

Container Vegetable Gardening

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If well-managed, vegetables grown in containers can provide high-quality produce in a small space.

Container vegetable gardening is a wonderful option for people who have limited space, impaired physical mobility, or conditions that interfere with in-ground gardening, such as poor garden soil. It also can help avoid problems with soilborne diseases and nematode pests that can exist in the soil in traditional, in-ground gardens. People who do not have access to a garden space, or simply do not want to grow a full-scale garden, may choose container vegetable gardening to provide them with enjoyment and produce.

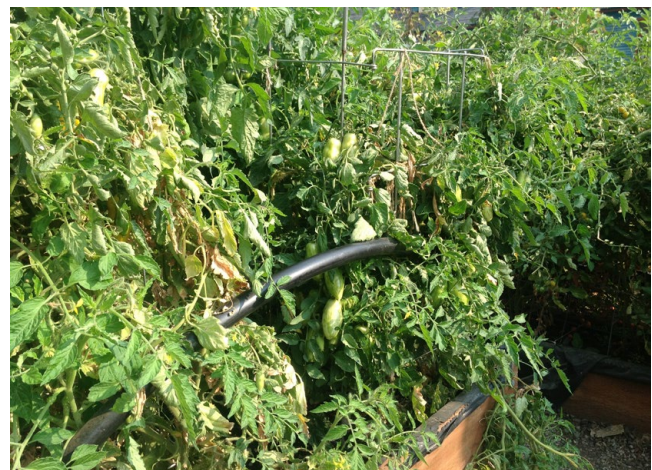
Containers are available in many different long-lasting and lightweight materials. Windowsills, patios, balconies, and doorsteps can provide adequate space for container vegetable gardens. Management of vegetables planted in containers can be simpler than in-ground gardening. Pests and diseases can also be monitored and cared for with relative ease.

Container vegetable gardening is a great way to introduce children to gardening by letting them grow and manage just a few plants in a single season. Success in growing, managing, and enjoying the produce from these containers can help start a lifelong interest in gardening and raising produce at home.

Container Selection and Use

Many kinds of containers can be used for container gardening. Containers of various materials, sizes, and prices can be obtained from garden centers and nurseries. Buckets, baskets, boxes, and even other “found” or repurposed materials can be used as containers. All containers require drainage holes punched or drilled in the sides near the bottom of the container. For example, a one-gallon container should have three to four ¼-inch drainage holes.

Containers are either porous or nonporous, which affects drainage in container gardens. The most widely used porous containers are made from unglazed clay. Moisture can escape through the sides and bottom of clay containers. Wood and fiber-based containers are considered semi-porous, limiting the release of excess moisture through the drainage holes.



Container vegetable gardening can provide homegrown produce for people who don't have a garden space or don't want a full-scale garden. Photo by Terri James.

The choice of container material affects the monitoring of the moisture level in the container throughout the growing season. For example, a porous container will dry out more quickly than a nonporous container, resulting in a need for more observation of the moisture levels. Selecting the right size container depends on the space available and which crops will be grown. Generally, the larger the container, the fewer the planting restrictions; larger containers also help buffer growing media temperature fluctuations.

Potting Media

Potting media for the container should be lightweight and well-drained with good aeration to promote carbon dioxide and oxygen exchange. Avoid field soil or clay-based soil, which can restrict growth, moisture drainage, and ease of container mobility. Clay soils comprise many microscopic particles that hold too much moisture when wet, reducing oxygen and carbon dioxide access, and tend to pull away from the sides of the container when they dry out. These soils can also introduce pathogens and unwanted weed seeds.

Prepackaged potting and soil-less growing media are available in many garden centers, nurseries, and other retail stores. Common formulations include peat moss, perlite, and compost or potting soil; check the content of the media to make sure it is appropriate for the vegetables to be grown. Specialty mixes are also available, as are mixes that contain slow-release fertilizers or supplemental nutrients.

Very lightweight materials such as 100 percent peat moss may be too light and may not be able to support plants over an entire growing season. Lightweight containers filled with lightweight growing media also may tip over, especially in windy conditions, potentially severely damaging or destroying the container plants.

Prepackaged and soil-less growing media can become expensive if large container gardens are desired. To help reduce expense, consider creating a homemade growing media by mixing equal parts of peat moss, potting soil, and perlite.

Fertilization

Both slow-release fertilizer and water-soluble fertilizer can be used for growing container vegetables. They are used for different reasons in container gardens. Soil-less growing mediums are sterile, and contain few nutrients. Nutrients will need to be added if they are not packaged with the growing medium.

Balanced slow-release formulations with equal parts of nitrogen, phosphorus, and potassium, such as 10-10-10 or 14-14-14, can be incorporated into the growing media. Use $\frac{1}{2}$ tablespoon of fertilizer per one gallon of container capacity. For example, a five-gallon container would require 2 $\frac{1}{2}$ tablespoons of slow-release fertilizer. Slow-release fertilizers provide a constant, small dose of nutrients to plants. Use fertilizer sources specifically labeled for vegetables.

Slower-release fertilizer easily leaches out of most types of packaged or soil-less growing media. Begin using water-soluble fertilizer in the middle of the growing season because at this point, roots may be restricted and stressed. Supplemental fertilization will help address the needs of the plant roots and replace nutrients leached during watering.

Commonly used water-soluble formulations include 20-20-20 or 15-30-15, which provide relatively balanced amounts of nitrogen, phosphorus, and potassium. If a growing medium containing fertilizer is chosen for the container vegetable garden, the plants will have enough nutrients for eight to 10 weeks. A supplemental application of water-soluble fertilizer should be added about eight weeks after starting the container garden. Always follow the label directions when applying fertilizers.

Water-soluble fertilizers release nutrients immediately to the plants, compared with slow-release formulations. Do not exceed recommended label rates of the frequency of application of any fertilizer. Over-application can burn plant roots and kill plants. Unlike traditional in-ground gardens, container gardens do not have enough media volume to buffer larger amounts of fertilizer.

Watering and Sunlight

Watering is a very important factor in the success or failure of container vegetable gardens. Containers are exposed to greater soil temperature fluctuations and moisture level extremes than traditional in-ground gardens. Wind and light exposure will increase the need for watering. Small containers and metal containers will warm up, cool down, and dry out more quickly than containers made of other materials.

Know the water and light needs of each vegetable to be planted in containers. A number of vegetable crops need a minimum of six hours of direct sun to thrive and be productive. The greater the light requirement, the greater the potential for moisture stress due to intense sun exposure combined with high temperatures.

Check moisture levels in containers by sticking a finger or a screwdriver a few inches into the growing media. If the growing media sticks to the "sensor," the moisture is adequate. If the container is small, it may be possible to gauge its level of hydration by picking it up. Estimate the dry weight immediately after planting, and again after watering. Adjust watering needs for weather patterns and natural precipitation. The plant's growth stage also affects water needs.

Water containers thoroughly using a light trickle and low speed to avoid washing out growing media and exposing plant roots. Allow water to saturate the growing media until water runs out the bottom of the container through the drainage holes. Small-scale drip irrigation systems can also be used to water container gardens. These systems emit water in a slow trickle to help ensure water absorption and reduce the loss of moisture and growing media. They may also need to be automated, using a timer so watering will occur while out of town.

Although water-holding gels may seem to be a great addition to containers to maintain constant moisture, this media is very difficult to rehydrate if it dries out. Growing media containing water-holding gels may need to be watered once, or even twice, a day. Feeder roots, seeking water in the gels, can be easily damaged. Fluctuations in available water can cause plants to use their energy to grow new feeder roots instead of flowering or developing fruit.

Mulch can be placed on the surface of the container to reduce moisture loss. Clean compost, straw, hay, shredded bark, or leaf mold can be used in container gardens. Do not apply more than 1 inch of mulch on the top of the growing media and around the plant. Take care to keep mulch away from the stem. The mulch could harbor insects and/or moisture, causing plant damage or disease.

General Management

As the season progresses, container vegetable gardens need to be properly managed to encourage plant growth and development to produce high-quality vegetables. Along with daily moisture monitoring, follow weather patterns to adjust moisture needs, and possibly move the container to protect plants from weather-related damage.

Select vegetable cultivars that will grow and thrive in containers. Complete information on the vegetable cultivars is found on the back of seed packages and plant tags on nursery-grown plants. Refer to *Table 1* for the recommended cultivars for various vegetable species. Choosing plants with known disease resistance is an additional benefit. Daily inspections for insect and disease damage are important to maintain plant health.

End of the Season

When the growing season is finished, remove and discard plant material and soil. These can be composted unless the plants were diseased, and adding these plants, and the media in which they were grown, into a compost pile may spread disease. Wash out containers with a gentle stream of water. Scrub nonporous containers with solutions of one part chlorine bleach to nine parts of clean water. Allow containers to dry completely in full sun. Store all containers in a building to avoid weathering, cracking, and damage.

Table 1. Recommended cultivars for various vegetable species that grow well in containers.

<i>Vegetable</i>	<i>Varieties</i>
Beans, Bush	Eureka, Blue Lake 47
Beets	Chioggia, Bulls Blood
Cabbage	Pak Choi Toy Choi (Chinese Cabbage), Caraflex
Chard, Swiss	Bright Lights
Carrots	Caracas, Little Finger
Cauliflower	Attribute Hybrid
Corn	On the Deck
Cucumbers	Spacemaker, Lemon, Salad Bush
Eggplant	Shooting Stars, Hanzel, Gretal, Fairy Tale
Herbs	Basil, Thyme, Chives, Sage, Parsley (flat leaf)
Kale	Redbor, Lacinato
Lettuce	Loose Leaf Blend
Peas	Easy Peasy, Peas-in-a-Pot, Snowbird (snow pea)
Peppers	Big Guy (hot), Cheyenne (hot), Orange Blaze (sweet), Tangerine (sweet), Cherry Stuffer (sweet)
Radish	Fire 'N Ice, German Giant, Black Spanish Round, Watermelon
Spinach	Space Hybrid
Squash	Tivoli (winter), Ronde de Nice (summer), B's Fordhook Zucchini
Tomatoes	Bush Early Girl, Tumbler (trailing), Tumbling Tom (yellow), Lizzano, Sweetheart of the Patio

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