Biovision Africa Trust

THE ORGANIC FARMER

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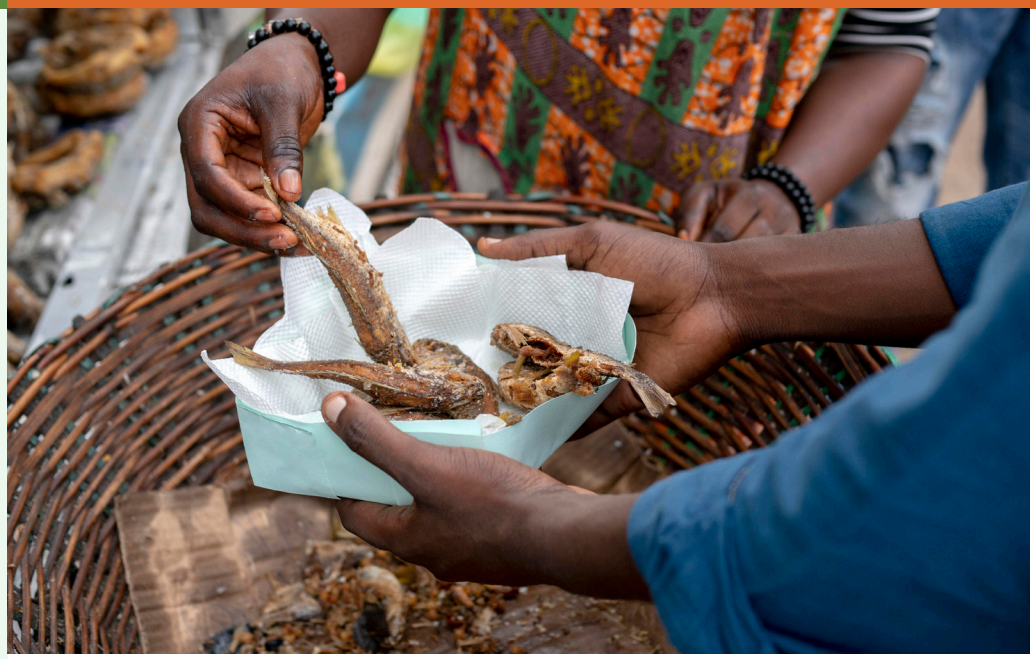
Dear reader,

THE RECENT BAN of 77 synthetic chemicals from the Kenyan market is a testament to the limitations of overreliance on synthetic chemicals in food production. As the public becomes more aware of the dangers of haphazard chemical application on crops, what can farmers do to meet the demand for safe food?

This edition samples exemplary farmers who have overcome dependence on synthetic input application on crops by adopting agroecological farming. With training on how to harvest and conserve water, planting techniques to conserve moisture, and using locally available materials to make soil fertilizers and biopesticides, farmers are cutting down costs and maximizing productivity.

In Makueni County, for example, farmers are embracing regenerative agriculture to reclaim barren land through diversification and conservation agriculture. With increased productivity, these farmers have ventured into multiple revenue streams, raising their living standards and those of their families. Read on for these inspiring stories and much more.



NUTRITION

Reviving indigenous wisdom: Nutritious recipes for a balanced family diet

By Dr Esther Nduku

Good nutrition is essential for the growth, development, and well-being of every family member. However, modern dietary patterns have increasingly replaced traditional, nutrient-rich indigenous foods with highly processed options, contributing to rising cases of malnutrition, obesity, and diet-related diseases.

Studies have shown that traditional diets are often more sustainable and nutritionally rich than modern, processed alternatives. In an era dominated by processed foods and fast meals, it is easy to overlook the wealth of nutrition hidden in our indigenous food traditions.

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Indigenous foods are not only culturally significant but also nutritionally dense, locally available, and environmentally sustainable.

Like many regions, the lower eastern region of Kenya has a rich heritage of indigenous foods that support a balanced diet yet remain underutilized today. The indigenous recipes of the lower eastern region of Kenya, particularly among the Kamba community, feature foods such as millet, sorghum, cassava, sweet potatoes, amaranth, tamarind, baobab powder, cowpeas, pigeon peas, and the traditional githeri (a mixture of maize and pulses). These foods offer rich and diverse nutritional profiles, being naturally high in dietary fiber, complex carbohydrates, and essential micronutrients including iron, calcium, potassium, folate, and vitamins A and C. For instance, baobab powder is well known for its high vitamin C and antioxidant content, while millet and sorghum provide essential B vitamins and iron, which are crucial for energy production and the prevention of anemia.

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ICIPE, Kasarani
TOF 30772 00100 Nbi
+254 715 422 460
theorganicfarmer.org

Production with purpose

Farmers in Makueni County turn to a new page with abundance from regenerative agriculture

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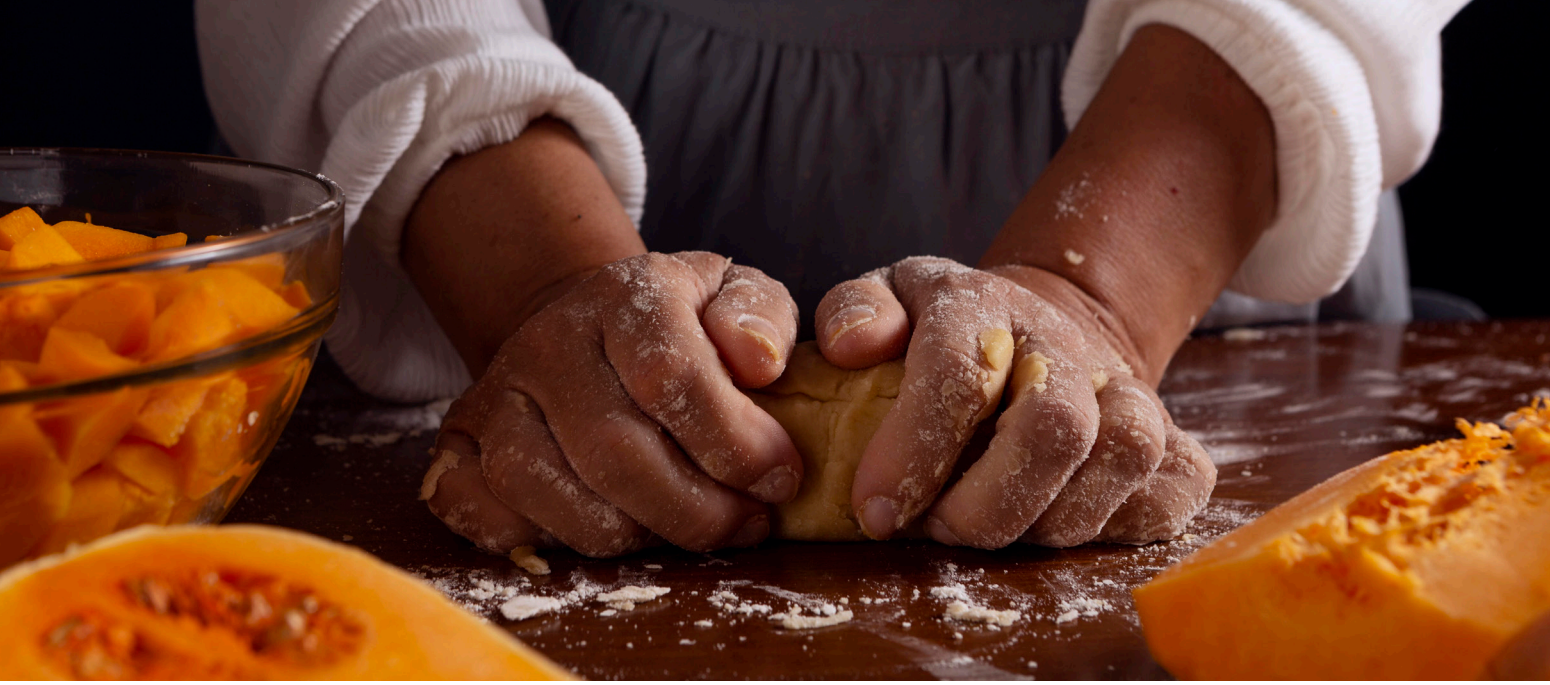

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Traditional leafy vegetables, such as cowpeas and pigeon peas, complement these staples by boosting protein content and enhancing gut health and nutrient absorption.

When compared to modern or Western dietary patterns, which are typically high in refined carbohydrates, saturated fats, and processed sugars, indigenous foods offer superior nutritional benefits and contribute to long-term health. For example, fermented millet-sorghum porridge has a lower glycemic index and provides better satiety than sugary breakfast cereals. At the same time, cassava mashed with groundnuts supplies natural plant-based proteins and healthy fats. Similarly, githeri, a staple across Lower Eastern Kenya, delivers a wholesome blend of carbohydrates and legumes, making it a cost-effective and nutrient-dense alternative to refined meals.

These dietary practices are more effective in preventing non-communicable diseases, such as hypertension, diabetes, and obesity. Despite the known benefits, changing lifestyles, urbanization, and food aid dependency have led to the marginalization of these foods.

The indigenous meals offer a balanced mix of macronutrients: carbohydrates from cassava, sweet potatoes, and maize, proteins from pigeon peas, cowpeas, and groundnuts, and healthy fats from seeds and nuts. Additionally, they supply essential micronutrients such as zinc, magnesium, calcium, and vitamin A, which are often lacking in modern urban diets.

These nutritional benefits are especially vital for the most vulnerable members of the community, including malnourished children, who require essential nutrients for proper growth and immune development. Pregnant and lactating women need increased intake of iron, folate, and calcium to support maternal health and fetal development. The elderly and chronically ill benefit from nutrient-dense, easy-to-digest meals that promote cardiovascular strength, bone health, and overall well-being. Reviving and promoting these traditional food practices not only improves family and community nutrition but also supports cultural heritage, food security, and climate-resilient agriculture in the region.

Examples of recipes drawn from indigenous foods

Fermented Millet-Sorghum Porridge (Uji)
Ingredients: Millet flour, sorghum flour, water, fermented starter.
Preparation: Mix the flours with water and ferment overnight. Boil the water, then add the mixture while stirring, and simmer until thickened.
Benefit: Rich in complex carbohydrates, iron, magnesium, and gut-friendly probiotics.

Baobab & Sorghum Pancakes
Ingredients: Sorghum flour, baobab powder, eggs, milk/water.
Preparation: Mix all the ingredients and cook as you would regular pancakes.
Benefit: High in calcium, vitamin C, and plant protein.

Cassava & Amaranth Stew
Ingredients: Cassava, amaranth leaves, onions, tomatoes, and oil.
Preparation: Boil the cassava; sauté the greens with onion and tomato, then combine and simmer.
Benefit: Provides fiber, vitamins A & C, iron, and calcium.

Cassava-Groundnut Mash
Ingredients: Boiled cassava, roasted groundnuts, onions, and tomatoes.
Preparation: Mash boiled cassava with sautéed groundnut mix.
Benefit: High in healthy fats, fiber, and plant protein.

Sweet Potato-Amaranth Chapatis
Ingredients: Mashed sweet potato, amaranth & wheat flours.
Preparation: Mix into the dough, roll, and pan-fry.
Benefit: High in beta-carotene, fiber, and energy.

Tamarind Vegetable Stew
Ingredients: Tamarind pulp, cowpeas or greens, onion, tomato.
Preparation: Sauté veggies, add tamarind juice, and simmer.
Benefit: Rich in vitamin C, iron, and antioxidants.

Baobab Energy Balls
Ingredients: Baobab powder, groundnuts, honey, millet flour.
Preparation: Mix and roll into small balls.
Benefit: Nutrient-dense snacks, ideal for children and mothers.

Sorghum-Amaranth Dumplings
Ingredients: Sorghum flour, chopped amaranth, onion, salt.
Preparation: Mix into the dough, shape, and steam/boil.
Benefit: Iron- and protein-rich (suitable for weaning and elderly diets)

Dr Esther Nduku is a nutrition expert in Machakos County
Email: Ndukumatuku@gmail.com

CLEAN ENERGY

Biogas: Powering rural homes and farms with clean energy in Kenya

Across the countryside, traditional fuels such as charcoal, firewood, and kerosene are steadily being replaced by biogas, a renewable, affordable, and environmentally friendly alternative

By Raymond Ng'etich

In Kenya, the transition to cleaner, more efficient energy sources is no longer confined to towns and cities; it is rapidly gaining momentum in rural villages as well. Across the countryside, traditional fuels such as charcoal, firewood, and kerosene are steadily being replaced by biogas, a renewable, affordable, and environmentally friendly alternative.

Produced from animal waste and other organic materials, biogas is giving smallholder farmers a chance to turn what was once seen as waste into a reliable source of cooking gas and energy. "Once installed, the digester creates a closed-loop system where nothing goes to waste. Farmers use the biogas to cook on double burner stoves, power water heaters, and operate small-scale machinery like chaff cutters," says Raymond Ng'etich, a technician at Systema Bio Kenya. Using locally available resources, farmers can now generate their own energy directly from their homesteads while simultaneously producing a nutrient-rich fertilizer for their crops.

Making biogas affordable for farmers

Recognizing that the upfront cost of installing a biogas system can be a challenge for many rural households, several companies in Kenya have developed innovative financing models. These companies offer on-site installation of biodigesters designed specifically for small farms, coupled with flexible, hire-purchase payment plans.

Instead of paying the full amount at once, farmers can make an affordable deposit and spread the remaining cost over manageable monthly instalments. This has opened the door for thousands of rural households to access clean energy without stretching their budgets. Beyond affordability, these companies also provide training on operation and maintenance, ensuring farmers get the best long-term value from their investment. "Sistema.bio for, instance, offers flexible payment plans tailored to the realities of farming life. Farmers can pay the full amount up front or choose to extend the cost over eight or 25 months, depending on what works best for their cash flow. For example, the Sistema 8 unit, priced at KES 89,000, can be paid off in 25 monthly installments of just KES 4,900. Larger units, like Sistema 30 and Sistema 40, also come with installment options," he says.

Payments are made through mobile money transfer, and every purchase includes free installation and three free service visits. "Sistema bio digester comes with a 10-year warranty and up to 20 years guaranteed usage, as well as continued support from trained local staff." This ensures that the technology is not only affordable but also well-maintained.

This approach not only makes clean energy accessible but also empowers rural households to reduce their dependence on expensive and polluting fuels, lower their carbon footprint, and improve their quality of life.

What is biogas, and how does it work?

Biogas is created when organic waste, such as cattle dung, crop residues, or kitchen scraps, is broken down by microorganisms in an oxygen-free environment, a process known as anaerobic digestion.

The process occurs within a biogas digester, a sealed unit where waste is combined with water to form a slurry. As microorganisms ferment the mixture, they release methane-rich gas, which is piped directly to a household stove, lamp, or water heater.

Once the digestion process is complete, the remaining material, called bio slurry, emerges as a potent organic fertilizer, rich in nitrogen, phosphorus, and potassium. This fertilizer is highly effective in improving soil fertility and boosting crop yields, providing farmers with a second stream of benefits beyond cooking fuel.

Violet's biogas journey: From reading to reality

One of the clearest examples of biogas transforming rural livelihoods is the story of Violet Kageha, a smallholder farmer from the lush hills of Kakamega County.

Violet first learned about small-scale biogas systems from The Organic Farmer (TOF) Magazine. "I read that biogas can be produced by dung from as few as two cows, so I sought more information

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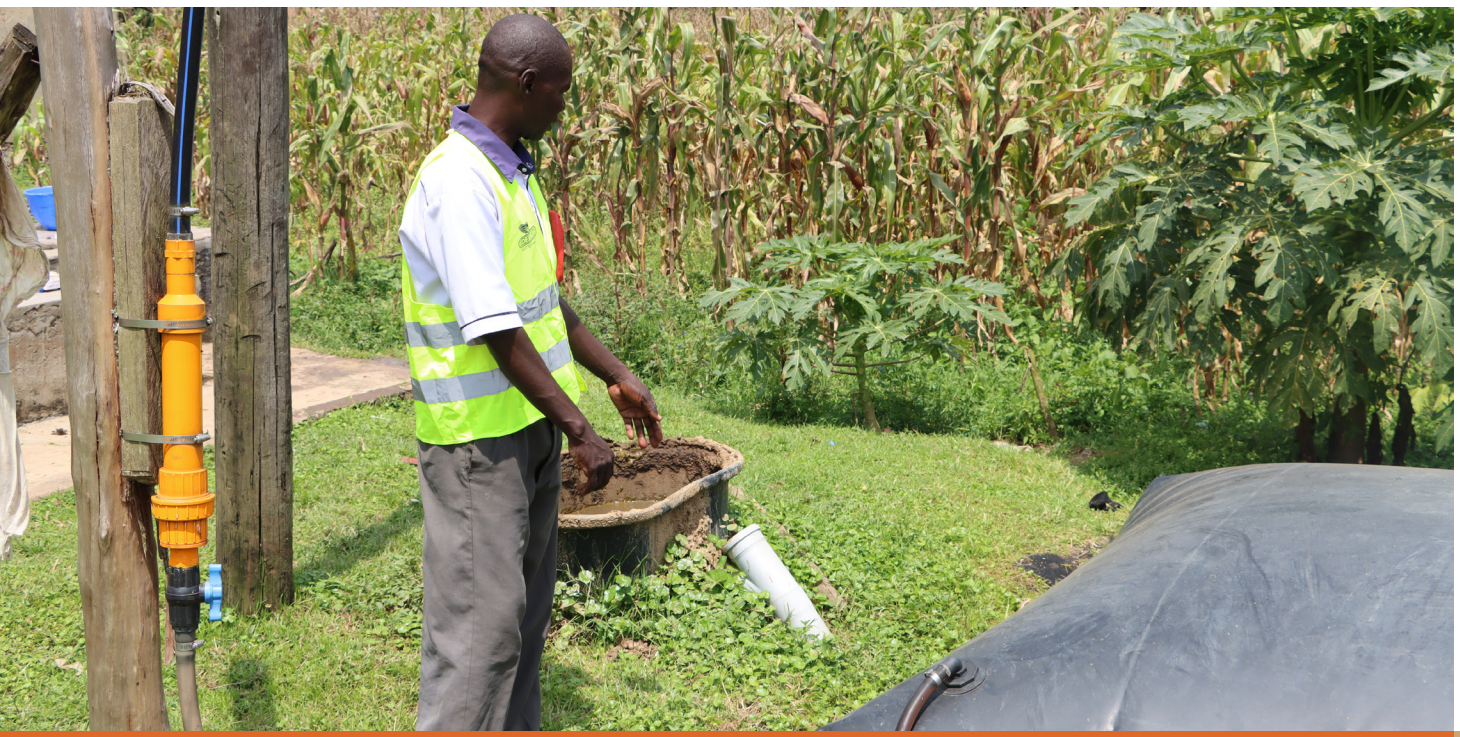

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on how to have it installed in my homestead," she recalls.

At the time, Violet had three dairy cows, more than enough to sustain a domestic digester. She approached a biogas installation company and was pleasantly surprised to find that the system was within her reach thanks to their hire-purchase payment plan.

"I only paid Ksh 3,500 as a deposit, and now I pay Ksh 3,500 monthly for 25 months," she explains. "The biogas plant has a warranty of 10 years, and I've been assured it will serve me for over 20 years."

Life After Biogas Installation

Since installing the biodigester, Violet has completely stopped using firewood for cooking. The unit requires only two 20-litre buckets of cow dung weekly to operate, producing enough gas to meet all her household cooking needs.

In fact, the system sometimes generates more gas than she can use at once. "Sometimes the gas is too much, so I choose to cook meals that take longer in order to reduce the mounting pressure of excess gas," she says with a smile.

The benefits have been significant:

- **Reduced Costs** – No more spending on charcoal, kerosene, or Liquid Petroleum Gas.
- **Time Saving** – No longer collects firewood, giving her more time for farm and family activities.
- **Cleaner Cooking** – No smoke in the kitchen, which means better health for her household.
- **Sustainable Fertilizer** – The bio slurry from the digester keeps her vegetable garden thriving without expensive chemical fertilizers.
- **Environmental Impact** – Reduced deforestation and fewer greenhouse gas emissions from decomposing manure.

"With biogas, my cows give me more than milk — they give me the energy to cook, fertilizer for my crops, and a cleaner home for my family."

SAFE FARMING

The Government of Kenya Bans 77 highly hazardous pesticides

Kenya joins other countries in shifting away from toxic farm inputs

By Kinyua Roline Kathambi

Farming for most food producers entails regular field spraying on the crops or weeds, a practice they have been used to. What follows in some instances is coughing, skin rash, and nauseous feeling because of the chemical composition of the pesticide they are exposed to. Although the use of pesticides has had a great impact on agriculture, thus helping farmers to control pests and diseases, increasing the yield and ensuring a reliable food supply, they still pose health threats to humans, animals, and the environment. The Government of Kenya in a bid to safeguard its population from the increasing effects of harsh chemicals on food and the environment recently made a move that shows that the efforts made by different entities in fight against use of highly hazardous pesticides in food production have been worthwhile.

Identified risks to human health

a) Acute effects:

Some active components present in synthetic pesticides can cause severe reactions to human beings if exposed even for a short time but intensely. These effects include:

i. Respiratory problems - exposure to pesticides can cause coughing or shortness of breath.
ii. Skin and eye irritation - upon contact with certain synthetic pesticides, one may experience a burning sensation, itching on the skin, or reddening of the eyes.
iii. Neurological symptoms - one may experience headache, nausea, and dizziness.

b) Chronic effects:

Long-term exposure to some chemicals present in synthetic pesticides can lead to:

i. Reproductive and developmental issues – This leads to miscarriage, infertility, or congenital conditions. Some of these effects are caused by effects on the endocrine system, which is responsible for hormone production.
ii. Cancer - Pesticides such as Organochlorines are classified as carcinogenic.

Ban of 77 pesticides in Kenya

On 7th May 2025, the Government of Kenya banned 77 highly hazardous pesticide (HHP) products and restricted the use of 202 others due to their adverse

effects on human and environmental health. Among the products banned are those containing active ingredients such as Acephate, Chlorothalonil, Diuron, and Thiacloprid. These are major chemicals that have been linked to cancer, endocrine disruption, reproductive harm, and annihilation of bees and other beneficial insects. Other chemicals banned include:

Chlorpyrifos – This is an organophosphate pesticide used to control pests. It controls pests by interfering with their nervous system. The main reason for its ban is that exposure to it when pregnant or in early childhood can disrupt brain development and cause lower IQ. It is also toxic to pollinators such as bees. It has been banned in the U.S. (as of 2021 for food crops), the E.U. (as of 2020), and Canada.

Propineb - It is a fungicide used to control fungal diseases in crops such as potatoes. However advantageous it may have been, it has been banned due to environmental risk to non-target organisms and groundwater contamination.

Iprodione - It is also a fungicide used to control a range of fungal diseases, particularly those caused by Rhizoctonia species. Iprodione was banned due to its negative effects on reproductive health and its persistence in soil. It is also toxic to aquatic life and has been banned in the E.U.

Endosulfan – It is banned in over 80 countries, including the U.S and India, due to its high toxicity to humans and wildlife.

Toxaphene - It is a chlorinated pesticide mixture that has been banned due to its high toxicity and environmental persistence.

Other 202 pesticides that are now highly restricted include herbicides such as 2,4-D Amine, which is now prohibited for use on coffee crops, and Abamectin, an insecticide and miticide, which has been prohibited from being applied in open fields. Other chemicals, including Imidacloprid, Omethoate, and Propineb, have been restricted from being used on food crops.

An additional 151 pesticide products are still under review and may not be imported, distributed, or applied until the final decision on them is announced in December 2025.

Further to the regulations on the use of HHPs, a new Pest Control Products Bill was approved by the Cabinet, proposing more stringent measures on pest control products in the market. This bill, which will soon be tabled in Parliament, proposes the following:

i. All pesticides registered in Kenya must also be registered in their country of origin.
ii. Products banned under international environmental agreements, such as the Stockholm and Rotterdam Conventions, are prohibited from use in Kenya.
iii. Pesticide molecules not approved by major regulatory bodies in the EU, USA, Canada, or Australia will not be imported or used in Kenya while under review.

These reforms, if approved, will protect Kenya from becoming a dumping ground for toxic chemicals already banned elsewhere. Farmers have been encouraged to adopt agroecological practices, such as Integrated Pest Management (IPM) strategies, crop diversification, and other natural solutions to manage pests and diseases. Organic input manufacturers have advanced in offering effective products at affordable prices and ensuring their accessibility. These solutions naturally manage pests without harming people, livestock, pollinators, or the environment.

The list of all banned pesticides is available on the Pest Control Product Board website https://www.pcpb.go.ke/banned-products-in-kenya/
Email: kathambiroline@gmail.com

Food safety starts with you

Are you carelessly making choices that are killing masses?

How would you respond if you discovered that the water you use for cooking every day has poison in it? Poison that could lead to terminal illness or complications that alter the quality of your life forever. There is a need for food producers to uphold social values, not only to protect consumers in the market but also to safeguard their families. Lack of integrity in food production not only contaminates the farm produce but also the natural resources such as soil and water, which are the sources of life for all.

Farmers across the country are increasingly gearing towards income generation by producing food for the market. With the desire to maximize the benefits of their hard work, there is a risk of compromising the principles of social values. This leads to detrimental practices such as the use of unsafe chemicals on fruits and vegetables, tubers and grains, to hasten the maturing process and seize emerging market opportunities.

The practice extends to the application of herbicides and burning weeds to save on the cost of production, but eventually these chemicals leave residues on the food, the soil, and water sources, which over time cause harm to children and adults alike.

These detrimental practices that farmers resort to in desperation to save on costs of production, can be replaced with the practice of agroecology. Farmers who have discovered this alternative are thriving, and the results are visible from their sustained improved livelihoods, through better yields and higher income, without endangering lives.
Here are examples of practices that farmers can adopt to maintain continued stability in yields and profits, without exposing their families and consumers to contaminated food.

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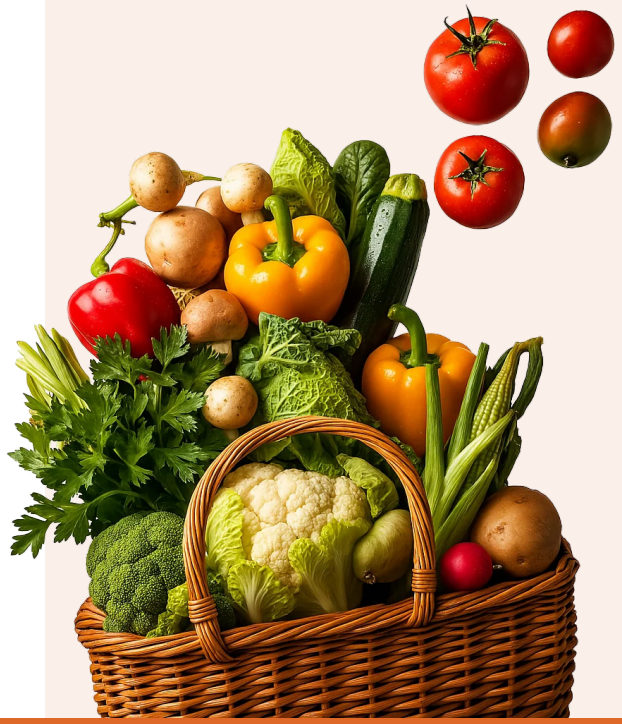

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(i) Diversification of sources of income

By continuously seeking information on technologies and agricultural ventures that they can engage in, farmers are gradually reaping significant benefits from diversifying their income streams on the farm. This frees the farmer from dependence on one farm produce for income. A case example of this practice is Violet Kageha, a farmer from Kakamega County. As narrated in the article on page 9 of this edition, Violet has diversified her income streams by growing and value-adding indigenous vegetables, sweet potatoes, rearing fish, keeping poultry, dairy cows, among others. Income diversification keeps one from desperation to violate ethical standards in food production, processing, and marketing, since there are various ventures that complement each other.

(ii) Soil health

Recycling farm materials reduces the cost of maintaining soil health; the more organic matter is applied to the soil, the richer the soil becomes over time, producing high-quality farm produce that does not necessitate the use of toxic substances to get the market appeal.

The quality and quantity of yields are also improved by continued use of organic fertilizers, such as compost manure, bokashi, vermicompost and vermijuice, black soldier fly frass, among others. This edition features testimonials of farmers who have adopted the use of organic manure on their farms, and the benefits they have observed in crop quality and yield.

(iii) Moisture conservation

There are myriad technologies that aid in moisture conservation, such as mandala gardens, cone gardens, zai pits, double-dug beds, sunken beds, cover cropping, and mulching. Some of these technologies, such as cone gardens, mandala gardens, and vertical gardens, maximize space in a way that allows farmers to grow vegetables using a staggered production approach, ensuring a steady supply of produce for the market at all times. What makes these technologies ideal is their low water consumption, even in dry seasons, making crop production possible throughout the year; hence, income streams are not limited to rainy seasons.

The quality and quantity of yields are also improved by continued use of organic fertilizers, such as compost manure, bokashi, vermicompost and vermijuice, black soldier fly frass, among others

Additionally, practices such as cover cropping and mulching leave no room for weeds, but instead, crop residue decomposes back into the soil, invigorating its fertility. These practices eradicate the need to apply harmful herbicides that kill living organisms in the soil, and at the same time contaminate rivers during rainy seasons when the residues are washed down in runoff.

(iv) Use of biopesticides

Large-scale farmers, especially those producing maize and wheat, hold onto harmful pesticides, arguing that it would not be possible to practice organic farming on large farms. However, today organic input manufacturers have biopesticides for all pests, retailing in local agrovets, and instead of relying on synthetic pesticides, large-scale producers ought to replace them with biopesticides as their efficacy has been proven, and their price range is not any different from the conventional pesticides. Additionally, biopesticides, whether made from plant extracts or purchased from agrovets, have little to no Post Harvest Intervals, (PHIs); hence, farmers can harvest and sell the produce in a safe state, without having to wait for weeks for the chemical residue to break down, as is the case with synthetic pesticides. This protects the consumers from foods that have high chemical residues.

Conclusion

Protecting your family, your neighbors, and your customers from ingesting toxins is possible. We need to stop the default approach to food production and ask this pertinent question: Is what I am applying to crops safe to eat? If not, seek alternatives, for they are available and accessible.

REGENERATIVE AGRICULTURE

Production with purpose

Farmers in Makueni County turn to a new page with abundance from regenerative agriculture

By Caroline Mwendwa

Regenerative farming in Makueni County has unlocked the potential of agriculture, creating not only a surplus for home consumption in areas where food scarcity was prevalent but also opening agribusiness opportunities for small-scale farmers.

ENVIU in collaboration with Biovision Africa Trust, launched the regenerative project in Makueni County in 2022. Three years later, families have experienced a transformation in nutrition and an improved standard of living as they venture into various agribusinesses.

"We have trained over 150 farmers in the County to reclaim their forsaken lands by adopting technologies that harvest water and conserve it within the farm, diversifying crops, doing mulching and cover cropping, recycling plant residue back into the soil, making manures and plant teas, as well as practicing integrated pest management, to increase their yield while reducing cost of production" says John Mutisya from Biovision Africa Trust.

Having witnessed how regenerative farming has improved livelihoods, ENVIU established two private entities, Halisi Gro and Zawiri Foods, to continue the mission of enrolling more farmers into regenerative agriculture, offering training, providing organic farm inputs, and linking farmers to markets. This holistic approach of transforming communities is paying in leaps and bounds, and more farmers are abandoning conventional farming and shifting to regenerative agriculture.

"As ENVIU, we realized that sometimes farmers are limited from adopting the new technologies due to the inaccessibility of bio inputs, and the lack of market for the produce once harvested," says Mark Nzivo from Zawiri Foods.

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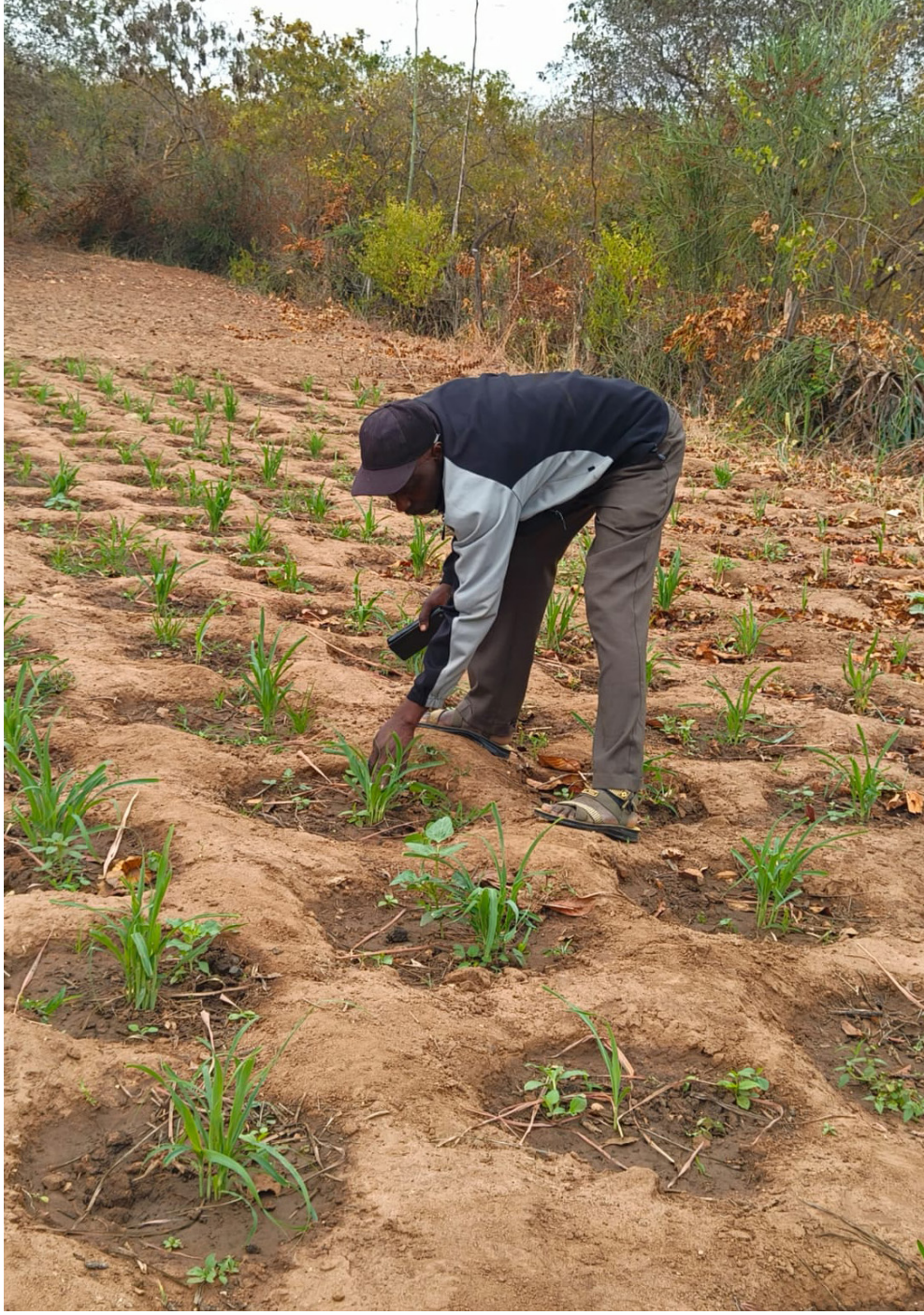

Nicholas Mutisya from Mavindini Ward, Makuenu County in his lemon grass farm

To close this gap, Zawiri Foods and Halisi Gro supply farmers with the bio inputs required, such as seeds for varieties of crops they desire to grow, especially those with already established markets, as well as biopesticides and post-harvest bags that they need in managing pests," he says. Halisi Gro provides extension services to the farmer, ensuring they get the specialist advice required to produce maximum yields. This comes at a low fee of about Ksh 200 per farmer, which is paid once. This support extends to the marketing of the produce through Zawiri Foods, a company that takes on produce, specifically herbs, from farmers

"Herbs are a short-cycle crop, that guarantees farmers a monthly income, once a reliable market is identified," says Nzivo. That is why, Zawiri Foods, in collaboration with Halisi Gro, under ENVIU Project, supports small-scale farmers who have been trained on regenerative agriculture, to integrate perennial herbs such as lemon grass, chillies, lemon thyme, oregano, and sage, into their farms, for increased diversity and short-cycle incomes," he explains. They sell the seeds to farmers and support them in production. Once the harvest is ready, Zawiri Foods buys it all at an agreed-upon price.

Nicholus Mutisya, a farmer from Harambee Village, in Mavindini Ward, Makueni County, is a beneficiary of this project. In his four-acre piece of land, Mutisya grows maize, beans, cowpeas, green grams, mangoes, oranges, and pixies. He met Halisi Gro in 2024 as part of the Muusine Fruit

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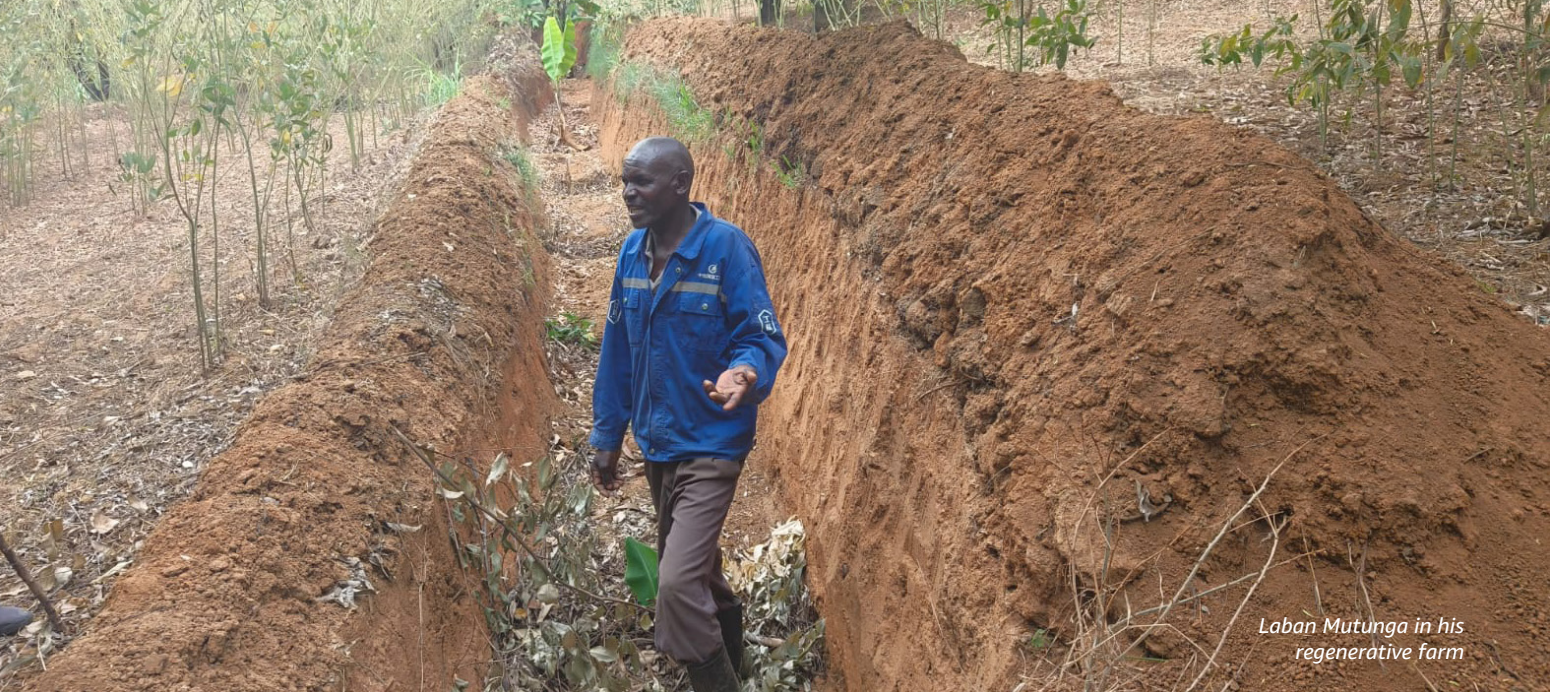

Laban Mutunga in his regenerative farm

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Growers Group. "What drew me to working with Halisi Gro and Zawiri Foods is their value chain approach that avails farm inputs, including seedlings, post-harvest bags, extension services, and linkage to markets," he says.

Mutisya was selected for the program because he has a water pan into which he harvests water that can last him all year-round. He underwent training on herb production for three months, and bought 70 plants of lemon grass, to start with. "The advantage of growing lemon grass is that in the first season, it takes 3 months to harvest, and on harvesting, more seedlings spring up. Following the first harvest, consequent harvesting is done monthly, creating regular income, at an increasing rate," he says. Nzivo explains that the lifespan of lemon grass, once planted, is 3 years. Since he started producing herbs, Mutisya has harvested the grass four times. On an eighth of an acre, he now has 800 lemon grass plants.

"The first season, I harvested 5 Kg, the second season, 11.5 Kg, the third season 23.5 Kg, and the fourth season, 30 Kg," he says, further explaining that once the plant is cut, more sprout, continuously increasing yield per season.

Once the lemon grass is harvested, Zawiri Foods team comes to pick the produce from the farm. "I sell the lemon grass at Ksh100 per kilogramme. Last season I made Ksh3,000, and next month I am targeting to harvest 50-75 Kg of lemon grass," he says.

With the growing income, Mutisya is motivated to increase the number of plants mainly because all that is required for a good yield is watering the plants regularly. "Whenever I encounter a challenge, I communicate with Halisi Gro officer, who comes to offer agronomical advice," he says. He is currently growing seedlings for additional perennial herbs including chilies, oregano and sage.

"With sustained market, these short-term crops are ideal as they offer guaranteed income on a monthly basis, which goes into paying school fees and catering for other household needs."

The Kyambuu Self-Help Group, comprising 16 farmers in Makueni County, has successfully integrated regenerative farming practices into its operations. They have been trained in these techniques and now grow a diverse range of crops, incorporating herbs, particularly lemon grass, for sale at the market. . "We are lucky to be among those supported by Halisi Gro in the adoption of regenerative agriculture," says Laban Mutunga, the chairperson of the group. Since we began this farming method, Halisi Gro has been instrumental in connecting us with biopesticides. The lead farmer of the group is the custodian of commonly used biopesticides and post-harvest bags, which are key in ensuring we remain faithful to growing crops organically," he says. Before this intervention we used to apply chemicals to manage pests, and preserve farm produce post-harvest. But now, we have safe products within our reach, and in affordable prices," he says.

The group is passionate about regenerative farming, having been trained on how to make compost manure, bokashi, and plant tea, fertilizers that they use in place of synthetic fertilizers. "Eight members are committed to the course, and each has registered for services with Halisi Gro, with Ksh 200 to show commitment." All eight registered members have dug swales to harvest water runoff during the rainy season, and established smile berms and planting pits, on which they grow diverse crops. Mutunga, the group leader, exemplifies what regenerative agriculture can achieve. "Growing crops using these technologies has proven to be highly effective as we only dig the swales, smile berms, and planting pits once. After harvesting, they remain, and to enrich the soil, crop residue from mulch, cover crop, and stalks is left to decompose, in readiness for planting the following season," he says. In the first season after adopting regenerative farming on a quarter-acre piece of land, Mutunga harvested 135 Kgs of beans and 180 Kgs of maize. From the same piece of land, he harvested tomatoes worth Ksh18,000 and cabbage worth Ksh12,000.

Eight members are committed to the course, and each has registered for services with Halisi Gro, with Ksh 200 to show commitment

All members of the Kyambuu Self Help Group are linked with Zawiri Foods and have a seedbed of herbs which they are multiplying for sharing amongst themselves. On average, each member has 200 plants of lemon grass, which will multiply progressively.

Zawiri Foods is collaborating with 40 farmers in herb production and marketing in Makueni County, targeting those who have already established water harvesting and conservation practices, as water is a key factor in herb production. After being taken from the farm, the herbs are solar-dried and sold to manufacturers such as spice industries and large-scale buyers, including supermarkets and restaurants.

The many opportunities presented by this initiative in improving livelihoods in Makueni County demonstrate that with the proper knowledge and linkage to essential services, farmers can maximize benefits from their farms.

ENTREPRENEURSHIP

Continuous learning thrusts farmer ahead with multiple income streams

By Caroline Mwendwa

Violet Kageha, a farmer from Butsotso South, Kakamega County, has demonstrated that knowledge is the key to the difference between wealth and poverty. Her quest for knowledge led her to Biovision Africa Trust's extension officer for Kakamega County, Pamela Otieno, who introduced her to The Organic Farmer Magazine and the vast possibilities that lie in the practice of agroecology.

A walk through her farm is more like an excursion, as beautiful features of aesthetically made mandalas, and cone gardens stand tall, with layered green leafy vegetables. Beneath the curated trees planted along the slopy landscape are heaps of well-composted manure, which support her farming all year round. "I was trained on how to do proper composting using dry matter from dry plant refuse, green leaves, especially the phosphorous-laden tithonia, cow dung, and ashes, in layers, to produce highly nutritious compost manure," she says.

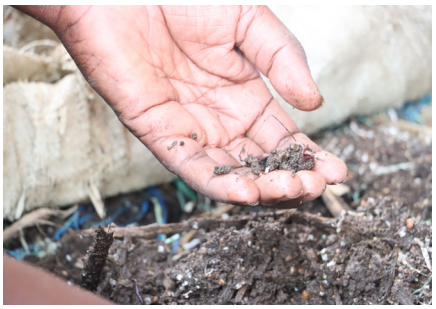
The efficacy of this technology is proven by the vibrance of the vegetables in her highly diversified kitchen garden. From the vegetables and cereals, she conducts seed banking by storing the seeds of the indigenous crops safely in tightly closed glass bottles, which she sells to farmers locally, and uses the rest on her farm.

Further down the farm is a large fish pond with a capacity of 1600 fish. From the fish enterprise, Violet makes on average Ksh 60,000 per harvesting season, as she harvests the fish at 2- 3 months of age.

"Fish market is readily available. Every time I inform my neighbors that I will be harvesting fish, they flock to my homestead to buy, and not one remains. This is because there are few farmers in this region rearing fish," she says. She sells one kilogramme of fish at Ksh 300. Violet further explains that the main cost of production in fish rearing is feed and the purchase of fingerlings. She buys pellets and supplements with edible weeds for fish that she has grown just beside the pond. Having learned about Azolla farming as a source of protein for livestock, she is currently growing azolla, and this will significantly reduce the cost of feeds.

For Violet, being informed about new technologies has saved her huge costs and made her farming experience highly rewarding. As she keeps poultry, just behind her homestead, she rears vermiworms as chicken feed, a technology she learned from TOF Magazine and set up successfully. She harvests vermijuice from the worms to use as foliar fertilizer on her vegetable garden, a practice she says keeps vegetables healthy. "I have discovered that poultry feed can easily be made at home. I feed my chicken with vermiworms and azolla," she says, adding that she is in the process of installing a black soldier fly unit, which will be another source of feed for the poultry.

Violet Kageha showcases her solar drier, which she uses to dry vegetables and sweet potatoes for value addition



Violet's enterprising spirit does not end here. Three dairy cows liven her homestead. Having read about Super Napier grass from TOF Magazine, she has planted this highly nutritious grass to feed the cows, and multiplies seeds for nearby farmers, a business that she says has boosted her income over time. Dung from the three cows feed into a biodigester, which she installed to produce biogas and biofertilizer.

The distinct savory taste of mandazi made from sweet potato flower makes them highly marketable, as there is no added sugar in them, making them a preferable choice, especially for the health-conscious consumers

Value addition

Having learnt value addition for higher profits, Violet has a solar dryer, which she uses to dry sweet potatoes and vegetables. From sweet potatoes, she makes her own flour, which she fortifies with wheat to make pastries such as mandazi. She sells some of the flour. "The distinct savory taste of mandazi made from sweet potato flower makes them highly marketable, as there is no added sugar in them, making them a preferable choice, especially for the health-conscious consumers," she says.

The dried vegetables, on the other hand, are a smart way to conserve vegetables. When vegetables are scarce, families rely on these dried vegetables, as they have a longer shelf life and their nutrients are not affected by drying. "Once dipped in cold water, the dried vegetables return to their original state, fresh and easy to cook, and the taste is not distinguishable," she says. Dried vegetables are gaining popularity among consumers, particularly in urban areas.

Conclusion

Knowledge has transformed the life of this small-scale farmer, and her willingness to try out new ideas has led her to income-generating activities and cost-cutting methods in farming. "I am constantly training interested farmers on how to innovatively make use of what they have to make money," she says.

AGROECOLOGY

Beatrice Nabwire unravels the potential of agroecology in Busia with immense benefits

By Erdly Agona

Beatrice Nabwire, a small-scale farmer from Khuhungu village in Matayos Subcounty, Busia County, practices organic farming and relies on indigenous knowledge to grow crops and raise poultry. Embracing the agroecological principle of diversity, her farm flourishes with vegetables, maize, and sorghum, alongside cows, hens, and a pig.

Her transformation began in 2023 after attending training sessions offered by Biovision Africa Trust (BvAT). Driven by the desire to overcome poor yields, avoid harmful chemicals, improve her family's well-being, and restore her soil health, she embraced organic techniques such as Bokashi fertilizer, natural pest control, and herbal remedies for poultry.

Before joining the agroecology trainings through her group at Singi CBO, Beatrice practiced conventional farming and often struggled with low yields. Curious and hopeful, she decided to give the training a try, and everything changed. "When they taught us in the groups, I would go back to my farm and try a small demo to see if it worked before applying it to the rest of my farm," she recalls.

Her first breakthrough came with Bokashi fertilizer, an organic manure made from natural farm inputs. "A field officer from Biovision Africa Trust taught us how to make Bokashi, and when I used it on my vegetables, I saw results I never expected. The soil improved, and my harvest tripled," she explains. "I now use Bokashi throughout my farm from planting to topdressing. Even the texture of the soil has changed; it's softer, more fertile, and farming is easier."

Her poultry journey is equally inspiring. Equipped with knowledge from Biovision's trainings and community seminars, she began preparing her own indigenous herbal remedies. "I mix moringa leaves, aloe vera, mango leaves, guava leaves, and other herbs into a natural tonic for my chickens. I give this to them every week. It keeps them healthy, and I no longer worry about diseases," she says.

Beatrice also learned to make nutritious chicken feed using maize, roasted soya, and omena from Lake Victoria. "I know exactly what my chickens eat, and I'm confident the meat and eggs are safe," she adds. Starting with just a few chickens, she expanded her flock, sold some for profit, and even managed to cover her daughters' school fees.

The training has also strengthened her group's unity. "Our group now meets every Wednesday at 10:00 AM at a member's home to make Bokashi fertilizer," she explains. "We rotate farm visits, and when it's a member's turn to host, he/she prepares the materials, and we come together to make Bokashi as a group. No one in our group is idle. Everyone is farming, and every household has a vegetable garden."

Beatrice's farm is now more than a source of income, it's the foundation of her family's wellness. "I no longer buy vegetables. Biovision Africa Trust provided us with indigenous vegetable seeds, and we were encouraged to multiply and share them with our neighbors. Now my family eats what we grow. It's safe and nutritious," she says proudly.

Despite her success, Beatrice acknowledges the challenges that organic farmers face, particularly in gaining market acceptance. "Many buyers don't understand the value of organic produce," she notes. She hopes that organizations like Biovision Africa Trust and its partners, such as the Swedish Society for Nature Conservation (SSNC), will help create better marketing strategies, packaging, and consumer education to promote organic products.

For Beatrice, agroecology has been life changing. From poor yields and chemical dependence to a thriving, chemical-free farm and a healthier family, her story is proof that organic farming is not just a method, it's a movement for better livelihoods and a healthier planet.

We rotate farm visits, and when it's a member's turn to host, he/she prepares the materials, and we come together to make Bokashi as a group. No one in our group is idle. Everyone is farming, and every household has a vegetable garden

INGO CHAMPS

Ingo Agrichamps Youth Group seizes a multimillion-shilling opportunity in fodder production

Youths in Kakamega demonstrate the power of vision and grit

By Dorothy Makayoto

In the heart of Western Kenya, a group of young agripreneurs is transforming the landscape of livestock farming. The Ingo Agrichamps Youth Association, formed in December 2022 and mobilized by Leaf CBO, has rapidly become a beacon of sustainable fodder production, empowering youth and revitalizing dairy farming in Kakamega County. Before Ingo Agrichamps stepped in, livestock farmers in Kakamega faced significant hurdles. They struggled with inadequate access to high-quality hay, which directly led to low milk production. Dairy cooperatives also struggled with an unreliable hay supply and difficulty in making bulk purchases.

The Journey: From Vision to 25 Acres

Ingo Agrichamps' fodder production initiative officially began in 2023. Their initial vision was clear: to fill the gap in hay production and empower young farmers.

A key to their success has been strategic land access. With support from FAO, they initially leased 3 acres at Bukura Agricultural Training Centre (ATC) in 2023 for hay production. Witnessing the profitability, the group expanded by partnering with the Agricultural Society of Kenya (ASK), Kakamega Branch, to lease an additional 7 acres of public land, bringing the total to 10 acres. These initial lease agreements (2023–2025) were successfully renewed in January 2025 for a further five years, securing public land access until 2030. Encouraged by this success, youth groups and individual members have also begun leasing private land, acquiring around 15 acres independently. As of June 2025, Ingo Agrichamps manages approximately 25 acres under fodder production, with ambitious plans to expand to 50 acres by the end of 2027.

The association primarily cultivates Boma Rhodes hay, a variety they learned about through the Livestock Feeds Commercialization project by FAO. Looking ahead, they plan to diversify into other fodder varieties like PakChong 1 Super Napier, and intercrop with Desmodium. They currently achieve three harvests per acre per year.

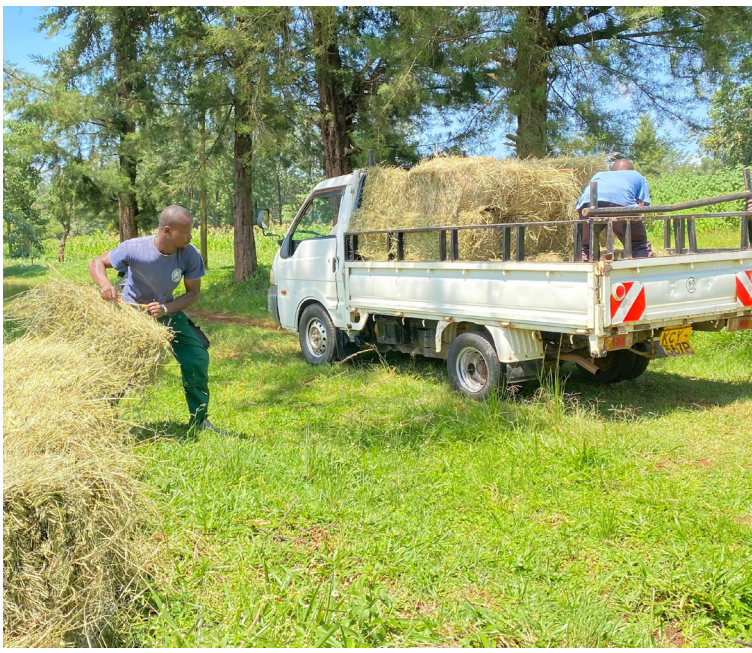
Quantifiable Impact and Empowerment

Ingo Agrichamps has made a significant impact on both the economic and social well-being of its members and the wider community:

Youth Empowerment: The association currently engages more than 150 youths through its eight member groups, not only in the dairy value chain, but also in other value chains in aquaculture, horticulture, and climate conservation activities.

Market Access: Their main buyers include individual dairy farmers, dairy cooperatives, and the Kakamega Dairy Development Corporation. They utilize direct farm delivery to ensure high-quality hay and build strong customer relationships. Their future plans include diversifying and increasing their market base beyond Kakamega County.

Community Impact: Ingo Agrichamps plays a crucial role in increasing milk production throughout Kakamega County by providing essential feedstock—high-quality hay. For dairy cooperatives, they aim to be a dependable source of high-quality hay, and for the Kakamega Dairy Development Corporation, a reliable, large-scale supplier.



Financial Highlights (2023–2025)

To date, the Ingo Agrichamps Youth Association has demonstrated strong financial growth and sustainability:

Production Revenue: From 25 acres, producing three hay harvests annually, the association has generated over Ksh 4.8 million in gross sales between 2023 and 2025.

Cost of Production: The average annual production cost per acre (including land lease, seeds, labour, and baling) stands at approximately Ksh 126,000, with costs mitigated through composting and leasing public land.

Net Income: The group has recorded an estimated Ksh 2,280,000 in net income over the past two years, which has been reinvested in land lease renewals and operational expansion. Youth Income Impact: Each of the youths engaged in the project earns an average of Ksh 52,200 per season, with some generating even more through group-based leasing models.

Planned Investments: The association plans to invest Ksh 1.5 Million and Ksh 800,000 by 2027 in acquiring a tractor-driven baler and constructing a hay storage barn to reduce post-harvest losses and improve efficiency. It also intends to invest Ksh 3 million by 2030 in acquiring a tractor for the baler.

Overcoming Challenges and Looking Ahead

Despite their remarkable success, Ingo Agrichamps has faced some hurdles. They currently rely on hiring balers from neighboring counties due to a lack of effective local baling services, which creates vulnerability and can inflate production costs. High input costs and limited access to credit for youth also serve as barriers.

To address these challenges, they have strategically secured public land leases and are building networks for future equipment acquisition and hay storage.

With plans to expand to 50 acres by the end of 2027, diversify their fodder varieties, and engage 500 youths in fodder production, Ingo Agrichamps Youth Association is not just growing hay; they are cultivating a sustainable future for agriculture and empowering a new generation of farmers in Kakamega County.

Dorothy Makayoto is the chairperson of Ingo Agrichamps Youth Group. Email: dorothymakayoto@gmail.com

TOF Radio

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

APICULTURE

Stingless bees: Tiny insects with big potential

By Erdly Agona

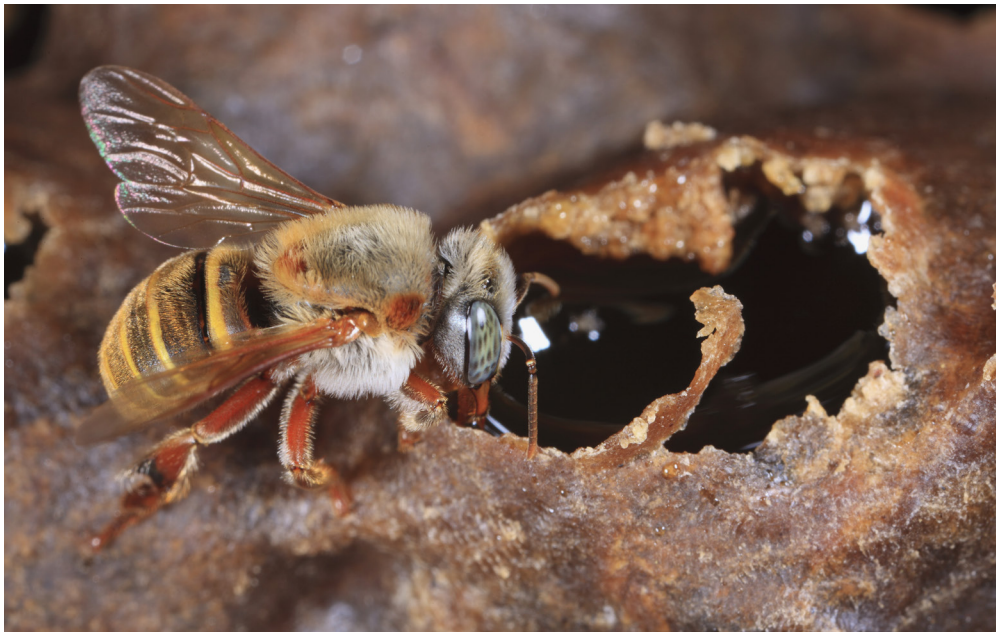
Bees are often feared for their painful stings. Some farmers refrain from keeping bees for fear of causing conflict with their neighbours. However, various species of stingless bees offer a different experience. Unlike bees with stingers, these stingless bees are harmless and safe to handle, even around children. Their docile nature makes them suitable for families and smallholder farmers who can keep them near their homes without concern.

Stingless bees are highly valued not only for their gentle nature but also for their significant roles in pollination and the production of medicinal honey. Stingless bee honey is highly prized for its distinctive taste and healing properties, despite being produced in smaller quantities than common honey. Furthermore, these bees are efficient pollinators; research indicates that just two hives per hectare can increase crop yields by up to 20 percent.

"Stingless bees, as the name suggests, don't sting. They are fascinating insects that produce medicinal honey that is uniquely tasty and can help in treating ailments." says Dr. Sevgan Subramanian, Head of Environmental Health at icipe.

In parts of Kakamega and Taita, farmers trained by icipe are already keeping these bees near their homes. They are also easier to manage than other species. "A simple mixture of sugar and water is enough to sustain them during dry seasons," explains Dr. Nelly Ndungu, a scientist based in icipe.

However, stingless bees face significant threats, including the use of pesticides on nearby farms, which can be deadly to colonies. In 2017, one farmer experienced substantial losses after placing his apiary near a maize plantation that was sprayed with herbicides. According to icipe researcher, Dr. Beatrice Ngaso, even low levels of pesticide residue can be harmful enough to cause bee deaths. To mitigate this, farmers are now being trained to spray crops in the evening, when bees are less active, allowing the pesticide residues to degrade overnight.



Another challenge lies in the unique properties of their honey. With higher moisture content than common honey, it is more liquid and ferments quickly. To address this, scientists at icipe are developing improved hive management, extraction, and processing techniques to extend shelf life and enhance marketability.

Stingless bees, as the name suggests, don't sting. They are fascinating insects that produce medicinal honey that is uniquely tasty and can help in treating ailments

But perhaps the most significant barrier is the market itself. While common honey has established standards, stingless bee honey and its by-products, such as wax and propolis, do not.

"For a product to come to the market, there must be clear standards. Right now, stingless bee honey lacks them," emphasizes Dr. Subramanian. Without such frameworks, farmers can only sell informally within their villages, limiting their income.

For stingless beekeeping to truly thrive, developing regulatory standards and formal markets is crucial. With stronger frameworks, farmers could access broader markets, increase incomes, and tap into the full potential of these gentle yet powerful pollinators.

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