Raised Bed Soil Chart

How much soil a bed holds, how to mix Mel's Mix in that volume, and how deep it needs to be — with the one distinction that decides whether a 6-inch bed is fine or useless.

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01 Mel's Mix, in the volume you actually need

1/3
Blended compost
Several kinds mixed together. One compost source is the most common mistake.

1/3
Peat moss or coir
Loosen and dampen before measuring. A compressed bale is not a volume.

1/3
Coarse vermiculite
Coarse grade. Holds moisture, keeps the mix open.

Measured **by volume, not by weight**. The Square Foot Gardening Foundation, who formulated it, measures each part with a 5-gallon bucket rather than a scale — which also solves the compressed-bale problem, because you measure the material after it has been loosened.

$$\text{bed volume} = \text{length ft} \times \text{width ft} \times (\text{depth inches} \div 12)$$

$$\text{each component} = \text{bed volume} \div 3$$

02 Volume by bed size

Bed size	Sq ft	6 in deep cu ft	8 in deep cu ft	12 in deep cu ft
4 × 4 ft	16	**8.0**	10.7	16.0
4 × 8 ft	32	**16.0**	21.3	32.0
4 × 10 ft	40	**20.0**	26.7	40.0
4 × 12 ft	48	**24.0**	32.0	48.0
3 × 6 ft	18	**9.0**	12.0	18.0
3 × 8 ft	24	**12.0**	16.0	24.0
2 × 8 ft	16	**8.0**	10.7	16.0
1 × 8 ft	8	**4.0**	5.3	8.0

The 6-inch column is the one that matters for Mel's Mix. A 4×4×6 bed needs 8 cubic feet — the figure the Square Foot Gardening Foundation publishes, and the number this table is checked against. The 8 and 12 inch columns are for beds that will be filled to that full depth with mixed soil, which the Foundation advises against: *a deeper bed should be filled underneath with sand or topsoil and topped with 6 inches of Mix.*

WHY NO BAG COUNTS

Peat moss and vermiculite compress by different amounts depending on brand and how long they sat in the yard. There is no official conversion from a compressed bale to loose volume, so "you need 3 bales" would be a guess dressed up as a number. **Loosen the material first, then measure.**

One 5-gallon bucket holds about 0.67 cubic feet. For a 4×4×6 bed that is **12 buckets of each** of the three components.

03 How deep the bed needs to be

READ THIS BEFORE THE NUMBERS

There are two completely different questions hiding behind "how deep", and the answer differs by a factor of two depending on which one you are asking.

Open bottom — the bed sits on soil. Depth is how much improved soil the roots start in; they carry on into the ground below. A 6-inch frame over decent ground grows tomatoes.

Hard bottom — the bed sits on concrete, gravel or paving. Roots stop at the base, so the frame depth *is* the entire root zone.

What you are growing	On a hard surface	Open bottom	Source
Leafy greens, herbs, radish, strawberries, beans, peas, cucumbers	**8 in min**	6 in min	Univ. of Maryland Extension
Peppers, tomatoes, squash and pumpkins	**12–24 in**	8 in min	Univ. of Maryland Extension
Most crops, general range	**6–12 in**		Iowa State Extension; Alabama Coop. Extension

Maryland publishes the hard-surface figures as two crop groups rather than a per-crop list, and that grouping is reproduced here exactly. Iowa State and Alabama both give 6 to 12 inches as the working range for most plants. Leave another 1 to 2 inches of freeboard above the soil line for mulch.

04 Two things that decide success more than depth

Root crops care about looseness, not height

Carrots, parsnips and long radishes fork and stunt in compacted or stony soil even in a bed a foot deep. What they need is soil loosened to the full length of the root they are supposed to make, with stones screened out. The Square Foot Gardening Foundation names potatoes and carrots specifically as the two crops where they build the soil up beyond the standard 6 inches.

A deeper bed is not automatically a better bed

Filling a 12-inch bed with 12 inches of Mel's Mix costs roughly twice what the 6-inch version does, and the extra depth does not make tomatoes grow better in an open-bottom bed — the roots were going into the ground anyway. Spend the difference on the compost blend instead.

05 Sources

1. **Square Foot Gardening Foundation** — Mel's Mix ratio and resources, the 6-inch depth recommendation, the 8 cubic foot figure for a 4×4×6 bed, and the guidance to fill a deeper bed with sand or topsoil beneath 6 inches of Mix. squarefootgardening.org
2. **University of Maryland Extension** — *Soil to Fill Raised Beds*, giving minimum depths by crop group for beds on a hard surface, and noting that roots pass into native soil when the bottom is open. extension.umd.edu
3. **Iowa State University Extension** — *Creating Raised Bed Planters*, giving 6 to 12 inches as the range most plants need, with 1 to 2 inches of freeboard for mulch.
4. **Alabama Cooperative Extension System** — *Raised-Bed Gardening* (ANR-1345), giving 6 to 12 inches as ideal for drainage and root development.

Bed volumes are arithmetic from the dimensions shown and are reproducible. The 4×4×6 figure of 8 cubic feet matches the Foundation's published example. Depth figures are quoted from the named extension publications by crop group, not per crop: there is no USDA-equivalent standard table for raised bed depth, so no table of that precision is presented here. Volume is exact; depth is guidance.