

Gardening in Small Spaces

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Gardening, in one form or another, is a popular hobby in the United States. Taking part in gardening activities helps promote healthy habits, including spending time outdoors, being physically active, and consuming homegrown fruits and vegetables.

Although most would agree that gardening is a worthwhile endeavor, traditional gardening with long neat rows spaced 3 or 4 feet apart to allow cultivation by a tractor or tiller may not be feasible for everyone. Individuals who live in urban areas, especially those living in townhomes, condominiums, and apartments, may not have the outdoor space needed for this conventional style of gardening. In addition, those with limited mobility may not be able to establish and maintain this type of garden. For many, raised bed gardening and container gardening may be a more practical and manageable choice for those gardening in small spaces and those with limited mobility.

This publication will outline two common methods for gardening in small spaces: raised bed gardening and container gardening. It is meant to be used as a companion to Home Vegetable Gardening in Kentucky (ID-128), which is referenced periodically throughout this publication. For additional information on specific vegetable crops, consult Vegetable Cultivars for Kentucky Gardens (ID-133), available online (see Additional Resources) or at your local county Extension office.

Raised Bed Gardening

Raised bed gardening has several advantages.

- You, the gardener, have control over the planting media. You can create your own amended soil or soilless mix to use in your raised bed. This allows for gardening in areas with poor soil quality, including rocky shallow soils, poorly drained soils, and soils with steep slopes.

- Better root growth from amending native soils or utilizing soilless mixes typically results in higher yields from plants grown in raised beds.
- Raised beds require less stooping during weeding and watering, making gardening easier for those with limited mobility.
- Raised beds allow for more efficient planting, since plants are not placed in traditional rows.

Planting Media

Container and raised bed gardening allow the grower to control the planting media through soil replacement or soil amendment. The decision for each will likely be determined by your budget. In a few small containers, it is a relatively low cost to purchase a prepared potting mix (soilless mix) available at local garden centers or greenhouses. However, purchasing a large volume of prepared soilless mix for multiple containers or raised beds might be cost prohibitive. An alternative to purchasing a prepared potting mix for a large raised bed would be to mix your own soilless mix or amend a native soil with organic additives.

Soilless Mixes

Because native soil can become compacted and impermeable to water and thus deprive plant roots of moisture and air, soilless mixes are often used in place of native soil in containers or small pots. Soilless mixes are synthetic blends of natural materials designed to provide the fundamental requirements of plants: air, water, and nutrient retention. Most soilless mixes have some of the following components.

- **Peat moss.** An organic product mined from wetlands in cold wet climates, peat moss consists of decomposed moss in the absence of oxygen, which slows decomposition. The natural processes involved in forming peat take hundreds to thousands of years. This material has a high moisture-holding capacity, low compaction, and a high plant nutrient retention capacity. Peat

has a low pH (3.5–4.0) and requires addition of lime for most crops. Used in moderation, peat is considered by some as a renewable resource; however, its regrowth rate is slow at 1 mm per year.

- **Coir pith.** Coir is the fibrous outer husk of a coconut that is used to make rope and mats. A byproduct of the fiber stripping process, the pulp surrounding the fiber has been used as a media for plant growth since the mid-1980s. Coir is considered a renewable resource and has properties similar to peat. Like peat, coir has a high moisture-holding capacity, low compaction, and a high plant nutrient retention capacity. However, coir has a higher pH (5.5 – 6.5), a higher soluble salt content, and is easier to wet relative to peat.
- **Compost.** Compost is a combination of decomposed organic materials (e.g., fruit and vegetable waste, herbivore manure, leaves, and yard waste). It often displaces peat or coir in mixes. Typically, very little compost that contains manure is used in potting soil, unless specifically labeled, due to odor. Compost adds nutrients to the mixture, so it is important to test your mix prior to fertilizer application for nutrient availability to avoid excess nutrients leaching into the environment from your garden. Ideally the carbon to nitrogen ratio (C:N) of mature compost is less than 30:1.
- **Wood products.** In some mixes, products from the timber industry are used as replacements for peat or coir. Usually ground and partially composted, wood products provide ample aeration but dry out faster than peat or coir.
- **Perlite.** Perlite is a silica-based volcanic rock (volcanic glass) that has been rapidly heated to expand several times its natural size, causing it to become porous. Heating causes openings and cracks that provide air- and water-holding capacity for the material. It is

lightweight, improves water retention and air circulation, and resembles small popcorn.

- **Vermiculite.** Vermiculite is a natural layered silicate mineral that when heated expands several times its natural volume. This mineral improves water-holding capacity, nutrient retention, and porosity. Typically this material makes up to 40 percent of mixes when combined with peat or other high C:N ratio compost.

The materials mentioned can be mixed in a variety of proportions and recipes depending on the user needs. Most vegetable crops in containers do best when the majority (up to 75%) of the mix is made up of organic material (peat or coir, and equal or lesser amounts of compost). The remainder is made up of the inorganic components of perlite and/or vermiculite, with addition of lime

to adjust to the pH needs of the desired crop. **It is very important to have your soilless mix tested prior to adding any plant nutrients or pH-altering amendments such as lime.**

Amended Soil

To develop an amended soil suitable for container gardening, mix no more than 25 percent native soil with at least 75 percent organic amendment (peat, coir, or a blend of one of these components with compost). The native soil component will provide the nutrient-holding and buffering capacity necessary for the planting media so inorganic components such as vermiculite and perlite are not needed. Avoid using 75 percent compost, as this amount of compost will contain an excess of nutrients, which can be an environmental hazard. Do not use native soils that have “heavy” texture containing more than 40 percent clay.

The Bed

The planting media in garden beds are usually raised with respect to the surrounding soil surface to a height of at least 6 to 8 inches. A frame to support the soil may be constructed from wood, stone, plastic composite, concrete block or brick, or the gardener may prefer to simply mound the planting media without a rigid structure. The bed size will vary according to the gardener’s needs and the space available. The cost of constructing a raised bed will depend on the type of material used and the size of the bed. Table 1 compares costs of a 4 foot x 4 foot x 12 inch raised bed that is made from pressure treated lumber, plastic composite, cedar board, concrete block, or decorative brick. Beds are typically constructed no more than 4 feet wide since this width allows for an easy reach into the bed from either side. An aisle of 2 to 4 feet is maintained between beds to allow easy access with tools and equipment (such as wheelbarrows, hose reels, chairs or stools, and wheelchairs).

Table 1. Cost comparison of material to construct the frame of a 4 foot x 4 foot x 12 inch raised bed

Item Description	Cost Per Item (\$)*	Quantity	Adjusted Cost
Pressure Treated Lumber 4' x 4' x 12" Raised Bed			
2" x 12" x 8' Pressure Treated lumber	13.97	2	27.94
4" x 4" x 8' Treated post for corner bracing	8.17	0.5	4.09
Galvanized 1/4" x 3" lag screw	0.63	16	10.08
Galvanized 1/4" flat washer	0.12	16	1.92
TOTAL			44.03
Pressure Treated Lumber 4' x 4' x 12" Raised Bed			
5/4" x 6" x 8' Pressure Treated lumber	5.37	4	21.48
4" x 4" x 8' Treated post for corner bracing	8.17	0.5	4.09
Galvanized 1/4" x 3" lag screw	0.63	32	20.16
Galvanized 1/4" flat washer	0.12	32	3.84
TOTAL			49.57
Composite Decking 4' x 4' x 12" Raised Bed			
1" x 5.5" x 8' composite deck material	17.97	4	71.88
4" x 4" x 8' Treated post for corner bracing	8.17	0.5	4.09
Galvanized 1/4" x 3" lag screw	0.63	32	20.16
Galvanized Steel 1/4" flat washer	0.12	32	3.84
TOTAL			99.97
Cedar Board 4' x 4' x 12" Raised Bed			
1" x 6" x 8' Cedar board	18.57	4	74.28
4" x 4" x 8' Treated post for corner bracing	8.17	0.5	4.09
Galvanized 1/4" x 3" lag screw	0.63	32	20.16
Galvanized Steel 1/4" flat washer	0.12	32	3.84
TOTAL			102.37
Concrete Block 4' x 4' x 12" Raised Bed			
16" x 8" x 8" Concrete block (Hollow for base)	1.35	12	16.20
16" x 8" x 4" Concrete block (Solid for top cap)	1.34	12	16.08
TOTAL			32.28

*Costs obtained September 2016

Selecting a Site

Vegetable gardens are most productive when planted in full sun. However, many vegetables will thrive and produce a good crop if they receive 4 to 6 hours of direct sunlight a day. Place your beds in a location where water is readily available since raised beds dry out more quickly and require more frequent watering than conventional gardens. In addition, place the garden away from trees whenever possible so that tree roots do not compete with the vegetables for water and nutrients. It is especially important to keep gardens away from black walnut trees since black walnut trees produce a compound in their roots, shoots, and leaves that is toxic to many plants including several vegetables.

Preparing the Planting Media

If the raised beds are 12 or more inches high, filling them with amended soil or soilless mix to the top of the structure is not necessary. A 6- to 8-inch depth of amended soil or soilless mix is adequate for plant growth. However, make sure that the sides of the structure are low enough relative to the planting media surface to prevent shading and allow sunlight to reach the plants. Shad-

ing may be especially noticeable in fall and spring. If the raised beds are high (> 24 inches) you might consider adding a large uncomposted organic component in the bottom of the bed. Before adding amended soil or soilless mix, up to two thirds of the raised bed height could be filled with the leaves, straw, grass clippings, newspaper, or wood chips (or a mixture of these components). Use a layer of grass clippings or some other compostable organic layer to separate the blended mixture of native soil and organic amendments from the bottom two thirds of raw organic material. The bottom two thirds of the raised bed will compost within a few growing seasons and lose volume. That composted organic material could be mixed in and blended with more native soil and/or soilless amendment including an inorganic component (e.g. perlite, vermiculite) as needed to maintain volume.

It is important to have amended soil or soilless mix from the beds tested for nutrient content prior to applying fertilizer or lime to minimize any possibility for nutrient runoff and pollution. For information about soil testing, see Extension publication *Taking Soil Test Samples* (AGR-16). The bulletin is available at your county Extension office or online at <http://www2.ca.uky.edu/agc/pubs/agr/agr16/agr16.pdf>.

Planting

There are several ways to plant your bed. You may choose to plant in rows within the bed, or simply group similar plants together by harvest time or height. Table 2 provides suggested spacing for commonly planted vegetables in raised beds and/or container gardening. When choosing what to plant, keep in mind that diversity in plants will promote a more stable ecosystem. Plant diversity encourages beneficial insects and microorganisms in the planting area. Adding flowers to your garden will further encourage and increase ecosystem diversity.

For direct seeded plantings it is often better to plant seeds more densely than desired for the final spacing and thin seedlings to the final spacing once plants have established the first few sets of leaves. If heavy disease pressure is anticipated, spacing plants a little further apart may aid air circulation that may

The following vegetables will grow in an area receiving 4 to 6 hours of direct sunlight a day (however, best yields may be realized in full sun).

**Carrots
Cauliflower
Swiss chard
Cucumber**

**Lettuce
Onion
Parsley
Peas**

**Radishes
Spinach
Winter squash**

Table 1. Suggested final spacing* of commonly planted vegetables in raised beds and containers

Vegetable type	Typical spacing (inches)	Plants per square foot
Radishes Leaf lettuce (quick crop)	2 x 2	36
Carrots Onions (green from seed) Spinach Leaf lettuce Mustard	3 x 3	16
Beets Turnips Garlic Onions (from slips or bulbs) Peas (provide trellis or support)	4 x 4	9
Most herbs (Basil, Cilantro, Dill, Fennel**, Mint**, Parsley*, Oregano**, Thyme) Bok Choy Head Lettuce Chard Beans Garlic Edible Soybean (Edamame) Corn (not recommended in small plantings)	6 x 6	4
Broccoli Cauliflower Kale Collards Cabbage Potatoes Sweet Potatoes Horseradish Summer squash Eggplant (dwarf types) Cucumber (trellised) Okra Peppers	12 x 12	1
Tomatoes Cucumbers (not trellised) Eggplant Pumpkins Rhubarb** Winter squash Cantaloupe Watermelon	18 x 18 to 18 x 24	<1 (actually .33-.44 plants per square ft)

*Biennial but usually grown as an annual

**Perennial, some perennial herbs can be aggressive, such as mint

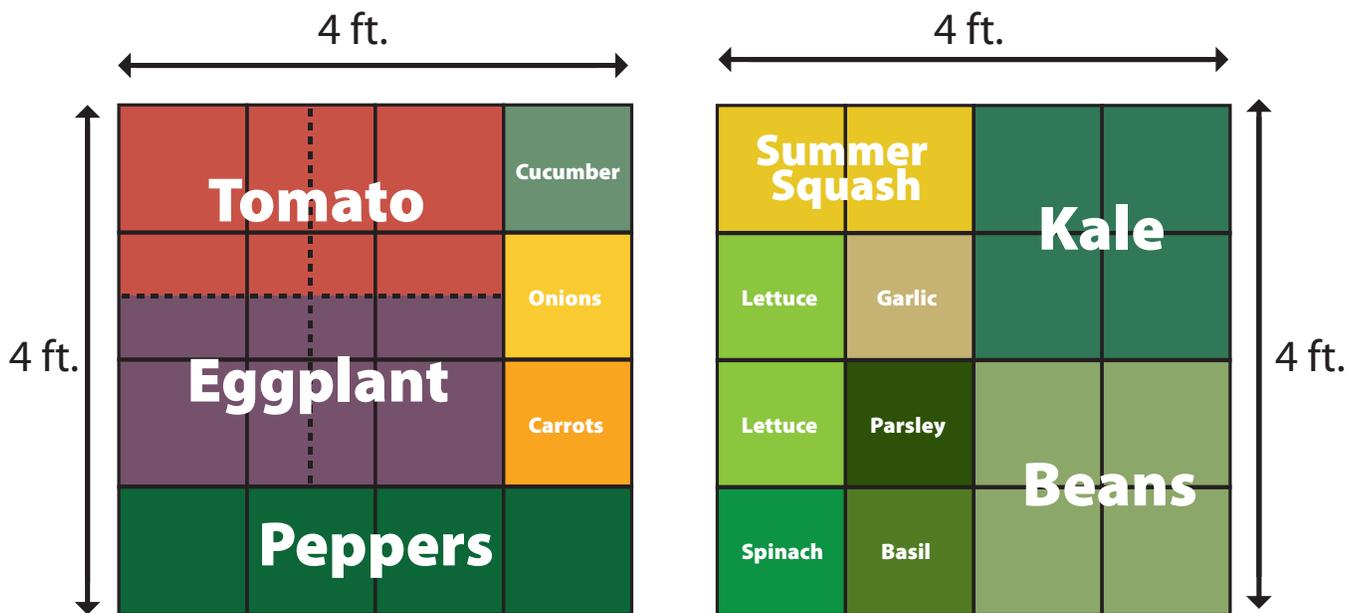


Figure 1. Example of vegetable spacing in a raised bed garden*

* As you plan from year to year, remember to move plants around if possible. In this example, each year the plants grown in the first bed (e.g., tomatoes, eggplant, peppers) can be moved to the second bed and plants grown in the second bed (e.g., summer squash, kale, lettuce) can be moved to first bed to prevent build up of certain pests.

** Early plants are grouped together for crop succession and smaller plants are placed on the outer areas of the garden to avoid shading.

help reduce disease. Factors that may increase disease pressure include disease present on plants growing during the previous year, disease susceptible cultivars being planted, or the garden area lacking exposure to morning sun to quickly dry dew and evening rains.

Raised bed gardens are ideal for succession planting. Succession planting allows a garden space to be used throughout the growing season, in spring, summer, and fall. For example, a plant that is harvested in spring is immediately replaced by a seed or transplant to be grown and harvested in summer. Vegetables such as spinach, lettuce, cabbage, and broccoli, grow well in spring and can be planted relatively early (late March or early April). These crops are often harvested by mid-May when summer vegetables, such as tomatoes, beans, peppers, and squash are planted. Some of these crops mature very quickly, allowing the possibility of making two or more plantings in the summer garden. For example, beans planted in mid-May will likely mature by mid-July. A second planting of beans can be made in mid-July to be harvested in mid-September. Many summer vegetables will be finishing by late August to early September, just in time for a planting of fall vegetables

(many of the same cool-season crops that were grown in the spring garden). Preparing for three gardening seasons and planting in succession will achieve the most intensive and efficient use of your garden space. For additional information on when to plant consult Home Vegetable Gardening in Kentucky (ID-128).

Training plants to grow vertically also allows for intensive and efficient gardening. This approach saves space and often results in higher quality produce. Examples include tomatoes and vine crops. Tomatoes can and should be staked or caged to support vertical growth. Vine crops such as cucumber, squash, and even melons can be trained to a trellis rather than allowed to sprawl across the ground. In the case of squash and melons, both of which have large fruit, individual fruit may need to be held up by a sling of plastic mesh or nylon hose for additional support.

As you plan from year to year, remember to move plants around if your gardening space allows. For example, if you have multiple beds, do

not grow tomatoes (and related crops such as potatoes, peppers, and eggplant) in the same bed for more than two or three years. Give the planting media a break from tomatoes (and related crops) for a couple of years by moving them to another bed, growing them in containers, or not growing them at all. This method will prevent pests from building up to high numbers that will eventually impact the performance of your plants. Note Figure 1. An alternative to this crop rotation practice is to remove and replace the soilless or amended soil mix every two to three years when the same crops are being grown in the same space.

Care and Maintenance

One of the benefits of raised beds is that the plants are elevated above the walkway and less stooping is required for maintenance and harvest of vegetables.

Gardening is an activity that can be enjoyed by the entire family. Encourage your children or grandchildren to get their hands dirty in the garden too. Consider planting a themed garden such as a pizza garden with tomatoes, basil, oregano, green peppers, banana peppers, and onions, or a garden based on a favorite children's book.

It is important to keep in mind that the amended soils and soilless mixes in raised bed gardens drain and dry out faster than conventional gardens. One way to slow drying is to mulch your garden. Placing a layer of organic or inorganic mulch on the surface will reduce weed growth (and competition between weeds and plants for moisture), and reduce water loss to evaporation. In addition, produce is usually cleaner at harvest when using organic or inorganic mulch.

Organic mulches include compost, straw, or grass clippings. A 1- to 2-inch layer of organic mulch will slowly break down and contribute beneficial organic matter. A few layers of newspaper beneath the organic mulch will help to prevent weed germination.

Plastic film (usually black) is the most common type of inorganic mulch. The film is stretched over the bed and anchored to the sides of the garden in early spring after the planting media has been prepared. Holes are made in the film where seeds or transplants will be placed. These holes will also provide entry sites for additional water during the growing season and allow for sufficient air exchange in the root zone. After the first rain, additional holes can be made in plastic if needed to allow standing water to drain. It may be more efficient to place a soaker hose or drip irrigation lines under the plastic to allow routine irrigation or supplemental irrigation during drought. Black plastic film will prevent weed growth by blocking sunlight, will significantly reduce evaporation of moisture from the surface, and will promote warmer root zone temperatures in spring, hastening development of most vegetable crops. The plastic film is usually replaced after each growing season, and the application of supplemental organic matter is more crucial with inorganic mulch than with organic mulch. If conditions are wet, plastic mulch may keep the plant root zone too wet and cause problems with root diseases. For soils prone to dampness, black landscaping fabric, a porous woven material, may be a better option since it allows more evaporation of water from the soil while continuing to control weeds.

As mentioned earlier, raised beds are more prone to drying out than conven-

tional gardens. At least 1 inch of rainfall or supplemental irrigation per week will usually be necessary to mature a vegetable crop. It is best to use a drip or soaker hose for supplemental irrigation. This allows water to be directed to the root system keeping the plant itself dry. Wetting the entire plant by using overhead irrigation sprinklers, especially late in the evening, will keep the foliage wet for several hours and promote certain disease problems. If absolutely necessary, overhead sprinkler irrigation is best performed early in the morning to allow for faster drying conditions.

Specific needs of individual crops as well as pest management are covered in *Home Vegetable Growing in Kentucky* (ID-128) in the What You Should Know about Asparagus through Watermelons, and the Insects and Weeds sections.

Planting a cover crop during the off-season is a good practice. A cover crop protects the amended soil or soilless mix from erosion and minimizes weed growth and establishment. The cover crop roots help to aerate the planting media and improve drainage, and when turned over in early spring the cover crop plant decomposition will add organic matter. Cool season cover crops include ryegrass, winter wheat, winter rye, oats, white clover, sweet clover, and certain other legumes. Certain *Brassica* species such as oil-seed-radish and mustards have an added benefit in that their decomposition may reduce certain soil-borne diseases and weeds.

Season Extenders

As spring approaches, many of us will want to start work in our vegetable gardens. And who wouldn't want to get a jump on spring and have the first ripe tomato of the neighborhood? Or on the flip side, what if you could extend the growing season and produce leafy greens like spinach and lettuce well into the fall and winter? Individual plant covers, row covers, or covers for the entire bed may allow you to do either. Bed covers, or low tunnels as they may be referred to by commercial growers, are made of clear plastic film that is supported by wire or plastic hoops. Bed covers enclose the entire bed and are held in place on the sides by soil or some material that is tacked to the frame. One end is often attached to

a wooden frame to allow opening of the ends on warm, sunny days. The covers usually stand 18 to 24 inches tall. Row covers could be constructed to cover individual sections of the bed while individual plants could be covered by small plastic bottles or jugs with the bottoms removed and the spout left open for air movement.

The advantage of these covers is that they protect plants from frost. On cool nights the heat trapped in the root zone warms the air that is trapped by the covering and offers the plants some protection from cold temperatures. Cold sensitive plants such as tomatoes and peppers can be transplanted to the garden 3 to 4 weeks earlier when using row covers. Once warm temperatures prevail, the covers are removed and the plants grown normally, out in the open. Cold tolerant plants, such as spinach, make a great fall and winter crop under covers and can be grown nearly all winter long. Another advantage is that plants grown under covers often have fewer insect problems. On warm days, temperatures under the covers can become hot enough to damage plants. If warm sunny conditions are expected, open the ends or remove the covers to allow some ventilation, then close them again at night to conserve heat.

One problem people encounter with covers is that weeds like them as well. Covers are in place for 3 to 4 weeks and little cultivation can be done during this time, so weeds may become a problem. One solution is to put black plastic sheeting on the surface before planting. Holes only large enough to insert the transplants are made in the plastic while the remainder of garden is covered to suppress weed growth. The plastic will also help to conserve moisture and will trap more of the sun's energy to warm the root zone and provide heat to the plants on cold nights. When the covers are removed, the plastic weed barrier is usually left in place to give season-long weed control.

Another season extender that can be used is a cold frame. A cold frame is a basic frame with clear plastic or glass panes with a hinged top that allows light to pass through. The top can be made from recycled windows or clear plastic



Figure 2. Cold frames extend the growing season



Figure 3. Tabletop gardening allows individuals with limited mobility to easily access the garden.

covering a wooden frame (Figure 2). Cold frames can be used for growing or “hardening off” transplants outdoors. They should be located with the cover tilted to the south to receive the greatest amount of sunlight.

Container Gardening

Even if you live in an apartment or townhome with only a balcony, patio, or walkway available for gardening, you can still enjoy many of the rewards of growing your own vegetables, although lack of space for a traditional garden is not the only reason to try container gardening.

Container gardening has many advantages.

- Switching to container gardens can be one solution to a traditional garden site that is unsuitable because of poor soil quality, problems with drainage, too much shade, or too much sun.
- Container gardens can be part of a crop rotation plan that involves moving certain crops from a backyard garden to containers to minimize the buildup of soil borne diseases.
- Container gardening is one example of assistance gardening that may be suitable for people with limited mobility.
- Many container-grown vegetables also have ornamental value and can enhance your home.
- Using containers allows you to take ad-

vantage of the various microclimates on your balcony, patio, or walkway. For example, lettuce can be grown in a cool, shaded area while heat-loving plants, such as eggplant, can be located in full sun where reflections from buildings or patio surfaces add to the heat.

Choosing Vegetables for Containers

Nearly all leafy vegetables will do well in containers. Plant breeders have developed many dwarf or miniature varieties for container production. Crops with many fruits per plant, such as tomatoes, are good choices. Cultivars with a bush or compact growth habit also do well. Container vegetable recommendations, including season and light requirements, spacing and container size, varieties, and days until harvest are available in Table 9 of *Home Vegetable Gardening in Kentucky (ID-128)*.

Selecting Containers

You can grow vegetables in just about any container. The container should be able to hold soil and should be large enough to support the crop when the crop is fully grown; it should also have holes for drainage. Porous materials, such as clay and wood (rot-resistant redwood, cedar, or cypress are best), lose moisture more quickly in dry weather and will therefore require more frequent watering. On the other hand, plants growing in these pots are almost impossible to overwater when adequate drainage is present due to the containers’ porous quality. Non-porous containers made of metal, plastic, glazed ceramic, glass, and wood lined with plastic hold moisture longer but can promote overwatering.

Consider using barrels, window boxes, and hanging baskets. Unusual and unique containers will add interest to your garden. Use caution when selecting small containers or those of dark colors. The root zone may become dangerously overheated when such containers are exposed to full sun.

Each container must have drainage holes in the bottom so the plant roots will not stand in water. If the container does not already have holes, make at least four sizeable ($\frac{1}{4}$ to $\frac{3}{8}$ inch) holes in the container’s sides, $\frac{1}{2}$ inch from the bottom. Containers with holes in the bottom may

need to be elevated slightly to allow water to exit the holes. The growing medium in very large containers is especially prone to waterlogging and poor drainage when drainage holes are inadequate or flow from the hole is restricted.

Choose the container size to match the plant's growth requirements. Feeding and watering plants is easier if you use large containers, since smaller ones need more frequent attention.

You will also want to consider the combined weight of the container with the amount of planting media that it will hold. If too light, your plants may blow over in severe winds. On the other hand, if you will be moving your plants during the growing season, you will not want to have excessive weight to handle. You may need to choose a container made of a lighter material or place your plants on a wheeled platform for ease in relocating.

Planting

For best results moisten the soilless mix the day before you intend to plant. Many mixes contain a high percentage of peat, which requires time to soak up and absorb the water. Peat moistens faster

with hot water than with cold water. If you use a slow-release fertilizer, it should be added to the mix prior to planting. Information about fertilization is available in *Home Vegetable Growing in Kentucky* (ID-128) in Table 17.

If containers are being reused, clean the container with a 10 percent bleach solution before planting. If you are using a clay pot, soak the pot in water for a few minutes first. Then place a coffee filter, screen mesh or clay pot fragments over the drainage holes in the bottom of the pot to keep the mix from leaking out while filling. You can add filler, such as crushed milk jugs, to the bottom few inches of an especially large or deep container to reduce the amount of mix needed. Soilless mix should be added to within a half inch of the top of the container.

Plant Support

Tall or vining vegetable crops require staking, caging, or trellising. This includes tomatoes, cucumbers, pole beans and other climbers. Plant supports should be put in place at seeding or transplanting to minimize the amount of dis-

turbance to the plant. Anchoring of the containers may be necessary to provide additional stability during high winds. A few stones placed in the bottom of the container may aid in stability, but will not aid in draining water for the container.

Interplanting

A single container can be limited to just one crop or interplanted with different vegetables, herbs, and bedding plants. To be successful, all plants in the same container must have the same requirements for sunlight and water.

Maintenance

Pay particular attention to watering container-grown vegetables. A soilless mix or amended soil can dry out very quickly, especially on a concrete patio in full sun. Porous containers, such as clay, are especially prone to dry out rapidly and can actually wick water away from plants. Daily watering may be necessary, however do not overwater. Water when the soilless mix or amended soil feels dry, adding enough that water runs out of the drainage holes. The soilless mix or amended soil should not be soggy or have water standing on top of it. Water should

Vegetables for Beginners

Tomatoes, especially cherry types. Two recent cultivars selected as winners by All-America Selections include Lizanno and Terenzo, but plant availability may be limited. These plants do not require caging or support and produce heavy yields of cherry tomatoes. Other varieties will also do well but most will require staking and tying or caging. Applications of agricultural lime, 2 to 3 tablespoons per plant worked into the soil or soilless mix at planting, is beneficial. Tomatoes need even moisture while developing fruit. Keep container plants well-watered and apply a mulch of straw, leaves, newspaper, or a combination of them around tomatoes growing in the garden. If you encounter problems with birds or rodents feeding on ripening fruit, pick the tomatoes as they are first starting to ripen and allow them to finish ripening indoors—quality will not be compromised.

Peppers, especially small hot types or banana types. These peppers are often more compact than standard bell types but give good yield and are attractive in containers. Peppers need good air circulation, so don't plant them too close. Provide adequate moisture but not too wet. Peppers can be harvested at any stage of development. For sweet types, flavors may peak as the peppers color. For hot types such as jalapeno, the flesh may gain a little more heat as they ripen. Regardless, peppers are generally quite tasty at any stage of development.

Green beans, bush types. These types of green beans produce their first crop about 6 to 8 weeks after planting. Even if you have space for only 15 to 20 plants you may get a harvest sufficient for several meals for a family of four. Provide good moisture and try to locate the plants where they will get morning sun to help dry the plant. If moisture remains on the plants into the morning it may increase disease issues. Mexican bean beetles look like lady bugs but usually are more brown. The immature insects look like yellow to orange cotton balls. In a small planting these can usually be picked off by hand and destroyed in a small container of soapy water or rubbing alcohol.

Summer squash, such as zucchini or yellow straight or crook neck types. Summer squash are very slow to vine and are suitable for containers or garden areas. Plants usually begin producing squash in about 6 weeks from planting. However, don't be alarmed if your plants begin to wilt and die in late summer. A moth (actually resembles a red wasp but not related) will lay eggs on the plant and the baby caterpillars will tunnel into the vines causing damage and allowing disease to spread. This is the squash vine borer and it is very difficult to control. However, most people who grow squash find that they get a good harvest before the vines are destroyed.

also freely drain from the base of the container and not collect in a saucer— as this may lead to a water soaked growing medium that will contain little oxygen necessary for roots, foster disease problems, and may harbor mosquito larvae.

Vegetables grown in containers should be fertilized regularly after an initial soil test has been made and adjustments to fertility have been made based on results. Make the first application three weeks after plants have two sets of leaves. Repeat once a week using a soluble plant food at one half the label rate. If you added a slow release fertilizer to your amended soil or soilless mix or used a high percentage of compost in the mix, additional fertilizer may not be needed. Your plants will exhibit yellowed foliage and stunted growth when nutrients become limited. Additional fertilizer or compost should be applied in such cases.

Protect plants from very high heat caused by light reflection from pavement or buildings. If necessary, move plants to a cooler spot or shade them during the hottest part of the day. Plants may also be moved to a sheltered location during severe rain or wind. Remember that the root zone is prone to overheating as well. Small, dark-colored containers should not be used in full sun.

After harvesting spring and early summer crops, you can replant the container with vegetables for the summer or fall garden. Remove vegetable crops from their containers once harvest is complete or after a killing frost. Saving and reusing the same soilless mix the following season is not recommended because the mix may be harboring disease organisms or insect pests. In addition, the mix becomes compacted and loses its structure with repeated watering and cultivation. Instead, add the used soilless mix to a compost pile or to soil in your yard or garden.

Gardening is a perfect project for youth to literally get their hands dirty and learn by doing. Share your love of gardening with a young person by being a mentor or 4-H volunteer. Contact your county Extension office for information on volunteer opportunities in your community.

Scrub containers with a 10 percent solution of household bleach before storing. Clay containers should be stored where temperatures will not drop below freezing to avoid cracking. Non-porous containers can be stored outside.

Summary

Raised bed gardening and container gardening offer everyone the opportunity to grow something. The small scale and adaptability of these gardens can meet the needs of a wide range of individuals, including those with limited mobility, those with different levels of gardening experience, and those who don't have the space and/or time for a traditional, large-scale garden.

For information on harvesting and storage for everything from asparagus to watermelons refer to *Home Vegetable Gardening in Kentucky (ID-128)*.

Additional Resources

Home Vegetable Gardening in Kentucky (ID-128)

<http://www2.ca.uky.edu/agc/pubs/id/id128/id128.pdf>

Vegetable Cultivars for Kentucky Gardens (ID-133)

<http://www2.ca.uky.edu/agc/pubs/id/id133/id133.pdf>

Taking Soil Test Samples (AGR-16)

<http://www2.ca.uky.edu/agc/pubs/agr/agr16/agr16.pdf>

We would like to acknowledge and thank Deborah Hill, retired, Forestry Department, for her contribution to this publication.