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Vegetables

Raised Bed Gardening

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Advantages

Raised bed gardening offers gardeners the opportunity to increase production while decreasing garden area. Raised beds are especially helpful to gardeners with limited gardening space and those who have difficulty with fine-textured, clayey soils which do not dry early. Efforts to improve undesirable soils can be concentrated on growing areas only.

Raised beds drain and warm up earlier in the spring, which allows planting of cool season vegetables at recommended planting dates. Raised bed gardens can be entered soon after rains or irrigation without compacting soils. Water will penetrate better during heavy rains and there will be less danger of erosion.

Once they are built, raised beds are easy to prepare for planting and to care for throughout the growing season. Root crops grow longer and straighter in medium- to coarse-textured soils. Raised beds are well suited to a wide range of intensive gardening techniques such as row covers, trickle irrigation, intercropping, successive plantings, use of plant supports, compact varieties and mixtures of food and ornamental plantings. Their orderliness usually produces an extremely attractive and appealing appearance.

Disadvantages

Raised beds also have a few disadvantages. They make it difficult or impossible to use large, mechanical equipment. Their edges break down unless they are supported. They require time, labor and perhaps money to develop. They are not well suited to sprawling vegetables such as pumpkins and winter squash. The close spacings used in raised beds can promote plant diseases by reducing air circulation and allowing plants to remain moist longer. The most severe problem associated with raised beds, however, is drainage.

Rapid drainage is an advantage when a gardener is trying to plant early spring vegetables. It is a disadvantage during the summer when drought stress can quickly lead to reduced yield and quality and increased physiological disease such as blossom-end-rot. Sandy soils and very high beds are particularly susceptible to drying out. Use low beds and add organic matter to them to help retain moisture.

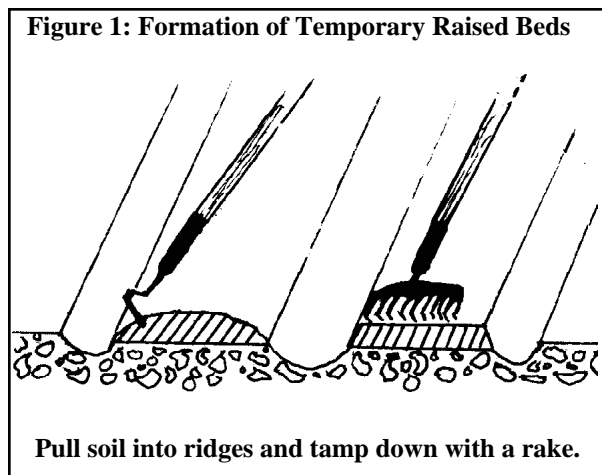
Apply mulches to the surface of the beds. Supplemental irrigation should also be considered essential when gardening on raised beds.



Developing Raised Beds

The simplest raised beds are temporary. They may be formed by raking or plowing freshly worked soil into ridges and away from aisles where one walks. Four- or 5-foot wide beds with 1 or 2 feet between beds are appropriate. Be sure that you can reach half way across each bed from one side to plant, weed and harvest. Make raised beds 4 to 8 inches high and any convenient length. Raised beds should never be walked on once they are formed. The absence of soil compaction in raised beds is one of their strongest advantages. Compost worked into the soil annually reduces soil crusting and enhances seedling emergence.

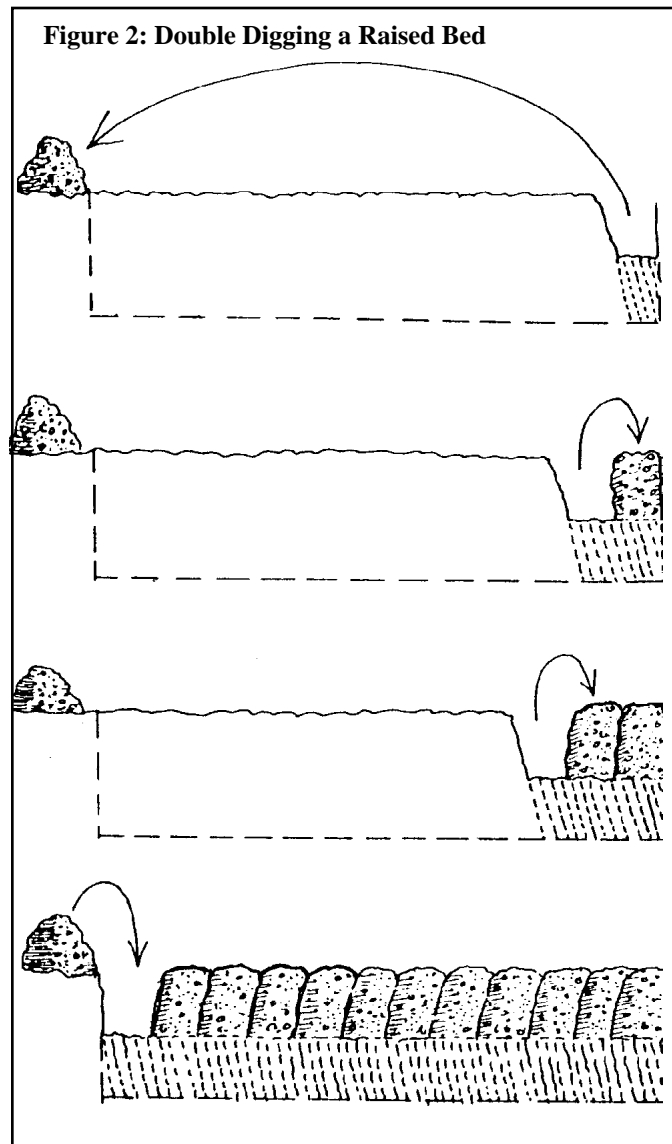
Flatten the top of temporary raised beds with a rake and they are ready to plant. Fertilizer, lime and organic matter are applied to the entire garden area before temporary raised beds are formed. These beds break down over the gardening season and must be reformed each year. Gardening with temporary raised beds is really not very different from traditional gardening. Formation of temporary raised beds is illustrated in figure 1.



Permanently raised beds make much better use of the advantages of raised beds. Begin to form permanently raised beds by marking off the desired area with stakes and twine. Fertilize, lime and cover the enclosed area with compost, shredded leaves or other organic material as desired. Work this material into the soil as deeply as possible using a spading fork or rototiller. Next, edge the beds. Raised beds may be edged with old lumber, landscape timbers, railroad ties, concrete blocks or whatever is convenient.

A combination of soil from the aisles, top soil, compost, sand, shredded leaves and other material may be added to fill the raised bed to the desired height.

Some gardeners form permanently raised beds using a system known as double digging. Double digging (figure 2) is a lot more work than the above system but assures that the raised bed will contain soft, enriched soil to a depth of nearly 2 feet.



Begin the double digging process by marking off the boundaries of the raised bed as described before. Use a spading fork to work the bed. Dig a trench 1 or 2 feet wide and one fork length deep across the end of the bed. Remove this soil to the far end of the bed. Apply fertilizer, lime and organic material to the trench. Using the

spading fork, loosen the soil in the bottom of the trench to the depth of the fork tines and work in the fertilizer, lime and organic material.

Now step back and dig another trench, placing the loosened soil on top of your previous trench. Again add what you wish, loosen the soil in the bottom of this trench and mix in the materials you have added. Continue to the end of the bed. Fill in the last trench with soil removed from the first trench. Edge the bed with the desired materials. The loosened soil will be several inches higher than the adjoining aisles. This double digging process is illustrated in figure 2. Never step in a raised bed after it has been double dug. The soil will settle gradually and beds will not need to be redug for one or even several years.

Using Raised Beds

Raised beds will have maximum efficiency if plants are spaced equidistant from each other rather than in rows. Plants should ideally just touch, forming a canopy over the soil when they are mature. One way to accomplish this spacing is to set plants a little farther apart than suggested spacings in the row and use the same distance between rows.

It may be more practical to plant two or three rows of vegetables such as bush beans

parallel to the bed length without worrying about equidistant spacings. Small vegetables that tend to mature all at once or that are used only in small amounts may be planted in short rows across the bed. Several plantings two or three weeks apart will maintain uniform production over many weeks.

Vegetables such as tomatoes and cucumbers do well in raised beds if they are supported and allowed to grow up rather than to sprawl. Corn is not well adapted to raised beds as it needs to be well anchored. Large sprawling vegetables such as watermelons and pumpkins are also better suited to traditional gardening systems than raised beds.

Small vegetables such as radish and lettuce may also be interplanted between tomatoes and other large vegetables. They will mature and can be removed before the tomatoes need the space. Reversing this procedure, peppers can be interplanted between lettuce plants in the same way.

To use raised beds efficiently, they should be well fertilized, watered and kept filled with growing plants. When a spring vegetable is harvested, plant a summer vegetable in its place. Follow summer vegetables with fall vegetables. Recommended spacings for common vegetables in raised beds are given in Table 1.

Table 1: Recommended Spacings Between Plant Centers For Raised Beds*

Vegetable	Inches Between Plant Centers
beans, bush	4-6
beets	2-6
broccoli	10-15
cabbage	15-18
carrots	2-4
cauliflower	15-18
collards	8-15
eggplant	18-24
kale	8-15
kohlrabi	5-8
lettuce, leaf	6-10
okra	10-18
onions	3-5
potato, Irish	9-12
potato, Sweet	18-24
radish	2-4
spinach	4-6
squash, summer	18-24
Swiss chard	6-10
tomato	18-24
turnips	4-6

* Gardeners new to raised bed gardening should use the wider spacings. More experienced raised bed gardeners can use the closer spacings.

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Charles L. Norman, Dean