Backyard Raised Beds That Don't Fail

Build it right, fill it right, keep it producing for years to come

Who is this for?	What you'll get
Anyone building a raised bed, a backyard, a balcony, or a planting area, and wants it to last more than a season or two.	A step-by-step plan to size, build, and fill raised beds with the right materials, so you're not rebuilding or replacing soil every few years. Includes a free printable worksheet to calculate soil, compost, and amendment quantities, and a simple spreadsheet to track your harvests.

There is a shortage of raised bed construction plans. Most show the lumber, the screws, and a pile of potting mix. The trouble starts a year later. The soil has become packed down, the wood has rotted, and the bottom layer of drainage stone has been covered by weeds and buried grass. This guide covers the parts most builders skip.

MATERIAL NOTE

This guide is written for a tolerant substance. Planting schemes, soil temperature limits, and crop selection vary significantly by region. Use the information provided as a starting point and adjust for your local conditions, microclimate, and personal preferences. Consult local gardening resources, extension services, or experienced growers for region-specific advice and recommendations.

SECTION 1

LOCATION — THE MISTAKE THAT CANNOT BE UNDONE

Where you put the bed decides everything that follows. It sets the sizing and type of soil that will work in it and matter. We have four factors right: **Sun**

Six hours of direct sunlight is the minimum for fruiting crops (tomatoes, peppers, cucumbers, squash). Greens, herbs, and root crops manage in 4–5 hours, under 4 hours, leave ornamentals or grow in containers instead.

- Check the shade pattern at 9 am, noon, and 3 pm before you commit. A fence, a neighbour's garage, or a tree you forgot about can cost you a third of your harvest.
- Avoid the base of large trees. Roots will steal water and nutrients, and the shade is dense all day.
- Leave room to walk around the bed. If you have to step on the soil to reach the middle, you will compact it every time.

Water Access

The most common raised bed failure was too far from a hose. Carrying water in a watering can is a chore that becomes a chore and then a reason to skip days.

- Place the bed within reach of a hose, a tap, or a rainwater butt. Ideally all three.
- Consider a drip line or soaker hose from the start. Laying it before the bed is filled is easy. Laying it after is not.
- Avoid low spots where water pools. Wet feet and dry roots are a bad combination.

Drainage

Most beds drain well. Some don't. The difference is usually not the soil. It's whether the ground below them has a level sitting or clay. Use the level, or a long piece of timber and a spirit level, to check. If water sits for more than a few hours after rain, you have a drainage problem.

- Before you build, dig a 12" hole where the bed will be. Fill it with water. If it drains in an hour, you're fine. If it's still standing water after two hours, you need to improve drainage before you build.
- Raising the bed helps, but it doesn't solve a problem on its own. A raised bed on clay is a clay bed with a wooden frame around it.
- Improve the soil underneath the bed, not just the soil in the bed. Roots will go where the water is.

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Heart Cedar Cost Not Available. Cedar is a low-value tree. Every year it wastes the nutrient and moisture heart wood and compresses sapwood into rot. Energy, chemicals, and labour are then spent to fight the rot. Cedar is the only wood that is left to rot with the fruit it grows.

SECTION 2

BED DIMENSIONS + MATERIALS

Dimensions That Work Under Any Actually Work

The standard 4'×8' bed is standard for a reason: a person can reach the middle of it from either side without stepping on it. The moment you step into a bed, you compact the soil you've just spent an hour loosening.

DIMENSION	BEST FOR	NOTES	TRADE-OFF
4×4 square	Small yards, herbs, beginners	Accessible from all sides; fits 16 crop groups.	Beds fill quickly. Easy to overplant.
4×8	Standard backyard	4 rigid halfs crop zones fit; 32 sq ft; widely available.	The workhorse. Build this if you have no reason not to.
4×12	Serious production	Same width, more space. Fits 48 crop groups.	Only if you'll maintain it properly.
2×8 (narrow)	Against a fence, tight spaces	Accessible from one side. Fits 16 crop groups.	Good for confined crops on a balcony.

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TIMBER NOTE If you're choosing between one large bed and two small beds for the same footprint, choose two. Separate beds mean better crop rotation, better soil maintenance, and the ability to change each bed's soil and fertility independently.

Materials: What to Buy, What to Avoid, and Why

MATERIAL	COST	LIFESPAN	SHADE SAFE?	SUMMER NOTES
Cedar (untreated)	$$ $$$	15–20 yrs	Yes	Best long-term value. Rises up in summer, requires interior bracing. Naturally resistant to rot and insects. Premium quality affects longevity.
Cedar (untreated)	$$	7–15 yrs	Yes	Cheaper choice. Natural oils resist rot and insects. Will last a few years. Can be used under if the cost is the issue.
Douglas fir (untreated)	$	4–8 yrs	Yes	Budget option. Works well. Replace sooner. Never use pressure-treated wood, either. Chemicals can leach into soil and impact soil microbiology.
Composite (recycled plastic / wood-plastic)	$$$	25+ yrs	Yes	Extremely durable, no rot. Expensive. Can get very hot in direct summer sun. Heavy.
Cinder block / concrete block	$	Permanent	Yes – with caveats	Durable and cheap. Fix salt in soil. Can leach alkalinity and water concentrate in the holes. Stable inside blocks, to fixed soil.
Galvanized stock tank (repurposed)	$$ $$	10–20 yrs	Yes	Popular for small spaces. Drill holes in the bottom for drainage. Can get hot – no holes = rust. Works well for greens and herbs.

WATER USE Cedar has very, excess transpiration barrier. Cedar's oil content repels, all retained in cedar, a moisture-resistant wood. There is a good reason the world's largest producers of it are Japanese and Italy. If you can find it, it is worth it. Don't use it as a "cheap" garden.

The Open-Bottom Principle

Raised beds are not pots. Their soil is connected to the soil below it by roots and by earthworms, so any landscape fabric or sheet underneath them blocks drainage and roots. Always open the bottom.

- Open-bottom beds drain better and keep roots healthier, especially in clay soil. Don't line the bottom with fabric. Put a layer of cardboard underneath to suppress weeds.
- Open-bottom beds are easier to move, to dig, and to amend. Closed-bottom beds are a permanent commitment.
- Exception: beds on hard surfaces (concrete, patios, decks) must be closed-bottom. Use a solid base and drill drainage holes every 6–8 inches.

Accessories That Actually Matter

A raised bed is a blank slate. Add a few things to make the experience better. Skip the rest.

- Hardware cloth (1/4" or 1/2" mesh) stapled inside the bottom of the bed keeps gophers, voles, and moles out. Worth it if you've ever watched a gopher eat a whole row of carrots overnight. Not worth it if you don't have rodents.
- Drip irrigation kit. Soaker hose or drip line on a timer. Water deeply and infrequently. Shallow daily watering trains roots to stay near the surface, where they dry out first.
- Soil thermometer. Tells you when soil is warm enough for seeds. Cheap and surprisingly useful.
- Row cover / insect netting. Lightweight fabric that lets in light and water but keeps cabbage moths, flea beetles, and cucumber beetles off young plants. Essential if you have pests. Unnecessary if you don't.
- Shade cloth (30–40%). Extends the season for cool-season crops in warm climates. Drapes over hoops in summer. Not needed in cool climates.
- Corner connectors / framing brackets. If using a modular system, keeps the corners square and the boards aligned.
- Thermometer (0°–40° C). Takes the guesswork out of planting time. Soil temperature matters more than air temperature. Cheap and worth it.

SECTION 3

SHEET MULCHING + THREE SOIL RECIPES

Sheet Mulching the Bare — Skip the Expensive Fill

The biggest DIY cost of raised beds is soil. Three recipes, depending on budget, time, and how much you already have. Each one is a starting point, not a rule. Adjust for what's available locally.

- Sheet mulching is the cheapest way to fill a bed. It's also the most forgiving. Layers rot down over a season or two, feeding the soil and building structure.
- Use cardboard and 12" of leaves (dry, shred or chop them). The lower feeds the fungi and worms that will break down the cardboard and the upper feeds the bacteria that will break down the leaves.
- Wet each layer as you go. Dry cardboard will wick moisture away from the soil below it. Wet it before it goes in.
- The cardboard suppresses weeds and grass completely within a few weeks. It will be gone by the end of the season. Don't worry about removing it.

TIMBER NOTE Sheet mulching is not a shortcut. It's the professional method. Commercial growers use it on their ground because it produces the best soil for the least money. Your raised bed is a small version of the same thing. Treat it with the same respect.

Three Soil Recipes at Three Budgets

Three soil recipes, three budgets. These are starting points. Be sure to test all items in commercial mulch garden uses to check for ingredients that may harm plants. Adjust for what's available locally and what you have on hand.

Recipe 1 — Bare (The Farmer's Blend)

Ingredient	Amount	Notes
Topsoil (from a garden centre)	40%	Buy by the cubic metre if ordering. Check for weeds.
Compost (bagged or bulk)	30%	Make extra from compost or purchase.
Coco coir or peat moss	20%	Helps retention without compaction and buffering.
Perlite or vermiculite	10%	Improves drainage and aeration. Wear a dust mask when mixing.

Recipe 2 — Good (The Farmer's Blend)

Ingredient	Amount	Notes
Topsoil (from a garden centre)	40%	Check for weeds and drainage. Improves structure.
Compost (bagged or bulk)	30%	Make extra from compost or purchase.
Coco coir or peat moss	20%	Helps retention without compaction and buffering.
Perlite or vermiculite	10%	Improves drainage and aeration. Wear a dust mask when mixing.

Cost per 4×8×12" bed: $120–$180. Time: 1–2 hours. Yield: 32 cubic feet.

Recipe 3 — Great (The Gardener's Dream)

Ingredient	Amount	Notes
Topsoil (from a garden centre)	40%	Check for weeds and drainage. Improves structure.
Compost (bagged or bulk)	30%	Make extra from compost or purchase.
Coco coir or peat moss	20%	Helps retention without compaction and buffering.
Perlite or vermiculite	10%	Improves drainage and aeration. Wear a dust mask when mixing.

Cost per 4×8×12" bed: $180–$250. Time: 1–2 hours. Yield: 32 cubic feet.

Recipe 4 — Better (The Standard Backyard Blend)

Ingredient	Amount	Notes
Topsoil (from a garden centre)	40%	Check for weeds and drainage. Improves structure.
Compost (bagged or bulk)	30%	Make extra from compost or purchase.
Coco coir or peat moss	20%	Helps retention without compaction and buffering.
Perlite or vermiculite	10%	Improves drainage and aeration. Wear a dust mask when mixing.

Cost per 4×8×12" bed: $120–$180. Time: 1–2 hours. Yield: 32 cubic feet.

Recipe 5 — Good (The Farmer's Blend)

Ingredient	Amount	Notes
Topsoil (from a garden centre)	40%	Check for weeds and drainage. Improves structure.
Compost (bagged or bulk)	30%	Make extra from compost or purchase.
Coco coir or peat moss	20%	Helps retention without compaction and buffering.
Perlite or vermiculite	10%	Improves drainage and aeration. Wear a dust mask when mixing.

Cost per 4×8×12" bed: $120–$180. Time: 1–2 hours. Yield: 32 cubic feet.

Recipe 6 — Better (The Standard Backyard Blend)

Ingredient	Amount	Notes
Topsoil (from a garden centre)	40%	Check for weeds and drainage. Improves structure.
Compost (bagged or bulk)	30%	Make extra from compost or purchase.
Coco coir or peat moss	20%	Helps retention without compaction and buffering.
Perlite or vermiculite	10%	Improves drainage and aeration. Wear a dust mask when mixing.

Cost per 4×8×12" bed: $180–$250. Time: 1–2 hours. Yield: 32 cubic feet.

Recipe 7 — Good (The Farmer's Blend)

Ingredient	Amount	Notes
Topsoil (from a garden centre)	40%	Check for weeds and drainage. Improves structure.
Compost (bagged or bulk)	30%	Make extra from compost or purchase.
Coco coir or peat moss	20%	Helps retention without compaction and buffering.
Perlite or vermiculite	10%	Improves drainage and aeration. Wear a dust mask when mixing.

Cost per 4×8×12" bed: $120–$180. Time: 1–2 hours. Yield: 32 cubic feet.

Recipe 8 — Better (The Standard Backyard Blend)

Ingredient	Amount	Notes
Topsoil (from a garden centre)	40%	Check for weeds and drainage. Improves structure.
Compost (bagged or bulk)	30%	Make extra from compost or purchase.
Coco coir or peat moss	20%	Helps retention without compaction and buffering.
Perlite or vermiculite	10%	Improves drainage and aeration. Wear a dust mask when mixing.

Cost per 4×8×12" bed: $180–$250. Time: 1–2 hours. Yield: 32 cubic feet.

Work Like a Raccoon Soak a processed wood chips in water overnight (ideally dry the soil on). Wood chips in the morning are excellent mulch. Wood has the soil fungi. Fungi is a critical nitrogen store at the top decomposer, meaning plants in direct competition for waters. Use finished compost only, because most of these materials need time to rot.

SECTION 4

DRIP IRRIGATION — AUTOMATE FROM DAY ONE

A raised bed's soil will dry faster, by more than any other garden. Drip irrigation is the only way to keep it consistent. It's not optional. It will also save you hours of labour.

- Lay the drip line on the soil surface, under the mulch. Burying it is unnecessary and makes it harder to find and repair.
- Run the line in a loop around the bed, with a branch line every 12" for dense crops.
- Add a timer. Watering at the same time every day is the single biggest improvement you can make to your garden.

The Case for Drip Over Overhead Watering

- It delivers water directly to the roots, not to the leaves, or the weeds.
- It wastes far less water to evaporation and runoff.
- It keeps foliage dry, which reduces fungal disease pressure dramatically.
- It can be run unattended for hours, or days, on a timer.

Drip Layout by Bed Count

SETUP	COMPONENTS	HOW RUN	LAYOUT NOTES
1 bed (4×8)	Timer + 1 mainline + 1 branch line + 1 emitter per plant	Kit + gal emitters per plant	Expandable drip lines covering the bed. Add more emitters as needed. Confirm per plant if from plants.
2 beds	Timer + manifold + 2 zone lines + emitters per bed	Same	Two zones, so each zone line from the manifold. Independent flow to each bed.
4+ beds	Timer + manifold + pressure regulator + filter + emitter lines	Adjust by zone	Add a filter and the front splash. Check for pressure loss in each bed. Adjust emitter rate by crop per bed.

- Set the timer to run at 05:00 (the coolest in the morning, before heat). This allows it to absorb before evaporation starts.
- Check emitters regularly. Clogged emitters are the most common failure. Flush the lines at the start of each season.
- Adjust run time by season. A cool-season bed may need 15 minutes once a day in summer it may need two hours 30 minutes every day.

TIMBER NOTE The cost drops dramatically if you build a network of beds instead of a single bed. A manifold system with 20 ft. of drip line from drought-tolerant drip is somewhat weeds costs you the whole season. This is not optional infrastructure.

SECTION 5

SUCCESSION PLANTING — GROW LIKE A FARMER IN A SMALL SPACE

Succession planting means planting a little at a time instead of all at once, so you're harvesting a little at a time instead of all at once. It's the single biggest change you can make to get more food from the same bed. It's also the most ignored.

How to Plan Your Bed in Zones

A 4×8 bed has enough room for roughly one tomato plant or two leafy crops, such as lettuce, or radishes. Plan your bed before you plant your first crop.

Zone	Succession Rule	Example Crops	Why It Works
Main Crops	Plant once, harvest once	Tomatoes, peppers, squash, beans	Occupies the bed for the full season.
Fast Crops	Every 2 weeks	Lettuce, radishes, spinach, herbs	Harvested in 3–4 weeks. Replant as you pull.
Cool Trail	Spring and autumn only	Peas, broad beans, kale, carrots	Can't tolerate the heat of summer. Plant around the main crops.

The Full Succession Calendar — 4×8' Bed

This calendar is organised by the month planting starts. Dates are relative to the last frost in your region's current season. The key point: the bed is never empty.

MONTH	MAIN CROP	WHAT TO PLANT NOW	SUCCESSION	CUT & COME AGAIN
Early Spring (just after last frost)	Start outdoor tomatoes, peppers, squash, beans	PLUG/PLANT: lettuce, radishes, spinach, herbs, peas, broad beans	Lettuce every 2 weeks	Succession greens every 2 weeks. Clear spent plants and replant immediately.
Late Spring (mid-May to mid-June)	Transplant tomatoes, peppers, cucumbers after last frost. Sow beans directly.	PLUG/PLANT: finishing crops. Start planning for heat-tolerant replacements.	Plant 1 small zone	Keeping crops go in. Trellis and support installed before planting, not after.
Summer (mid-June to mid-August)	Full trellising, watering, and feeding. Harvest begins.	PLUG/PLANT: heat-tolerant crops. Start fall planting indoors.	All zones	Don't wait for crops to finish before planting. Plant while they're still producing.
Late Summer (mid-August to mid-September)	Harvest peak. Begin clearing spent plants.	PLUG/PLANT: fall crops. Start seeds indoors.	Lettuce every 2 weeks	Pull summer greens that bolt or yellow. Replant immediately. Clean beds thoroughly.
Fall (post-Sept 15/21)	Transplant brassicas, kale, carrots, beets, spinach, herbs	PLUG/PLANT: frost-tolerant crops. Start overwintering crops.	All zones	This is the highest-yield succession period. Don't waste it.
Winter (Oct–Mar)	Cold-season crops producing. Harvest as needed. Plan next year's beds.	PLUG/PLANT: early crops for next season. Start transplant trays indoors.	Full bed	Cold-season crops need the months to yield winters. Plan your spring succession around productions.

BOUNDARY NOTE Planting and fruit if your growing seasons is nearly limited calendar that the development. The succession and season rule does not change. Only the dates do. Use your last frost date as your anchor point, and count forward and backward from there.

- When a crop is finished, don't leave the bed empty. Pull it, add compost, and plant something else the same day.
- Write a crop history. Each year, note what you planted, when, and how it performed. After three years, you'll have a better plan than any book can give you.
- Leave a few plants to flower and set seed. Pollinators will thank you, and you'll have free seeds for next season.

The Succession Rule Never Leave a Bed Empty

Every day a bed sits empty is a day of lost production. A home budget is every time the one day as the next transplant is ready within 14 weeks of the last harvest. Here's how to make that happen.

Succession Planting: One Bed, Two Rounds

SECTION 6

RAISED BED SLUMP — WHY BEDS FAIL IN YEAR TWO

Most raised beds look great in year one. By year two, the soil has settled, the edges have pulled away from the boards, and somewhere underneath, the bottom layer of drainage stone has been covered by weeds and buried grass. This is not bad luck. It is predictable. What you're in that has a solution to it.

What Actually Happens to Soil in a Raised Bed

Soil in a raised bed is not the same as soil in the ground. It is a managed system, and it behaves differently. Understanding the difference is the first step to keeping it productive.

- Settling. Soil compacts. Organic matter decomposes. Air pockets collapse. The bed will lose 2–4 inches of height in the first season. This is normal.
- Nutrient depletion. Plants remove nutrients every time they harvest. The soil is not a natural system, and it does not replenish itself.
- Salt buildup. Fertilisers, tap water, and even some composts leave salts behind. Over time, they concentrate in the soil and can burn roots.
- Drainage changes. The bottom of the bed can become compacted or clogged. The edges can pull away from the boards, creating gaps that dry out fast.

TIMBER TRANSITION You can not feeding the plants. You can feeding the soil biology that feeds the plants. The moment you stop thinking about soil as dirt and start thinking about it as a living system, everything else in this section makes sense.

The Annual Refresh — What to Add, How Much, and When

By the end of each season, the bed is missing nutrients. A simple refresh each spring restores it. A regular, more extensive flush every few years keeps it productive.

	Annual Refresh	Full Soil Refresh	Why	Skip If
Compost	2–3 inches, worked into the top 6 inches	4–6 inches, worked into the top 12 inches	Feeds soil biology, improves structure, holds moisture	Never skip.
Worm castings	1–2 inches, mixed in	2–3 inches, mixed in	Gentle, slow-release nutrients. Excellent for seedlings.	Never skip.
Balanced organic fertiliser	Per packet instructions	Per packet instructions	Replaces what the crops removed. Use a blend, not a single nutrient.	Soil is already rich and you're not growing heavy feeders.
Lime (for acidic soils)	Only if needed	Only if needed	Raises pH. Test first. Adding lime to soil that doesn't need it causes problems.	Soil is neutral or alkaline.
Gypsum (for clay soils)	Only if needed	Only if needed	Helps clay particles clump. Does not change pH.	Soil is sandy or loamy.
Mulch	Top dressing	Top dressing	Suppresses weeds, retains moisture, feeds soil as it breaks down.	Never skip.

COMPOST IS NOT OPTIONAL Every 3–5 years, empty the bed. Screen the soil through a 1/2" hardware cloth. Remove the rocks, roots, and anything that hasn't broken down. Refill with fresh soil, compost, and amendments. It's a weekend project, and it will add years to the bed's life.

The Nitrogen Trap — What Stalls Fresh Your Soil

One ingredient can cause a bed to collapse. Every compost ingredient needs nitrogen to break down. Carbon-rich materials actively bind it.

Carbon-Rich Materials	Nitrogen-Rich Materials	Ratio for Composting
Sawdust, wood chips, shavings	Grass clippings, fresh manure, kitchen scraps	Aim for roughly 30 parts carbon to 1 part nitrogen by volume.
Straw, dry leaves	Coffee grounds, green plant trimmings	Layer them in roughly equal thirds by volume.
Cardboard, paper	Vegetable peelings, weeds	Shred cardboard and paper before adding. Whole sheets take years.
Corn stalks, dry plant stems	Legume vines (peas, beans)	Chop stems into short pieces to speed decomposition.

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SECTION 7

COMPOST COLLABORATION — THE NEIGHBOURHOOD TIE-IN

A small bed can be fed entirely from your own kitchen and garden. A large one can't. Here's how to get the rest without buying bags of soil.

The Three-Household Compost Model

- Three households, three bins, one pile. Each household contributes kitchen scraps and yard waste to a shared pile.
- Rotate responsibility. One household turns the pile each week. The next household waters it if it's dry. The third household harvests finished compost.
- Everyone gets a share. Finished compost is shared between the three households in proportion to what each contributed. No one household has to produce it all.

Sourcing Compost on a Budget

- Ask your local council. Many councils collect garden waste and offer it free or cheaply to residents. Check your council's website or call the waste department.
- Community garden compost. Many community gardens have compost piles and welcome contributions and sometimes sell surplus.
- Local farms. Horse manure is excellent compost material. Ask before you collect — some farms charge, some don't.

My seed bulk log

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My annual refresh log

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