DILULU FOUNDATION

GROWING GREENER COMMUNITIES ACROSS AFRICA

GARDENING GUIDE

Three-Bin Composting Systems

Build and run a multi-stage compost system for schools, community gardens and market farms — one bay filling, one cooking, one finishing.

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"Knowledge grows when it is shared."

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A three-bin composting system is the workhorse of community gardens, school grounds and market farms. Three connected bays let you work in stages — one bin filling, one bin cooking, one bin finishing — so there is always compost ready to use. For anyone managing large volumes of garden waste, a three-bin system is the most practical, durable and satisfying way to compost.

This guide covers building the bays, running the three-stage rhythm, managing the pile, and using the finished compost — with adaptations for every budget and climate.

Why Three Bins?

A single pile forces a choice: stop adding fresh material and wait for it to finish, or keep adding and never get finished compost. Three bays solve that problem with a simple assembly line.

The Three Stages

- **Bin 1 — Filling:** fresh material is layered in every day until the bay is full.
- **Bin 2 — Cooking:** the full bay is turned into the middle bin, where the hot phase does its work.
- **Bin 3 — Finishing:** the turned pile rests and matures into dark, crumbly compost while a new batch starts in Bin 1.

> *"One bin is a pile. Three bins are a factory."*

Building Your Bays

Bays can be built from almost anything durable: wooden pallets, planks, bricks, blocks, or wire mesh on timber frames. Each bay should hold about one cubic metre — large enough to heat, small enough to turn by hand.

Simple Pallet Bays

1. **Position:** level ground, partial shade, near a water point and the garden.
2. **Frame:** stand three pallets in a U shape and lash or screw them together; repeat twice beside the first bay to make three connected cells.
3. **Front:** leave the fourth side open, or fit a removable board front held by wooden runners so material is easy to fork out.
4. **Roof:** a simple cover of corrugated sheet or waterproof canvas keeps rain out while allowing air to flow.

Durable Block or Brick Bays

For permanent community sites, bays built from blocks or bricks with removable timber slats at the front will last for decades. Leave gaps between blocks for aeration, and set the base on compacted soil — never concrete — so worms and soil life can move up into the pile.

Running the Three-Stage Rhythm

1. **Fill Bin 1** with alternating layers of greens and browns (about one part greens to two parts browns), watering each layer lightly as you go.
2. **Cap the full bin** with a thick brown layer and let it sit for one to two weeks.
3. **Turn into Bin 2:** fork the whole pile across, mixing dry and wet patches; water if it feels like a wrung-out sponge.
4. **Let it cook:** the core should reach 55–70 °C within days. Turn again in one to two weeks.
5. **Finish in Bin 3:** after two to three turns, move the pile into the third bay to cure for a month.
6. **Harvest** the mature compost and start filling Bin 1 again.

Materials — the Green and Brown Balance

GREENS (NITROGEN)	BROWNS (CARBON)	KEEP OUT
Grass clippings, green weeds	Dry leaves, straw, maize stalks	Meat, fish, dairy, oils
Kitchen fruit and vegetable scraps	Cardboard, paper, egg cartons	Pet waste
Fresh herbivore manure	Prunings, twigs, sawdust	Diseased plants with seed heads
Spent garden plants	Corn cobs, husks, nutshells	Plastic, glass, metal

Moisture, Air and Turning

- **Squeeze test:** a handful from the core should feel like a wrung-out sponge — a few drops between the fingers.
- **Turn every one to two weeks** during the hot phase; each turn restores oxygen and remixes material.
- **Water in layers** while turning rather than flooding the top.
- **Coarse stalks and twigs** create natural air channels between turns.

Scaling for Schools and Communities

A three-bin system is the ideal backbone for a school or community composting programme: the stages give every visitor something to see, and the rotation gives every class a job — filling, turning, or harvesting. Add a fourth bay for storing finished compost and browns, and label the bays clearly so newcomers learn the rhythm instantly.

Troubleshooting

PROBLEM	LIKELY CAUSE	SOLUTION
Pile won't heat	Too small, too dry, too few greens	Fill to 1 m^3, water, add nitrogen-rich material
Rotten smell	Too wet and airless	Turn aggressively, add coarse browns
Ammonia smell	Too many greens	Mix in browns and turn
Flies	Food waste exposed	Bury scraps in the core, cap with browns
Dry fibrous centre	Not enough water or nitrogen	Turn and moisten in layers, add greens

When Is It Finished?

Compost is ready when it is dark, crumbly and sweet-smelling, the original materials are unrecognisable, and a finished pile no longer reheats after turning. A germination test — sowing fast seeds like beans or radish in a pot of the compost — confirms it is mature and safe for seedlings.

Using Your Compost

- **Beds:** work 2–5 cm into the top 15 cm of soil before planting.
- **Mulch:** spread a 3–5 cm layer around trees and shrubs.
- **Potting mix:** blend up to one third compost with soil and sand.
- **Compost tea:** the base of the liquid feeds described in our compost tea guide.

Frequently Asked Questions

Do I really need three bays?

No — two bays work well for small gardens: one filling, one finishing, turning in place. Three simply keeps the rhythm smoother when volumes are larger.

What does a system cost?

Four to six wooden pallets and some wire or screws make a complete three-bay system for almost nothing. Block-built bays cost more but last decades.

How much waste can it handle?

A standard three-bin system processes the garden and kitchen waste of a large household, a school, or a community garden — hundreds of kilograms per season.

Can I compost in the rainy season?

Yes — cover the bays, turn slightly more often, and keep the material moist but never soaked.

Glossary of Terms

- **Bay:** one cell of a multi-bin system.
- **Turning:** moving the pile to restore air and remix material.
- **Curing:** the final maturing stage in the third bay.
- **C:N ratio:** the balance of carbon-rich browns to nitrogen-rich greens.

Further Learning

Pair the three-bin system with our hot composting guide for the full science of the cooking phase, and the school composting guide to build a programme around your bays.