

SUSTAINABLE COFFEE PRODUCTION IN KANUNGU, UGANDA

HOW TO PRODUCE COFFEE IN AN ENVIRONMENTALLY SUSTAINABLE WAY:

Maintain good soil fertility

- Look to establish farming systems of mixed crop species.
- Where possible, and if it isn't used for any specific alternate activity (ie livestock feed), return non-harmful organic material from the farm to the field, either directly or after processing (ie compost).
- Prevent erosion, as well as the deterioration of the soil, through;
 - mechanical control eg use of terraces, erosion barriers, rain basins etc
 - biological control eg maintaining vegetative cover all year long through inter-cropping with nitrogen binding legumes or through mulching.
- Use organic and inorganic fertiliser to manage and improve soil fertility.
 - One 20-litre basin of decomposed manure (from cow dung, chicken litter, household waste or compost) should be added to the soil when planting if available.
 - 3 – 5 kg of manure should be placed around existing trees per year. Do not heap manure between the trees.
 - Before using inorganic fertiliser determine the amount required by conducting soil and leaf analysis, and consider yield expectations. Only apply inorganic fertiliser if it is economically viable.
 - If using inorganic fertiliser apply it around the tree within the rooting zone at the beginning of rainy seasons.
 - A standard inorganic fertiliser recommendation for trees that are up to two years old is to apply 75g of NPK (17-17-17) inorganic fertiliser per tree per rainy season. For trees that are more than two years old, apply 250g of NPK per tree per rainy season for Robusta coffee trees and 200g of NPK per tree per rainy season for Arabica coffee trees.
 - If possible, seek specialist advice on inorganic fertiliser use from local extension officers.



Sustainably produced coffee is grown in a way that conserves nature and provides a good livelihood for the people who grow and process it. Unsustainable coffee production contributes to deforestation, water contamination and the exploitation of workers. In order to maximise profits – both this year and in the future, coffee farmers need to work in a way that is:

- Environmentally sustainable
- Economically sustainable
- Socially sustainable

By following this guide, and working in a sustainable way, you can continue to generate good yields of high-quality coffee that fetch a good price for many generations to come.



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KANUNGU'S HIGH ALTITUDE AND TROPICAL CLIMATE PROVIDE THE PERFECT CONDITIONS FOR COFFEE PRODUCTION



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Integrated Pest Management (IPM)

Create favourable conditions for natural enemies of frequent pests and diseases of coffee plants. This can be achieved by planting intercrops or shade trees that will harbour natural enemies, as well as avoiding the use of broad spectrum insecticides that kill natural enemies. Examples of natural enemies include spiders (ie wolf spiders and Lynx spiders) that prey on most insects, Tachinid flies that attack adult caterpillars, Braconid wasps that feed on caterpillars, wasps, beetles, flies and aphids etc.

Avoid planting shade trees that host black twig borers. These borers can devastate Robusta harvests. Trees that host black twig borers include Markhamia spp, umbrella tree (*Measopsis emini*) and silk tree (*Albizia chinensis*). Instead, plant varieties of shade trees like Grevillea spp, Ficus spp and Cordia spp in your coffee garden as black twig borers don't live in these trees.

If the use of agrochemicals is necessary, use them in a manner that is sensitive to the environment, selective and least toxic to other inhabitants. Use selective chemicals to manage specific weeds, pests or disease causing organisms. Avoid using broad spectrum chemicals.

Only use agrochemicals approved by the Uganda Coffee Development Authority (UCDA) and DO NOT used banned agrochemicals. Examples of UCDA recommended agrochemicals include chlorpyrifos (ie Dursban), which controls Root Mealy Bugs; White stem borers and Aphids. Imidacloprid

(ie Imax) mixed with Tebucozanole (Orius) controls Black Twig Borers. Cypermethrin controls Antestia bugs. Copper (ie Nordox 75%) is useful for controlling Coffee Berry Disease.

Your cooperative, off-taker or local extension officer should be able to advise you further on a full list of approved and banned agrochemicals. Remember, agrochemicals can be harmful to you, your workers, the environment and your coffee. Always follow the label and apply at the recommended rates, using appropriate application methods and use personal protective equipment where recommended.

Water usage and wastewater management

Minimise the volume of water used to irrigate plantations through proper techniques that direct water efficiently to the plants eg drip irrigation.

Collect run-off water in trenches or ponds for soil moisture retention.

Reduce the volume of water used in wet processing of coffee via the application of efficient technologies (ie based on machinery production capacities) and recycling of water.

Take active steps not to pollute local water sources – they belong to everyone. If you wash your coffee in the river, you are spoiling the water for you and for your neighbours downstream. Wash your coffee in a container away from the water source. Dispose of the waste carefully so it doesn't run back into the water source.

Use agrochemicals away from water sources, and do not wash application equipment (ie sprayers) or agrochemical containers in the river.

Plant, maintain or restore buffer zones adjacent to waterways, preferably with native species such as elephant grass (*Pennisetum purpureum*).

Waste management

It's important to separate organic and inorganic waste – organic waste can be used to make compost and improve the health of your soil.

If agrochemicals have been used on your farm, do not use the containers for storage of other materials as they can contain residues and poison the contents. Make holes in the bottom of empty containers to stop re-use.

Climate change adaption and prevention

Climate change is the change of the Earth's ecosystems due to an increase in the global temperature. The effects of climate change include prolonged droughts, hailstorms, landslides, floods, thunderstorms and unreliable rainfall, which can disrupt agricultural productivity.

To adapt to climate change, apply good agricultural practices that help to minimise the effects of climate change. These include planting shade trees, mulching, irrigation, use of manure and inorganic fertilisers, integrated pest management, soil erosion control and use of cover crops.

You should always be informed on climate change trends for proper farm planning.

Use firewood only if it is unavoidable and comes from well-managed sources like shade trees, specific (fast growing) trees planted for this purpose or reforested areas, or from pruning residues.

Never use firewood from natural forests.

Plant multi-purpose trees for shade and fuel supply.

Use energy saving stoves and solar energy where possible.

Explore the possibility of biogas production from livestock manure and other source.

Avoid burning crop residues in the field as the fire may spread to your coffee and cause a loss of nutrients and living organisms.

Harvesting, processing and storing your coffee

Harvest cherries at the peak of maturity. Don't mix cherries picked from the ground with properly harvested ripe cherries.

Make sure that cherries are processed as soon as possible after harvesting, ideally on the same day.

Dry coffee cherries in a timely and proper mannerly. When drying coffee in the sun, use concrete patios, drying tables, tarpaulins or mats. Avoid re-wetting of dried coffee cherries by rain, dew or other kind of humidity.

Store coffee separately from chemical products or other substances posing potential threat to human health or contamination risks or threat to human health. Avoid contact of coffee with smoke. Make use of well-maintained facilities for green coffee processing and keep them clean.

Selling your coffee

Join a farmers' group, association or cooperative. By working together with other coffee farmers you can accumulate large volumes and sell directly to processors for the best prices.

Farmers' associations and cooperatives can link you to support services, help you access finance and help farmers bargain collectively to achieve a good price.

Try to develop long-term trading relationships with buyers.

Financial stability

Where possible, engage in multiple income generating activities on or off the farm. If you have many different income sources it helps to build resilience and you are less likely to be forced to sell your coffee at the farm gate at harvest time for immediate cash. You will be able to wait and sell in bulk for a higher price.

Join a VSLA or SACCO to save money and take out loans on fair terms. Often they can link farmers to jointly apply for farm loans from formal financial institutions.



Working conditions

Farm workers should be treated fairly and equally with no discrimination against gender or disability. All workers are important for your coffee farm (including family members and casual labourers) and should be treated with respect.

A fair rate of pay for the job should be agreed, and the workers should be promptly paid when the work is complete. If you don't pay your workers well, or on time, they may not be incentivised to do a good job. Keep a record of all payments made.

Reasonable working conditions such as clean drinking water, toilets and protective equipment should be provided. Daily working hours for workers should not exceed the maximum number of hours set by global certification standards (ie four to eight working hours per day).

Do not employ children of school age, or keep children out of school to work.

Training of workers

Train your labourers on sustainable production

practices and good agricultural practices. By training your workers to identify problems such as pests, diseases and plants with low vigour it can help increase yields.

Ensure that labourers know to and are comfortable informing management immediately if they suspect a problem.

Expanding your coffee garden

Consider the specifics of your piece of land – is it suitable for a coffee garden? Robusta grows well on deep, well drained and fertile loamy soils (rich in organic matter and potassium). Arabica grows well on deep, well drained, fertile and slightly acidic loamy soils of pH range 4.5 to 5.

Kanungu, Uganda has both highlands and lowlands.

Arabica can only be grown in the highlands, usually from 1,300 to 2,000m, whereas Robusta can be grown in the lowlands, from 900 – 1,000m. However the two species meet in Kanungu.

Kanungu is also endowed with diverse streams of water, rivers and impenetrable forest.

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Achieving a higher price for sustainably produced coffee

Record keeping is KEY: keep a record of the inputs and techniques used in your coffee garden.

Agrochemical application records are important and should show the different points in production where they have been used, the date, the purpose of application and the product and amount used.

Keep records showing all your expenditure on inputs and managing your coffee garden.

Keep farm sales/income records to see how much profit you are making! Keep farm activity records (land preparation, planting, weeding, mulching, fertiliser application, pruning, harvesting etc.) so that buyers can easily be shown the different sustainable production techniques that have been used.

Records provide proof of sustainably produced coffee and could be helpful when bargaining for a premium price with the buyer.

These are YOUR records – but you might need to share them if a buyer is willing to pay a price premium for sustainably produced coffee.

