early planting allows crops to make full use of moisture and strong roots before dry periods set in. Proper spacing and correct number of seeds per hole are essential

At its heart, Conservation Agriculture is built on three simple principles: disturb the soil as little as possible, keep it covered, and grow different crops over time. These principles are not complicated, but they require a change in habit. When followed step by step, they guide farmers through the planting season in a practical and realistic way.

The first step comes even before the rain arrives. Instead of ploughing the whole field, the farmer prepares only the spots where crops will be planted. This can be done by digging small planting holes, basins, or shallow lines using a jembe (hoe) or ripper. Large weeds are cleared, but the soil is not fully turned over. By leaving most of the soil undisturbed, its natural structure remains intact. This allows for water to penetrate easily while the roots grow deeper. Beneficial organisms such as worms also thrive in this environment. This approach also saves time and labour, resources that are often scarce at the start of the season.

Planting at the right time is another critical step. Early planting allows crops to make full use of available moisture and establish strong roots before dry periods set in. Proper spacing and the correct number of seeds per hole are essential. For maize, two seeds per hole is advisable, and spacing should be 75 -90 cm between rows and 30 cm between holes.

Weak plants should be thinned early, and gaps filled where seeds fail to germinate. These simple actions improve crop vigour and overall yield. Once planting begins, the soil should never be left bare. Soil cover is a cornerstone of conservation agriculture.



Avocado Farming Gives Youth a Green Path to Prosperity

Youth turn to lucrative avocado farming to boost their livelihood and promote the circular economy. **PAGE 7**

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Incur less production costs and harvest more adopting these techniques

After seeds are planted and seedlings emerge, crop residues such as maize stalks, sorghum stover, dry grass, or bean remains are spread on the ground between crops as mulch. Mulching helps prevent moisture loss and erosion. Additionally, since the soil stays covered, weeds have minimal opportunity to grow. As the mulch slowly breaks down, it feeds the soil and improves its fertility.

Feeding the soil is just as important as feeding the crops. Before planting, a small amount of compost or manure is placed in each planting hole and lightly mixed with the soil. Seeds are then planted on top. This targeted feeding ensures nutrients are available right where roots grow. During the season, additional organic matter comes from mulch and crop residues left in the field. Over time, the soil becomes darker, softer, and more fertile. Fresh manure should be avoided at planting, as it can damage young seedlings.

As crops grow, weed control must be done early and gently. Weeds compete with crops for nutrients and moisture, especially at the beginning of the season. Shallow weeding or hand pulling is recommended. Deep digging should be avoided because it disturbs the soil and brings buried weed seeds to the surface. Mulching plays a major role here, reducing weed growth naturally and cutting down labour later in the season.

One season alone is not enough to restore tired soil. Crop rotation is what keeps conservation agriculture working year after year. Farmers are encouraged to avoid planting the same crop in the same field every season. Cereals such as maize or sorghum should be followed by legumes, such as beans, cowpeas, or green grams. Legumes improve soil fertility by adding nitrogen, while rotation helps break pest and disease cycles.

Gradually, practicing conservation agriculture reinvigorates the soil. As you harvest the first season and repeat the process in the following seasons, you will notice changes by the second or third season. The soil becomes easier to work with, and moisture stays in the soil longer after rain. In the same way, weeds are reduced significantly, and this makes crops grow healthy as they don't compete for nutrients.

For farmers willing to start small and learn season by season, conservation agriculture offers a reliable way to secure harvests even in uncertain climates.



WEATHER ADVISORY

Weather Advisory - March-April-May 2026 from the Kenya Meteorological Department

Floods and extreme rainfall events in some regions destroy crops and erode soil, compounding climate risk. Kenya continues to face failed rainy seasons and prolonged dry spells that drive livestock deaths and malnutrition

By Vincent Sakwa

Farmers in Kenya and Africa depend on rain-fed agriculture. Climate change reduces predictability, increases the risk of crop failure, and undermines the resilience of food systems. Erratic rainfall, droughts, floods, and heat stress are among the most significant and immediate threats. Floods and extreme rainfall events in some regions destroy crops and erode soil, compounding climate risk. Kenya continues to face failed rainy seasons and prolonged dry spells that drive livestock deaths and malnutrition.

Severe drought across Kenya (areas of semi-arid and arid north) has devastated pastoral and mixed farming communities, killing livestock, worsening hunger, and increasing competition for scarce water and pasture. This drought has caused acute food insecurity and forced migrations for grazing and water.

During the enhanced rainfall season, livestock farming, which forms a critical component for income and food basket for pastoral communities, faces multiple challenges. Disease outbreaks (e.g., foot-and-mouth disease) affect herd health, prompting urgent vaccination campaigns. However, during the depressed rainfall season, livestock feed shortages and high prices reduce productivity and profitability for dairy and meat producers.

Kenya relies heavily on imported raw materials for feed, increasing costs and threatening sustainability. Drought reduces pasture availability and water, worsening livestock stress and lowering milk yields.



March, April, and May 2026 Seasonal forecast

The climate outlook for the March–April–May (MAM) 2026 season is expected to be near-average to above-average rainfall over the Lake Victoria Basin, the Highlands West of the Rift Valley, the Highlands East of the Rift Valley (including Nairobi), the Rift Valley, and parts of North-western Kenya. Near-average to below-average rainfall is expected across the Southeastern Lowlands, the Northeastern Lowlands, and parts of Northwestern Kenya. Below-average rainfall is expected over the Coastal region.

During the season, several areas are likely to experience a generally poor-to-fair temporal and spatial distribution of rainfall. The season is expected to be characterised by a normal to late onset, with intermittent dry spells. However, occasional heavy rainfall is likely in some parts of the country. The peak of the rain is expected in April over most regions, except the Coast, where it is expected in May.

Forecast Release

The forecast was released a month in advance, before the seasonal rains began. It's therefore expected that farmers should



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make a critical decision on the various farming activities, including land preparation and seed selection.

Areas Expecting Enhanced Rainfall: What does this mean for crops:

Good rains can support better crop growth and allow farmers to diversify crops. With enough moisture, farmers can also harvest and store water for later agricultural use.

Pastures may improve, and conserving feeds and fodder can help support livestock during future dry periods. The season also presents a good chance to practice soil conservation measures to protect farms. However, too much rain can also cause problems. High moisture increases the risk of crop pests and diseases. Flooding and waterlogging may damage crops, wash away soil nutrients, and delay planting or harvesting. In some areas, landslides and soil erosion may occur, leading to land loss and livelihood losses. Roads may be damaged, making it difficult to transport produce and access markets.

Advice to farmers:

- Monitor crops closely for pests and diseases.
- Improve drainage where possible.
- Harvest and store excess water safely.
- Protect soil using terraces, grass strips, or mulching.

Areas Expecting Depressed Rainfall: What this means for crops

Low rainfall is likely to result in poor crop performance. Yields may reduce, and farm income could decline. Water shortages may force households to travel longer distances to watering points. Competition for limited resources may also increase, leading to conflicts within communities and with wildlife. Farmers may face low prices for their produce, further affecting household income.

Advice to farmers:

- Plant drought-tolerant or early-maturing crops.
- Practice moisture conservation, such as mulching.
- Use available water carefully and plan ahead.

Livestock outlook in areas with enhanced rainfall

Livestock is likely to benefit from improved pasture and water availability. Animals may improve their body condition, leading to increased milk and meat production. Households may enjoy improved access to livestock products and may even have surplus forage, hay, and crop residues for storage. Still, risks remain. Flooding can displace livestock, restrict grazing, and cause animal deaths. Wet conditions increase the chances of livestock diseases, parasites, and vector-borne illnesses. Storms may bring lightning, which can kill animals and damage shelters. Lush pastures can also cause bloating, especially in cattle.

Advice to livestock keepers:

Proper livestock feeding practices are essential to reduce health risks such as bloat. Cut fodder should be adequately dried or wilted before feeding to animals. Stall feeding and test feeding should be encouraged, especially under open grazing systems, to allow close monitoring of animal response. Grazing should be carefully controlled, and the inclusion of dry roughages in the diet helps balance moisture levels and supports healthy digestion.

To mitigate against diseases such as Foot and Mouth (FMD), Pneumonia, internal and external parasites, observe routine vaccination, isolation of sick and or affected animals and prompt treatment. Pests can be controlled by zero fly netting. Also, farmers are advised to take biosecurity measures to minimize transfer of diseases.

Extreme weather can cause stress in animals, ensure proper housing, feeding and watering to manage this. Also avoid grazing animals in waterlogged pastures. Ensure proper drainage around grazing areas.

To avoid wastage and spoilage of fodder and milk during periods of high rainfall, farmers should ensure that green or fresh fodder is properly wilted or dried before storage or feeding. Chopped fodder should be well aerated to prevent fermentation and decay, while clean milking and proper handling techniques must be practiced to maintain milk quality and reduce post-harvest losses.

In areas with depressed rainfall

Livestock productivity is expected to decline due to poor pasture regeneration and limited water supply. Water sources may not recharge enough, forcing animals to walk long distances in search of water and pasture.

The cost of livestock feeds and drugs may rise, increasing the burden on households.

Advice to livestock keepers:

- Reduce herd sizes where necessary to ease pressure on resources.
- Supplement feeds early before animals weaken.
- Plan watering schedules to reduce long trekking distances.

Key Message

Rainfall changes affect everyone differently. Early preparation, good farm management, and timely action can reduce losses and help farmers make the most of available opportunities. Stay alert, seek advice from extension officers, and work together as a community to manage the season safely.

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FODDER PRODUCTION PLANNING

Planning fodder production early in the year for continuous supply

By Francis Mwangi

The success of any livestock farm depends mainly on feed availability. When fodder is poorly planned, badly managed, or affected by unreliable weather, feed becomes scarce and irregular. Even farmers with good dairy cows fail to get the milk yields they expect. Cows need feed for maintenance, growth, milk production, and reproduction. Feeding takes the largest share of milk production costs (about 65–70%), so poor feeding quickly leads to losses. The main raw material of livestock feed is forage (also called roughage), which usually makes up 30–70% of the cow's diet. As a general guide, a cow should eat about 3% of its body weight in dry matter per day. Fodder includes grass, legumes, and fodder trees grown specifically for livestock. Today, fodder production must consider climate change, smaller land sizes and local rainfall conditions. Always choose fodder that is proven to perform well in your area.

Planning for Successful Fodder Production

Good fodder production starts with planning. The goal is to match feed production with animal needs throughout the year. A good plan considers: how much fodder your animals need, how much fodder your land can produce and how to ensure feed availability all year round (January–December). From this, you can calculate total dry matter needed per year and the land area required for fodder. (Extension officers can help with these calculations.)

Choosing the Right Fodder

The right fodder determines both milk yield and feed costs. Use tested and recommended varieties for your region rather than experimenting blindly. Combining grass with legumes improves feed quality, intake and soil fertility.

Key Fodder Options (Examples)

Napier grass – Napier grass (*Pennisetum purpureum*) is a high-yielding and widely adaptable fodder crop that plays a central role in smallholder farming systems. Improved varieties such as Bana grass, French Cameroon, Clone 13, and Kakamega 1 are well suited to low- and medium-altitude areas with well-drained soils and annual rainfall above 900 mm. The crop produces large quantities of herbage throughout the year and is best established using the Tumbukiza technology, which significantly enhances productivity.

Beyond fodder production, Napier grass provides additional benefits when integrated into cropping systems. When planted around maize fields, it helps control maize stalk borers, reduces wind damage, and minimizes soil erosion by stabilizing the soil. With proper management including regular weeding, application of manure, and harvesting every six to eight weeks Napier grass can remain productive in the same field for three to five years. It is mainly fed fresh to livestock, though excess fodder can be conserved as silage, and under good management it can reliably support one to three dairy cows per acre, making it a sustainable and dependable feed source.

Rhodes grass – Rhodes grass is a perennial forage grass widely cultivated for hay production due to its good regrowth and ease of management. The two most common varieties are Boma Rhodes and Elmba Rhodes, both valued for their suitability to a range of farming systems. Rhodes grass is typically sown at the onset of the rainy season, either by broadcasting or drilling the seed at a spacing of



15–30 cm, using a seed rate of about 5 kg per hectare. For optimal quality and yield, the grass should be harvested or grazed soon after flowering, when nutrient content is highest and the forage is most suitable for livestock feeding. Absolutely! Here's a more detailed, fully prose version of your article with richer information for each leguminous fodder variety:

Leguminous Fodders

Sweet Potato Vines (*Ipomoea batata*)

Sweet potato vines are drought-tolerant, palatable, and highly digestible, making them an excellent protein supplement for dairy cattle. Varieties such as Kemb10, Ksb20, Ex-Mukurweini, Saparo, and Ex-Msinya produce abundant fodder. Planting is best done on wet soil by digging hills 15 cm deep and planting vine cuttings 30–60 cm long, burying three-quarters of the vine, with a handful of manure mixed with 60 kg/acre of planting fertilizer per hill. The vines should be spaced at 50x50 cm for faster ground coverage. Harvesting begins after 3–4 months, with yields of 12–14 tons of fresh vines per hectare per year. They can be cut every 2–3 months depending on weather conditions and are best fed chopped and mixed with grasses or silage, contributing up to 50% of the daily feed.

Lucerne (*Medicago sativa*)

Lucerne is a high-yielding, perennial legume that grows upright to about one meter. It is highly suitable for hay or silage and can remain productive for 4–6 years under proper care. Lucerne thrives in well-drained, fertile soils with a pH of 6–6.5 and requires well-distributed rainfall above 870 mm. Seeds are sown either by drilling or broadcasting at a depth of no more than 1 cm, with 6–8 kg per acre. Spacing of 20–25 cm between rows ensures healthy growth. Harvesting starts 4–5 months after planting, with yields ranging from 14–20 tons of dry matter per hectare annually. Lucerne contains 19–22% crude protein, 21% dry matter, and 21% crude fiber, making it highly nutritious for dairy animals.

Sweet Lupin (*Lupinus spp.*)

Sweet lupins, including white lupin (*Lupinus albus*) and blue lupin (*Lupinus angustifolius*), are excellent sources of high-protein feed, with crude protein content ranging from 30–36%. They grow best in cool, high-rainfall areas and tolerate low temperatures. Seeds are planted at 12–14 kg per acre with a





spacing of 45x30 cm. The crop matures in 120–150 days, producing approximately 0.8–1.0 ton of grain per acre. Lupins can be milled for feed compounding.

Desmodium (Green Leaf and Silver Leaf)

Desmodium is a perennial climbing legume with deep roots and long, freely branching stems that root at the nodes. It tolerates low temperatures and is ideal for intercropping with Napier or Kikuyu grasses. The green-leaf variety grows quickly and produces high-quality forage, while the silver-leaf variety offers better frost tolerance. Desmodium grows well on light to clay loam soils with a pH above 5. Seeds or vine cuttings can be sown at 1 cm depth, with a seed rate of 2 kg per acre or 16,000 vines. Spacing of 20x25 cm (seeds) or 50x50 cm (cuttings) promotes faster ground coverage. Yields range from 12–19 tons of dry matter per hectare annually, with crude protein content between 15–22%.

Common Vetch (*Vicia sativa*)

Common vetch is a short-term legume crop that grows rapidly and has high nutritive value. It can be grown as a pure stand or mixed with grasses such as oats or barley. Vetch prefers well-drained, neutral soils with a pH of 6–7. A fine, well-prepared seedbed ensures good germination, with seed rates of 13 kg per hectare for pure stands and 7 kg per hectare when intercropped. The crop matures in approximately 120 days, producing 4–6 tons of dry matter per hectare when grown in combination with oats. Crude protein content ranges from 17–22%, making it a valuable feed for dairy animals.

Leguminous trees

Leguminous fodder trees like Calliandra, Tree Lucerne (*Tagasaste*), and Sesbania provide high-protein feed, improve soil fertility, and offer additional benefits such as shade, fuelwood, and erosion control. They thrive in different climates and altitudes, with annual dry matter yields ranging from 4 to 10 tons per hectare depending on the species. Incorporating these trees into farms ensures a steady supply of nutritious fodder while supporting sustainable and cost-effective dairy farming.

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How to Prepare Green Leafy Vegetables for Maximum Health Benefits

By Dennis Soita

Green leafy vegetables are among the most nutrient-rich natural foods. When prepared properly, they can improve eyesight, strengthen immunity, enhance skin radiance, support healthy hair and nails, prevent anemia, and promote strong bones. However, washing, cutting, and cooking methods determine whether your body absorbs these nutrients or loses them during preparation.

This guide focuses on common vegetables: amaranth (terere), kunde (cowpea leaves), spinach, managu (black nightshade), and collards (sukuma wiki).

1. Amaranth (Terere)

Health Benefits:


- Helps prevent anemia and fatigue
- Promotes healthy glowing skin
- Strengthens immunity
- Supports healthy pregnancy
- Improves energy levels

Best Preparation Method:

- Wash before cutting (not after).
- Cut into medium pieces to avoid nutrient loss.
- Cook in a little oil or add groundnut paste to help the body absorb nutrients fully.
- Avoid overcooking, simmer for a few minutes only.

Quick Recipe: Sauté chopped onions in a little oil, add tomatoes (optional), then add the vegetables. Cook briefly and serve with ugali or rice.





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2. Kunde (Cowpea Leaves)

Health Benefits:

- Boosts immunity and helps fight flu and infections
- Improves eyesight, especially in dim light
- Supports strong bones
- Promotes healthy growth in children

Best Preparation Method:

- Remove tough stalks.
- Blanch briefly in boiling water for 3–5 minutes.
- Fry lightly in a little oil with onions and tomatoes.
- Do not throw away cooking water if minimal, nutrients may be lost.

Adding a little oil or coconut milk improves nutrient absorption.

Quick Recipe: Post-blanch, stir-fry with garlic and tomatoes; serve alongside rice or chapati.

3. Spinach

Health Benefits:

- Helps prevent anaemia
- Promotes healthy hair and nails
- Strengthens blood vessels
- Improves wound healing
- Supports strong muscles

Best Preparation Method:

- Steam or sauté quickly.
- Avoid boiling for long periods.
- Cook in a small amount of oil to improve nutrient absorption.

Quick Recipe: Quick-sauté spinach with garlic in oil; mix into eggs or serve with ndengu (green grams)

4. Managu (Black Nightshade)

Health Benefits:

- Helps fight infections
- Boosts immunity
- Supports healthy skin
- Improves digestion
- Enhances overall body strength

Best Preparation Method:

- Remove tough branches.
- Wash thoroughly before chopping.
- Can be lightly blanched then sautéed.
- Cook it with coconut milk for added flavour and better nutrient use.

Avoid overcooking (under 7 minutes), as prolonged heat reduces its health benefits.

Quick Recipe: Sauté onions, add managu and coconut milk, simmer briefly; enjoy with ugali or rice.

5. Collards (Sukuma Wiki)

Health Benefits:

- Strengthens bones and teeth
- Improves eyesight
- Helps the body fight infections
- Promotes healthy skin
- Supports healthy blood formation

Best Preparation Method:

- Wash before cutting.
- Cook in a little oil.
- Do not add baking soda (it destroys important nutrients).
- Cook for a short time, 5-7 minutes, to retain colour and nutrients.

Quick Recipe: Fry onions and tomatoes, add chopped sukuma, cook for a short time; perfect with ugali or githeri (mixture of boiled maize (corn) and beans).

Smart Cooking Tips to Maximize Nutrient Absorption

To ensure your body benefits fully:

1. Wash before cutting: Cutting first and then washing exposes nutrients to air and water, leading to nutrient loss..
2. Avoid overcooking: Cook vegetables for the shortest time possible.
3. Use a little oil: Some nutrients are better absorbed when vegetables are cooked with small amounts of oil, ghee, coconut milk, or groundnut paste.
4. Avoid throwing away cooking water: If vegetables are boiled, use minimal water and consume it as part of the dish.
5. Do not use baking soda: It destroys important nutrients that support immunity and skin health.
6. Harvest or buy tender vegetables: Overmature vegetables lose nutrients and take longer to cook.

Why Proper Preparation Matters

When properly prepared, green leafy vegetables help you:

- Improve eyesight
- Boost immunity and fight flu
- Increase body strength and energy
- Prevent anaemia
- Maintain healthy skin
- Support healthy hair and nails
- Build strong bones
- Support a healthy pregnancy

Green vegetables are not just food, they are daily natural medicine.

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AVOCADO CULTIVATION

Avocado Farming Gives Youth a Green Path to Prosperity

Youth turn to lucrative avocado farming to boost their livelihood and promote the circular economy

By Vincent Kipyegon

The global demand for avocados has spurred avocado farming in Kenya. According to a report from the Agriculture and Food Authority, avocados were the most in-demand fruit products in international markets, fetching 24 billion shillings between January and September 2025. This indicates that avocado farming is a viable venture for agribusiness practice.

Winters Kiprotich, a 26-year-old youth farmer from Kericho County, is part of the avocado growers contributing to the value chain. As a graduate of Meru University's agricultural extension degree, he was convinced that avocado farming was the future of agribusiness while working as an extension employee at a Meru farm. "I left employment in 2024 when I learned that the farm generated massive profits in the propagation and growing of avocado seedlings. I relocated back home, ready to start my own venture," explains Winter Kiprotich.

With family support, he established his agribusiness venture, K-farm, starting with a simple nursery and grafting Hass avocados before expanding to the propagation of passion fruits and vegetables, mostly cabbage seedlings. He planted 70 avocado plants and sold others to farmers from the region. The one-acre farm beside his nursery is surrounded by tea plantations, which Winters states he will gradually replace with avocado trees. The avocado plants are well spaced, 5 by 5 metres, and the fruits have started forming, anticipating an abundant harvest. He intercrops the avocados with butternuts, tree tomatoes, passion fruits, pomegranates, rosemary, spring onions, peaches, and apples.



I left employment in 2024 when I learned that the farm generated massive profits in the propagation and growing of avocado seedlings



Each avocado plant is mulched with dry matter consisting of leaves and plant straws. Winters explains that the mulch helps retain moisture and decomposes, releasing nutrients that are absorbed by the avocado roots. "I have crops intercropped with avocado for various reasons: butternut as cover crops to control weeding and spring onions in between avocados to repel pests, I have Mexican marigold growing at the edge of the farm as a pest repellent," notes Winters.

For fertilizer, Winters uses compost manure from animal bedding, kitchen and plant waste. "I prepare compost manure on a 6-foot heap, which typically takes 3 months to be ready. I also buy animal dung from a nearby dairy farm," Winters says. Additionally, he supplements the crops with commercial organic fertilizers to improve foliage.

As a trained agricultural extension expert, Winters provides field consultancy services, including drip irrigation installation, dam liners, vermicomposting, tower garden setup, and azolla cultivation.

Pests and diseases

The young farmer notes that diseases and pests are his major challenge. Winter complains that *Persea mite* is a pest that attacks the underside of avocado leaves. Thrips and white flies are other pests. Diseases such as powdery mildew, stem infection, dry rot, and blossom end rot are common in his avocados. He intercrops

mints and spring onions to help combat diseases and deter pests.

Agribusiness opportunities

Winters confidently states that avocado farming is a profitable agribusiness, with prices fluctuating between Ksh80 and Ksh130 per kilogramme. "With proper care, an avocado plant takes 2-3 years to reach maturity, producing up to 300kg of avocado fruits with two harvesting seasons annually. In the beginning, you can obtain 50 kg per tree," explains Winter.

He sells passion fruit seedlings at Ksh 40 and vegetable seedlings from as low as Ksh 2. "I sell avocado fruit to export traders who come to the farm and buy in bulk, relieving me from transportation costs."

Parting Shot

Winter Kipkoeh is optimistic that avocado prices will continue to rise and encourages youth in employment to pursue avocado farming as a side hustle and unemployed youths to devote themselves to the avocado value chain. "Agribusiness requires patience, low expectations, and resilience. In the end, you will reap heavy profits, create meaningful networks, and improve your livelihood," advises Kipkoeh.

He plans to plant another 130 avocado trees. He has drilled a borehole capable of supplying 1000 litres to the farm daily. Winter hopes that the county government will support his business by buying seedlings from his farm and making access to water affordable.

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INNOVATION

KALRO Develops Bird-Resistant Sorghum Varieties

By **Caroline Mwendwa**

Most farmers want to grow sorghum, but the prospect of dealing with birds discourages them. “Whenever I grow sorghum, I worry about the birds pecking at them until I have nothing to harvest. This has prevented me from planting sorghum for a long time,” says Phyllis Nduva, a farmer from Wote, Makueni County.

She further explains how she has tried many approaches, such as mixing eggs with water and spraying on the sorghum, to keep birds away. “I wish there was a better way of dealing with the birds, as sorghum is a key ingredient for healthy meals for my family.”

To address this challenge, researchers at the Kenya Agricultural and Livestock Research Organisation (KALRO) have developed a new set of climate-smart sorghum varieties that help farmers cope with both bird damage and unreliable rainfall. These varieties are already being grown by thousands of farmers who attest to their reliable attributes.

According to KALRO scientists, sorghum is most vulnerable to birds during the milk stage, when the grain is still soft and sweet. The new varieties are designed to protect themselves at exactly this point. Their panicles are compact with darker grains, that contain higher levels of tannins.

This combination makes the crop unattractive to birds. Birds may peck at the grain, but they quickly lose interest and move on. What makes this approach farmer-friendly is that the bitterness does not last. As the crop matures, tannin levels drop naturally, and by harvest time, the grain is suitable for both human food and animal feed. The five climate-smart varieties released by KALRO include Jasiri, Smart Sorghum, and Ndume, which are white in colour; Pato 1, a brown sorghum;

and Hummer, which is red. Together, they give farmers more choice depending on their needs and local markets. Beyond resisting birds, these varieties are built for tough conditions. They remain green, a trait that allows them to continue photosynthesis even when moisture is limited. Their shallow root systems help them make use of light rain, which is increasingly important as rainfall patterns become more unpredictable. As a result, farmers are seeing more stable yields even in dry seasons.

There are also nutritional benefits. The new varieties are rich in minerals such as calcium and iron, and they provide high levels of protein, making them valuable for household food security as well as commercial use. So far, farmers in counties such as Kitui, Makueni, Machakos, Tharaka-Nithi, and Busia have adopted the new varieties. These varieties are especially well-suited to Kenya’s arid and semi-arid lands, including parts of Eastern Kenya, the Coast, Western Kenya, and sections of the Rift Valley where drought and bird pressure are common.

Access to seeds has also been made easier. Farmers can purchase certified seeds from KALRO centres across the country, where small packets are sold at affordable prices, with a 2Kg packet going for around Ksh 400. In addition, KALRO works with extension officers, farmer groups, and seed companies to distribute trial packs and connect growers to reliable markets, including brewing and seed production.

Older sorghum varieties such as Serena and Seredo, which also contain tannins, remain in use in some areas and still offer partial protection against birds. However, newer climate-smart varieties combine bird resistance, drought tolerance, and improved yields in a more complete package.

INNOVATION

Planting techniques to utilise for dryland areas

By **Anthony Musili**

Semi-arid areas such as Ukambani face many challenges, including low and unreliable rainfall that cause water shortages, high temperatures, and declining soil fertility. These conditions have led to frequent crop failures, reduced livestock fodder, and increased conflicts between people and wild animals.

Dryland farming is most suitable in such regions. However, dry land farming does not mean low productivity; with the right planting techniques, farmers can have stable harvests using correct soil and water conservation measures.

Dry land planting techniques can be achieved by adopting water-harvesting practices, building organic matter, and implementing soil protection measures. The following are some of the planting techniques suitable for dryland areas.

1) Zai pits (planting basins)

- Dig pit 2ft by 2ft by 2ft (60cm by 60cm by 60cm)
- Dig first layer 30cm, scoop the soil and put it aside (top layer)
- Dig the second layer and scoop it out
- Mix the top soil with manure and fill the pit again

Benefits

- Reduces runoff and soil erosion
- Conserves water and nutrients
- Improves yields even with low rainfall

Suitable crops

Maize, sorghum, millet, cowpeas, fruits, and vegetables.

2) Double-dug beds

It's an intensive gardening technique used to prepare soil to a depth of 2ft, which involves loosening two distinct layers of soil: topsoil and the subsoil, to create a highly aerated, nutrient-rich environment for plant roots.

How to prepare a double-dug bed

Mark the bed 1- 1.2m wide for easy working without stepping on it, with a preferred length.

Step 1

- Dig the first trench: dig a trench across one end of the bed
- Remove the topsoil by digging 30cm deep with a width of 30cm
- Put the soil aside or in a wheelbarrow for later use
- Loosen the subsoil 30cm deep and add manure

Step 2

- Dig the next 30cm
- Place the topsoil into the first trench
- Loosen the subsoil again and add compost manure

Step 3

- Move to the next trenches repeating the same process until the last trench
- Use the soil kept aside from the first trench to fill the final trench
- Level the bed slightly raised about 15 - 20cm
- Spread compost manure on top
- Water well before planting

Benefits of double dug beds:

- Improves water and soil conservation
- Enhances root growth
- Improves aeration and drainage
- Helps in replenishing soil, hence long-term fertility

3) Mulching - Cover the ground with a layer of loose material such as straw, dry grass, leaves, or crop residues.

Benefits

- Controls weeds by reducing the amount of light reaching the soil
- Conserves water by reducing evaporation
- Improves soil organic matter, thus increasing the number of micro-organisms in the topsoil

4) Cover cropping - Plant live crops that spread and cover the soil. Examples of such crops include: pumpkins, dolichos, sweet potato, beans, cowpea etc.

5) Agroforestry - A system that integrates trees with crops or pasture.

In drylands, drought-tolerant trees are integrated into the farm, e.g., *Moringa oleifera*, *Gliricidia sepium*, *Acacia* spp., and *Grevillea* spp., among other plant species. These trees help with wind protection and provide shade. They also provide organic matter from fallen leaves.



CONTINUED FROM PG 9

6) Intercropping with drought-tolerant crops

Plant crops that adapt to low rainfall. For example, integrating sorghum with cow peas, millet with green grams and pigeon peas with cassava.

Benefits

- The crops improve soil cover, thus conserving moisture
- Provides diversification, thus reducing risk
- Legumes help in nitrogen fixation

7) Water retention ditches

These are shallow channels dug across a slope to slow down runoff and allow rainwater to soak into the soil instead of flowing away.

Benefits:

- Slow down runoff
- Recharge soil moisture
- Reduce soil erosion
- Improve crop survival

The technique is best for fruit trees and fodder crops.

6) Use of half-moon structures

These are simple water harvesting structures resembling a half-moon used in dry lands to tap water around trees and for other purposes such as planting of cereals and vegetables.

7) Timely planting

Farmers should not plant after light rainfall, instead, they should plant immediately at the onset of the rain. This ensures good germination, better crop growth, and efficient use of rainfall.

8) Crop and variety selection

Farming in drylands requires deliberate selection of crop varieties that will withstand the dry weather conditions. The most suitable are those with the following characteristics:

- Short-stem varieties with limited leaf surface minimize transpiration.
- Deep, prolific root systems enhance moisture utilization.
- Quick-maturing varieties.

9) Practice minimum tillage

This means disturbing the soil as little as possible, just opening the planting hole or row.

Benefits include reduced soil erosion, improved moisture retention, enhanced soil structure and organic matter, greater microbial activity, lower labor and fuel costs, and reduced weed seed burial, all of which support better crop establishment and resilience in dry environments.

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INNOVATION

Select the right maize variety for maximum yields

Every year, many farmers harvest less maize than they expected. In most cases, the problem is not a lack of effort or poor farming skills. It starts much earlier, at the seed selection stage. Planting a maize variety unsuited to your area almost always results in poor yields, no matter how well the crop is managed.

Maize varieties are not the same. Each one is developed to perform best under specific conditions such as altitude, rainfall, soil type, and temperature. When a farmer plants a variety outside the conditions for which it was designed, the crop struggles. This is why farmers are encouraged to understand their agro-ecological zone before buying seeds.

Before fully adopting any new maize variety, especially one you have never grown before, it is important to test it first. Set aside a small piece of land and plant the new variety there. Observe it closely from germination to harvest. This approach reduces risk and protects farmers from large losses that can result from experimenting across the entire farm. Many farmers unknowingly plant the wrong maize varieties because they rely on advertisements or advice from agrovet shops. Seed companies promote their products aggressively, often highlighting only the benefits. At the same

time, agrovet attendants may recommend any variety in stock, including seed that is not moving quickly. For this reason, farmers should seek independent advice from extension officers, research institutions, or reliable agricultural sources before buying maize seed.

When testing a new variety, farmers should observe important characteristics, for instance, check whether the crop lodges easily due to wind or heavy cobs. Observe whether the husks open early before maturity, allowing water to enter and causing grain rot. Yield performance, disease tolerance, and overall plant strength should also be noted. Once a variety has proven itself under local conditions, it can then be grown on a larger scale. The following are suitable maize varieties for various regions in Kenya.

High-Altitude Maize Varieties
(Rainfall: 1,000–1,500 mm | Altitude: 1,700–2,300 m)

In high-altitude regions, several improved maize varieties perform well when properly managed.

ADC 600-23A, developed by the Agricultural Development Corporation, yields between 43 and 68 bags per acre. It has a sweet taste, strong stalks that do not lodge easily, produces double cobs, and is resistant to rust, leaf blight, and grey leaf spot. It outyields H614D by over 40 percent. This variety is suitable for Trans Nzoia, Uasin Gishu, West Pokot, Keiyo, Marakwet, Laikipia, Nakuru, Kisii, and Kiambu.



KH600-14E, from Freshco and an improved version of H614D, yields 45–50 bags per acre. It is sweet, has flinty grains that resist weevils, excellent husk cover that prevents rotting, and has tolerance to grey leaf spot. It matures one week earlier than H614D and outyields it by 13.3 percent. Suitable areas include Trans Nzoia, Uasin Gishu, West Pokot, Keiyo, Marakwet, Laikipia, Nakuru, Kisii, and Kiambu.

KH600-15A, from East African Seed, yields 33–47 bags per acre and matures in 145–148 days. It has good husk cover, strong standability, produces double cobs, and is tolerant to grey leaf spot, maize streak virus, and blights. It performs well in Mt Elgon slopes, Trans Nzoia, West Pokot, Uasin Gishu, Nandi, greater Kericho, Taita, upper Nyeri, Laikipia, and lower Nyandarua.



Many farmers unknowingly plant the wrong maize varieties because they rely on advertisements or advice from agrovet shops. Seed companies promote their products aggressively, highlighting only the benefits

KH600-16A, from Freshco, yields 35–50 bags per acre and outyields H614D by 16 percent. It matures in 140–180 days, has strong stalks, good husk cover, droops at maturity to prevent rotting, and tolerates grey leaf spot and leaf blight. It is suitable for Trans Nzoia, Uasin Gishu, West Pokot, Keiyo, Marakwet, Laikipia, Nakuru, Kisii, Bungoma, Mt Elgon, and Kiambu.

600-15A, from East African Seed, yields 35–45 bags per acre. It has white semi-flint grains, strong stalks, good husk cover, and drooping cobs that reduce rotting. It performs well in Mt Elgon slopes, Trans Nzoia, West Pokot, Uasin Gishu, Nandi, greater Kericho, Taita, upper Nyeri, Laikipia, and lower Nyandarua. Kenya Seed Company varieties commonly grown in high-altitude zones include H614D, H6213, H629, and H628, with H6213 performing particularly well under high-level management.

<https://kenyaseed.com/products/maize> and <https://cga.co.ke/>

PEST CONTROL

Tausa Comprehensive School Champions Organic Farming in Semi-Arid Taita Taveta

Tausa Comprehensive School in Mbololo Location, Voi Sub-County, Taita Taveta County, is making remarkable strides in promoting sustainable agriculture through an innovative organic gardening project.

The school, working closely with its learners, has established a thriving agricultural initiative focused on vegetable production. At the heart of the project is a commitment to organic farming practices. Instead of relying on chemical fertilizers and synthetic pesticides, the school uses natural inputs such as organic manure, organic foliar feeds, and natural pesticides.

According to the project coordinators, the decision to embrace organic gardening was driven by both economic and environmental considerations. Organic farming significantly reduces operational costs by eliminating the need for expensive synthetic chemicals. At the same time, it promotes environmental conservation by converting natural waste into valuable manure used in the gardens.

The initiative also safeguards the health of growers, consumers, and the surrounding ecosystem. By avoiding harmful chemicals, the school protects beneficial insects and soil organisms such as earthworms, fungi, and bacteria, which play a crucial role in decomposing organic matter and improving soil fertility. Additionally, organic manure enhances the soil's ability to retain moisture an essential advantage in the school's semi-arid environment. Organic pesticides used in the project have a short residual effect and decompose naturally, further minimizing environmental impact.

Despite its success, the project faces notable challenges. Located in a semi-arid region, the school experiences water shortages during the dry season, sometimes compelling learners to bring water from home to sustain the crops. The lack of fencing also exposes the garden to damage from stray livestock.

Nevertheless, the benefits of the initiative extend beyond agricultural learning. Proceeds from the sale of farm produce support the school feeding programme and help purchase essential learning materials such as books, pens, and rubbers for students.

The project is proof that organic farming enhances resilience and provides solutions to challenges faced in farming especially in the arid and semi-arid areas.



Through weekly Kiswahili and local languages radio programmes, TOF Radio helps to improve awareness and knowledge of sound agroecological practices, strengthen the link between researchers and farmers to enhance food security, reduce poverty and increase household incomes among farmers in Kenya.

TOF Radio Stations

Emuria FM	Monday and Friday -10-11AM
Getembe FM	Monday 8PM
Milele FM	Tuesday 11-12AM
Mutongoi FM	Wednesday 10-11AM
Coro FM	Thursday 8.20-9PM
Ingo FM	Friday 8-9PM



TOF Answers Your Questions: Organic Fertilisers and their Benefits

Following TOF Radio programmes aired on soil management, two farmers recently shared the following questions on soil health and low-cost farming solutions. Below are clear, practical answers written for everyday farm use.

Zephania Emwatsi from Kakamega asks: How can organic fertilisers restore soil in the long term?

Healthy soil is alive. It contains tiny organisms like bacteria, fungi, insects, and worms. These living organisms help crops grow stronger. Over time, chemical fertilisers can weaken this life. Organic fertilisers help bring it back.

Here's how organic fertilisers restore soil over time:

They feed the soil, not just the crop: Organic fertilisers such as compost, manure and plant tea provide food for soil organisms. These organisms slowly release nutrients to crops, season after season.

They improve soil structure: Organic matter helps soil stay loose and crumbly. This allows roots to grow deeper and for water to move more easily into the soil, rather than running off.

They help soil hold water: Soils with organic matter retain moisture for longer. This is very important during dry spells.

They reduce soil exhaustion: Organic fertilisers do not burn crops or kill soil life. With



continued use, soils become darker, richer, and more productive.

They restore long-term fertility: Even when rains are poor, soils treated with organic fertilisers perform better because nutrients remain in the soil longer. Organic fertilisers

slowly but surely heal tired soils.

The more you use them, the better your soil becomes every season.

For any follow-up questions, call us on 0715 422 460

Partner organizations



TOF on the web:

- 🌐 <https://biovisionafricatrust.org>
- 🌐 mkulimambunifu.org | infonet-biovision.org
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