



Raised bed gardening has become a popular gardening practice. Smaller lots and families have led to the downsizing of planting areas and the amount of produce needed.

Raised bed gardening is fun and enjoyable for the gardening enthusiast. Planting and tending a garden is still a favorite hobby and pastime for millions of Americans. And, the taste of fresh-picked vegetables is beyond compare.

Raised bed gardens offer several advantages over conventional gardening plots. Soil raised above ground level warms up more quickly in the spring, which allows for earlier planting dates. These beds are usually filled with high-quality soil which improves drainage and increases yield. Raised beds are smaller than traditional gardens, making them easier for most people to maintain. For example, the denser plantings help reduce weed infestations.

The main disadvantage of this system is that elevated beds tend to dry out more quickly in the summer months, increasing the need for watering.

Construction

The beds are usually raised off the ground 6- to 8-inches. The framework for this structure can be made from several types of materials. Some gardeners suggest not using a support but, instead, mounding the soil. This is the simplest method and works well.

Most gardeners use some sort of framing materials such as railroad ties, landscape timbers, planking, rock, manufactured blocks, or bricks. Do not use railroad ties that are still oozing sticky, black creosote or have a strong odor.

Naturally rot-resistant woods such as cedar and redwood are also a good choice. Other species of wood product used are often treated with wood preservative to increase the life of the structure because wood rot can become a problem over time.

Questions sometimes arise over the use of treated lumber in vegetable beds. The wood preservative ACQ

Raised Bed Gardening

(Alkaline Copper Quaternary) is the most widely available wood preservative for residential use. It may be used for raised bed construction. Some gardeners still prefer to line the sides of beds with polyethylene plastic so that roots do not come into contact with treated wood. Do not use plastic on the bottom of the beds as this will prevent drainage.

Size

The size of the raised bed varies depending on the gardener. A suggested size is either 4 by 8 foot or 4 by 10 foot. The 4-foot width is preferred because it allows for an easy reach into the bed from either side to tend the plants. This keeps soil compaction from occurring because the garden soil is not walked on. Length of the bed can also vary depending on type of construction materials used and the space available for the bed.

A 6- to 8-inch depth of the bed at minimum is recommended because this will allow the added drainage and improve soil tilth needed to produce healthy plants. This depth is also where most of the main feeder roots of the vegetable crops will be located for nutrients and water uptake.





Location

As with any garden site, the bed should be in full sun for best production. If a full sun location is not available, pick a spot that will get at least a half day of sunlight — shady areas will result in poor production.

The bed should also be near a water source, as raised beds will require more water than conventional plantings.

The best location also provides wind protection. Summer winds can take their toll on vegetable crops. A tree, shrub screen, or border will work if it is on the south or southwest side to protect the garden from harsh summer winds.

Soil Mix

One of the greatest advantages to raised bed gardening is the ability to amend the soil. For instance, soils in some areas tend to have high clay content, which drain poorly and are hard to till when either too wet or dry. Soils in newly constructed areas are not always adequate. Raised beds are wonderful in this situation.

Several types of amended soil mixes can be used, but usually include good topsoil and organic matter, often in similar portions. This gives you a planting mix that drains well and is easy to till.

When incorporating the soil mix, several guidelines should be followed. It is best to loosen or spade the existing soil. This will improve drainage from the bed and prevent waterlogging. Spade or till 6- to 8-inches deep.

Next, blend a small amount of the amended soil mix into the existing soil.

This will help avoid the problems that can arise from having two different soil layers. Incorporate about 2 inches of mix into the upper few inches of existing soil. You are then ready to begin filling the raised bed. The result will be 10 to 12 inches of rich soil for plants to grow in.

It is also important that a soil test be done on the mix. This will help you determine what fertilizer needs to be added. Contact your local K-State Research and Extension office for information on soil testing.

Plant Spacings

For a truly productive raised bed garden, the gardener must relearn many aspects of planting. Gone are the long straight rows and wide spacing between rows. Raised bed gardens use space more efficiently. In fact, rows may not even be used.

Small crops such as the leafy greens and root crops can be planted in wide rows or just by scattering the seeds over a small section of the soil.

Medium size vegetables such as snap beans, peas, or onions may be planted in rows with about 1 foot between each row. Or here again, a block planting with about 6 inches between plants can be used for highest return.

Large crops, such as tomatoes will need to be on 12- to 18-inch centers depending on their growth habit. Staking or caging the plants will allow for the highest plant density.

Other devices can be used to increase the capacity of the area. Trellises and other structures can be made to let vine crops and other plants grow up instead of sprawling.

Efficient Space Use

A good gardener should be able to use the bed to its fullest potential. Careful planning must be used to achieve this. Group vegetables together based on the maturity time. Plant all short-season crops in one area so that when they finish producing they can be replaced by another crop. This is referred to as succession planting.

For instance, plant lettuce, spinach, radishes, and other leafy crops in one area so that the area can be replanted with beans, cucumbers, or some other warm-season crop after the first crop is harvested.

Also, interplanting may be used. This method utilizes the empty row space. For example, between rows of onions, plant tomatoes or peppers. By the time the onions are harvested, the other plants will just be reaching a large size. Succession planting and intercropping will help you reach the full potential of the bed.

Do not overlook fall gardening. Most crops that produce well in the spring months will also produce in the fall. In fact, some crops such as broccoli, cauliflower, and cabbage may even produce better in the fall as we tend to have a longer and more consistent cool period.

Planting Dates

You may be able to plant a little earlier because raised beds warm up quicker in the spring. By using plastic mulches and row covers, it is possible to plant as much as two weeks earlier than a traditional garden. For a garden calendar with suggested planting dates, see our publication *Vegetable Garden Planting Guide, MF315*: <https://bookstore.ksre.ksu.edu/pubs/mf315.pdf>.

Watering

It is best to water when the soil dries slightly. One or more inches of water per week is the general recommendation.



Many raised bed gardeners use drip irrigation. Drip irrigation allows you to use less water and apply it more efficiently. Drip tubing or a soaker hose may be purchased at local nurseries and garden centers. The tubes are then laid out over the bed, spaced about 2 to 3 feet apart depending on soil type. Using very low pressure (7 to 10 psi), the water slowly drips or oozes from the hose and filters down into the soil. Pressure regulators are available for drip systems to drop pressure to the recommended range. Drip irrigation places the water at the root system, which allows for less evaporation and prevents water from moving to nontarget areas such as the path. The drip tubing can also be buried below the soil surface for the most efficient delivery method.

Fertilization

Fertilization needs of a raised bed garden are the same as a traditional garden. It is best to start with a soil test. If a soil test is not used, apply a general application of about 1 pound of 10-10-10 spread over 100 square feet of bed before planting in the spring. Incorporate the fertilizer into the soil.

Sidedress the crops during the growing season based on needs of individual crops. Do not overfertilize as this will lead to poor production.

Mulches

Summer mulches such as straw help to conserve moisture, cool the soil, and control weeds. Apply a 2- to 4-inch layer over the soil after it has warmed; do not apply too early as you may keep the soil cool and slow the growth of warm-season crops.

Plastic mulches, in reference to raised beds, now have taken on a new meaning. Black plastic laid over the soil a month before the traditional planting date will allow the soil to warm earlier and may allow you to plant as much as 2 weeks earlier. This means harvest dates will arrive sooner, and in many cases, the yield will be greater.

To get the biggest jump on the season, you will need to warm the air temperatures as well as the soil. Materials called floating row covers, commonly made from spun polyester, or similar devices made of clear plastic film, can be used to trap the radiant heat of the sun. These covers, used in conjunction with the plastic mulch, will give the earliest returns.

Be sure to remove the row covers when spring temperatures increase to 80°F so that temperatures under the covers do not build up too high and damage the plants.

The floating row covers can also help reduce insect feeding on early season crops. If applied tightly around the framework of the raised bed, it acts as a physical barrier to prevent the insects from getting to the plants.



Conclusion

Raised bed gardens are a popular way for today's gardener to produce fresh, high quality, good tasting vegetables. It allows for more efficient use of space to maximize your investment of time, energy, and money.

As with any gardening product, the fun and rewards come from your own experimentation and finding the techniques that work best for you. For more information, contact your local K-State Research and Extension office for additional resources to help you produce the finest garden on the block.

Ward Upham, Extension Associate, Consumer Horticulture

Original authors: Dennis Patton, Johnson County Extension Agent, Horticulture; Ward Upham, Extension Associate, Consumer Horticulture.

Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned.

Publications from Kansas State University are available at www.bookstore.ksre.ksu.edu.

Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, credit Ward Upham and Dennis Patton, *Raised Bed Gardening*, Kansas State University, May 2022.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

K-State Research and Extension is an equal opportunity provider and employer. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of K-State Research and Extension, Kansas State University, County Extension Councils, Extension Districts.

MF2134 rev. May 2022