The Fertiliser Replacement Kit

What Kenyan Farmers Can Do When Fertiliser Prices Rise

A Practical Guide to Manure, Nettle Tea and Foliar Alternatives

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Fertiliser prices are rising significantly. With the Middle East conflict disrupting the Strait of Hormuz, through which about one third of global seaborne fertiliser trade passes, urea prices rose nearly 47% in the first three weeks of the conflict alone. For Kenyan smallholders, where fertiliser already accounts for the largest single variable cost in growing staple crops, this creates a real and immediate problem. Maize alone uses more than 200kg of fertiliser per hectare in western Kenya's highlands.

The good news is that alternatives exist and Kenyan farmers have used them for generations. This guide covers the two most practical and accessible fertiliser replacements: properly aged manure and nettle tea. It also covers foliar feeding as a complementary approach. Used well, these can genuinely reduce dependence on inorganic fertiliser.

- *These alternatives work best as supplements or partial replacements, especially in the first one to two seasons as soil organic matter builds up. Plan to transition gradually rather than switching entirely in one season.*

Part 1: Manure

Manure is the most accessible and effective fertiliser alternative for most Kenyan smallholders. Cattle, goat, chicken and pig manure all have different nutrient profiles. The most important rule: manure must be aged or composted before use.

Why Manure Must Be Aged

Fresh manure contains high concentrations of ammonia nitrogen that can burn plant roots and damage seedlings. It also contains pathogens and weed seeds. Aged or composted manure has broken these down; it is stable, safe and more nutrient-rich in available plant form.

- *Apply aged manure at least 90 days before harvesting above-ground crops, and at least 120 days before harvesting root crops or leafy vegetables that touch the soil. If manure is properly hot-composted, it can be applied much sooner.*

How Long Does Manure Need to Age?

Stockpiled without management	3 to 4 months minimum in warm, moist conditions. Up to 12 months in dry or cold conditions. Slower and less reliable.

Actively composted (turned regularly)	6 to 8 weeks. Turning every 1 to 2 weeks introduces oxygen, speeds decomposition and kills pathogens through heat. Pile should reach 55 to 70 degrees Celsius internally.
Hot composting (managed temperature)	As little as 3 to 4 weeks if properly managed and maintained above 60 degrees Celsius for at least 3 consecutive days.
How to tell it is ready	Dark, crumbly and earthy-smelling. No longer heats up when turned. Germination test: plant radish seeds in the compost; if they sprout and thrive, it is ready.

Nutrient Content by Manure Type

Chicken manure	Highest nitrogen content of all livestock manures. Very hot; burns plants badly if applied fresh. Must be well composted. Recommended rate: 2 to 4 tonnes per acre per season.
Cattle manure	Lower nitrogen but excellent for building soil organic matter and improving water retention. Safer in larger quantities. Most widely available in Kenya. Recommended rate: 5 to 10 tonnes per acre per season.
Goat and rabbit manure	Pellet form breaks down faster and has slightly higher nutrient density than cattle. Can be applied fresh in lower quantities. Recommended rate: 2 to 5 tonnes per acre per season.
Pig manure	High nutrient content but requires careful composting due to pathogen risk. Recommended rate: 3 to 6 tonnes per acre.

How to Compost Manure

1. Mix manure with carbon-rich materials such as dry straw, maize stalks or dry leaves in a ratio of 1 part manure to 2 parts dry material. Carbon balances the nitrogen and prevents the pile from becoming compacted and smelly.
2. Build the pile in a shaded area away from water sources. Minimum pile size: 1 metre by 1 metre by 1 metre to retain enough heat.
3. Keep the pile moist but not waterlogged; like a wrung-out sponge. Water lightly during dry periods.
4. Turn the pile every 1 to 2 weeks with a fork or jembe, working the outside materials into the centre. This introduces oxygen and ensures even decomposition.
5. The pile will heat up significantly in the first few weeks. Temperatures above 55 degrees Celsius kill most pathogens and weed seeds.
6. After 6 to 8 weeks of active management, allow the pile to cool and cure for 2 to 3 more weeks before applying.
7. Apply finished compost at 3 to 5 tonnes per acre, incorporated into the top 15cm of soil before planting or as a top dressing around established plants.

> *If you have animals, start a compost pile now. With the current fertiliser price situation, finished compost in 6 to 8 weeks could save you significantly on input costs for the short rains season.*

Part 2: Nettle Tea

Stinging nettle, known as Thabai in Kikuyu or Chisa in Luo, is one of the most nutrient-dense plants in the Kenyan countryside and one of the most overlooked fertiliser sources. It grows wild in most moist, fertile areas of central and western Kenya.

Nettle tea is made by fermenting fresh nettle leaves in water. The result is a free, organic, liquid fertiliser that is particularly high in nitrogen, which drives leafy growth, as well as iron, potassium, calcium and magnesium. It can be used as a soil drench or a foliar spray.

What Nettle Tea Contains

Nitrogen	The primary nutrient for leafy growth. Makes nettle tea excellent for young seedlings and vegetative-stage crops such as maize, kale, spinach and cabbages.
Iron	Particularly useful for soils suffering from iron deficiency. A foliar application can green up yellowing plants within days.
Potassium	Supports root development and disease resistance.
Calcium and Magnesium	Support cell wall development and chlorophyll production.
Plant polyphenols	Boost plant immune systems with mild anti-bacterial and anti-fungal properties.
Limitation	Nettle tea is lower in phosphorus than manure. It works best as a nitrogen supplement, not a complete fertiliser replacement. Combine with aged manure for a more complete nutrient profile.

How to Make Nettle Tea

What you need: Fresh nettles, a large plastic bucket or barrel (not metal, as metal reacts with the acids in fermented tea), gloves, a stirring stick, water and a cloth or sieve for straining.

8. Wearing thick gloves, harvest young nettle leaves and stems before the plant flowers. Avoid plants near roads or areas that may have been sprayed.
9. Roughly chop or crush the nettles to break down the cell walls and speed up fermentation.
10. Fill the bucket or barrel approximately three-quarters full with chopped nettles.
11. Cover with water. Use rainwater if possible. If using tap water, let it sit for 24 hours to allow chlorine to evaporate, as chlorine slows fermentation.
12. Weigh the nettles down with a brick or stone to keep them submerged.
13. Cover loosely with a lid or cloth. Do not seal airtight as gases need to escape during fermentation.
14. Place the bucket in a warm, sunny spot but away from the house. After 48 hours it will smell strongly. This is normal and means fermentation is working.

15. Stir vigorously every 2 days to introduce oxygen. White foam forming on top is a good sign.
16. The tea is ready when it stops bubbling and has turned dark brown or green-brown. In warm Kenyan weather this takes approximately 14 days. In cooler highland areas, up to 3 weeks.
17. Strain out all plant material through a cloth or sieve. The remaining liquid is your nettle fertiliser concentrate. The pulp goes onto the compost heap.

How to Apply Nettle Tea

Soil drench (root feeding)	Dilute 1 part nettle tea to 10 parts water. Apply around the base of plants, not directly onto leaves. Apply in the early morning or late evening.
Foliar spray (leaf feeding)	Dilute 1 part nettle tea to 20 parts water. Strain very well first to avoid clogging the sprayer nozzle. Spray onto leaves in the evening. Plants absorb nutrients through their stomata and the effect is fast.
Frequency	Once every 2 weeks during the growing season. Increase to once a week for heavy feeders like maize and kale during peak vegetative growth.
Storage	Finished nettle tea concentrate can be stored in sealed containers for up to 6 months.
Do not use on	Tomatoes, peppers and roses, which are sensitive to the high iron levels. Also stop using on any plant once it begins to flower as high nitrogen at this stage produces abundant foliage but poor fruit or grain set.
Best for	Maize at vegetative stage, kale, spinach, cabbages, leeks, cucumbers, courgettes, young fruit trees and seedlings.

> *The used nettle pulp left after straining is an excellent compost activator. Add it directly to your compost pile to speed up decomposition.*

Part 3: Foliar Alternatives

Foliar feeding applies liquid nutrients directly to plant leaves. Plants absorb foliar nutrients through their stomata up to 10 times faster than through their roots, making it an excellent strategy when soil is depleted or when crops need a fast nutrient boost.

Nettle Tea Foliar Spray

As described above. Dilute 1:20 and spray in the evening. Best for nitrogen and iron deficiency. Works quickly and is free if you have access to wild nettles.

Wood Ash Solution

Wood ash is rich in potassium and calcium, which support root development, disease resistance and flowering. Dissolve 1 cup of clean wood ash in 20 litres of water. Allow to settle for 24 hours, then strain and use the liquid as a foliar spray. Apply once every 2 to 3 weeks. Do not use during drought stress as it can raise soil pH over time if applied excessively.

Compost Tea

Soak well-finished compost in water for 24 to 48 hours at a ratio of 1 part compost to 5 parts water, then strain and dilute 1:10 with water. Apply as a soil drench or foliar spray. Less potent than nettle tea but more balanced across nitrogen, phosphorus and potassium. Particularly useful for seedlings and transplants.

Manure Tea

Similar to compost tea. Soak aged (not fresh) manure in water, strain and dilute 1:10. A quick way to get liquid fertiliser to plants without waiting for full composting. Use only with well-aged manure as fresh manure tea can carry pathogens.

> *On commercial foliar products: Several KEPHIS-registered organic foliar fertilisers are available through Kenyan agrovets, including products based on fish meal, seaweed and humic acid. More expensive than homemade alternatives but reliable and consistent. Ask at your local agrovet for what is available.*

Quick Reference: Which Alternative for Which Situation?

Situation	Recommended Alternative
Maize at planting stage	Apply 5 tonnes per acre of aged cattle manure incorporated into the soil before planting.
Maize at vegetative stage	Apply nettle tea drench (1:10) every 2 weeks. Supplement with wood ash solution for potassium.
Kale or spinach in established bed	Nettle tea foliar spray (1:20) once a week. Top-dress with aged chicken manure.
Young seedlings showing yellowing	Nettle tea foliar spray (1:20). The iron content greens up yellow leaves very quickly.
Fruit trees between seasons	Apply 5 to 10kg of aged manure around the drip line. Mulch to conserve moisture.
Crops beginning to flower or fruit	Stop nitrogen sources. Switch to wood ash foliar spray to support fruiting.
Planning ahead	Build a compost pile now. 6 to 8 weeks of active composting gives you enough to apply for the next planting season.

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