

# Vegetable Gardening

## Kentucky GROW



## **The goals of this module are:**

To learn the best techniques for successful vegetable gardening.

## **What you need:**

- Seeds. Available at garden centers or through mail-order. Some come treated with fungicide or bacterial inoculants, or in pelleted form to make handling easier.
- Plants. For a quicker start, you can buy some vegetable plants and transplant them to the garden.
- Markers, plastic or wooden
- String and sticks to make straight rows (if not planting in blocks)
- Trowel
- Water, short-term for planting (bucket or watering can) and long-term for growing (sprinklers and soakers)
- Hoe or other type of weeding tool
- Mulch
- Kneeling pads for those who will be able to kneel to plant and maintain the garden
- Rototiller or shovel to till in amendments and break up the soil

## **Time needed:**

See “How to Prepare.”

## **How to prepare:**

Creating a vegetable garden is a long-term project, beginning in the spring with planning and soil preparation, and ending with preparing the garden for winter. This module should be done in small stages, with preparation individualized for each task.

It is important to not plant a garden so big that it is overtaken by weeds and participants lose heart. However a garden that’s too small, might not give everyone a chance to participate. If participants cannot attend every session, will there be someone who can harvest, weed, and water all season long? A well-grown garden can produce 600 to 700 pounds of food per 1,000 square feet. What will happen to the produced vegetables (Donate to a food pantry? Have a program on cooking or canning? Sell at the farmers’ market?)

If a permanent planting site is not available, vegetables can be grown in containers. See the Container Gardening Module for methods.

## The program:

Since a wide variety of vegetables is available from the local grocery store, growing your own vegetables might seem like a waste of time and energy. But eating something you grew yourself can be immensely satisfying, and home-grown vegetables sometimes have better flavor than the same kinds of vegetables in the store. There is, however, some effort involved in raising your own vegetables. By breaking down the process in steps and by using certain techniques, anyone with limited abilities can have a vegetable garden.

## Choose a Proper Site

The best site for a vegetable garden is one that is sunny for 6 to 8 hours a day, has good, loamy soil that drains well, and does not sit in a low spot. It will be close to a convenient water source and have good access for people of all abilities. Avoid gardening close to trees, as they will take away water with their roots and perhaps drop seeds and leaves (walnuts, especially, should be avoided – they secrete a chemical that is toxic to a large number of vegetable plants).

For those with limited space, the vegetable plot may be broken up into several sites. For instance, the tomatoes could be planted on the south side of the house, the peppers out by the mailbox, and the lettuce next to the deck. Also, planting in containers (see the Container Gardening Module) is an option for those residing in apartments or who have tiny yards. Raised beds (see the Raised Beds Module) are great for gardeners who cannot kneel or bend down, but they also work well for sites with poor drainage or difficult soil.

## Make a Plan

Draw a scale model of the vegetable plot, diagramming where each vegetable will be planted. Traditionally, rows are spaced 2.5 to 4 feet apart to allow for the use of a rototiller to weed and mix in fertilizers. This is not an efficient use of land (and some may not have the ability to use a rototiller), and gardeners with a limited amount of space might want to consider planting intensively.

Intensive gardening is a collection of techniques to get the most production out of small amounts of land. Examples of intensive gardening techniques include planting in wide rows, raised beds, intercropping (tucking in smaller plants among larger ones such as tomatoes), succession planting, and growing plants vertically. The soil must be very good to successfully get so much out of it, but erosion is decreased and the shade created by intensively grown plants cuts down on weeding.

## Prepare the Soil

Remove the sod if starting a new garden. Have the soil tested, and mix in any recommended amendments. Every spring, add organic material: compost, old manure, grass clippings, or composted leaves (see the Composting Module). Do not apply fresh manure – the high nitrogen content might damage the plants and can contain bacteria harmful to humans. Till in any amendments to a depth of about 8 inches. Rake it smooth and remove any rocks or sticks.

## Plant

The best time to plant is on a cool, cloudy day a few days after a good rain. Lacking that, plant in the evening when the air is cooler and the sun less intense. The soil should be damp but not so wet that when squeezed in your hand it remains in a tight ball.

Some vegetables grow better in cool soil and should be planted in early spring (typically the first weeks of March): spinach, lettuce, onions, broccoli, greens, cauliflower, radishes, beets, turnips, and potatoes. They can withstand a late frost fairly well. Other vegetables will not flourish in cool soil and should be planted out after the last heavy frost (from April 20 to May 10 in Kentucky; see your Cooperative Extension Agent for the last frost date for your area). Tomatoes, cucumbers, peppers, squash, eggplant, beans, corn, and melons all do well in warmer soils.

When deciding where in the garden to plant each family of vegetable, try to rotate your plantings in a three year cycle to prevent the buildup of insect pests and pathogens. Tomatoes especially are susceptible to soil-borne diseases and should not be planted in the same place every year. Rotation also allows for better use of soil nutrients. For example, switch out beans and peas with corn. Beans and peas add nitrogen to the soil, whereas corn is a heavy consumer of nitrogen.

Vegetable seeds may be bought locally or through a mail-order catalog. Check the package to be sure that the seed is not left over from last year, as germination will be less successful. The package will have the essential planting information – when to plant, how deeply, and how far apart. Some gardeners sow closer together and then thin to the recommended spacing. That way, seeds that don't germinate will not leave a gap in the row or block.

Plants that take a long time to produce fruit are usually started ahead of time indoors or bought as transplants from local garden centers. It is easy to find starts of tomatoes, green peppers, eggplants, and even squash, lettuce, and Brussels sprouts. Plants in peat pots can be planted directly in the soil, but make sure the top is buried to prevent wicking and loss of moisture. Tomatoes are often described as being determinate or indeterminate. Determinate plants are those whose entire fruit crop for the season will ripen at the same time. Most roma types are determinate, and the all-at-once ripening is good if you want to can or freeze the tomatoes. Indeterminate tomatoes produce ripe fruit until frost kills the plant. A few ripe tomatoes a day is good if you are growing tomatoes for fresh eating in salads or other recipes.

It's a good idea to plant spring garden crops together so you can plant fall vegetables in the same area once the spring crops are done. In July and August, you can plant the last group of warm-weather vegetables such as corn and beans, and they will ripen before the first frost. Also at that time, you can plant the vegetables that love the cooler weather of fall and can take a frost, such as greens, radishes, and spinach.

## Watering

Vegetable plants need an inch of water a week to grow their best. A simple coffee can with inches marked off on the side works well as a rain gauge. If not provided by rain, water can be delivered with soaker hoses or drip irrigation. If overhead watering with a sprinkler is the only

option available, water in the morning so the water has a chance to soak in before the sun warms the soil, to reduce the incidence of foliar diseases.

For water-hungry plants such as tomatoes and peppers, drill holes in the bottom of a 5-gallon bucket, place next to the plant, and fill with water. Water will slowly drip right to the roots. Or bury a milk jug with no cap upside down in the soil next to the plants. Cut the bottom off and fill with water.

## Mulching

Mulching should be done after the soil has warmed up and before the weeds take over. Landscape fabric can be used, as well as newspaper (cover 6 sheets with a thin layer of straw or mulch to hold it down and improve the appearance), grass clippings, or pine needles. Not only will the mulch reduce watering and weeding, it will also keep the fruit cleaner and lessen the chance of soil-borne disease taking hold.

## Fertilizing

Fertilizer is best added in the spring before planting, but take care to use the proper amounts or the plants can be damaged. A soil test will tell you what nutrients the soil lacks, and how much and what kind to apply. If you have a very small garden or are gardening in containers, apply 2.5 pounds of 5-10-10 to every 100 square feet.

Commercial fertilizers tend to leach out of the soil before the end of the growing season, so some vegetables benefit from an additional application of fertilizer. Apply in a band 6 inches from the stem of the plant, then rake in and water. The usual rate is 5 tablespoons of ammonium nitrate per 10 feet of row.

## Pests and Diseases

Pests and diseases of vegetable crops are more thoroughly covered in separate modules. The home gardener should consider non-chemical methods of control before spraying with pesticides or herbicides. In small gardens, sometimes hand-picking insects before they get out of hand or mulching to prevent weeds in the first place makes more sense. Also, time and money will be wasted if a planting is lost, but will you go hungry? Plant extra to compensate or visit the farmer's market if pests or diseases get the best of your plants.

## Weeding

Perhaps the bane of children everywhere, weeding the vegetable garden is perhaps the least-favorite summertime chore. Weeds steal nutrients, sunlight, and water from desirable plants and might harbor insect pests. To reduce weeding:

- Mulch as soon as the soil warms up (or use plastic mulches that warm the soil at planting time)
- buy seeds that are free of weed seeds
- Prevent garden weeds from going to seed

- Avoid using manure or mulch with weed seeds, and till shallowly (tilling deeply just brings more weed seeds to the surface).
- Grow healthy, robust plants to out-compete the weeds

## Putting the garden to bed

Once all the crops have been harvested, clear any plant material from the site and compost. Till in organic material such as compost or manure. Consider planting a cover crop such as ryegrass to reduce loss of nutrients, prevent compaction, and shade out cool-season weeds. Row covers are also available to prevent frost damage and extend the growing seasons of tomatoes, peppers, and cucumbers.

## Accommodations for this program:

Accommodations will vary depending upon what participants choose to accomplish in vegetable gardening. The aisles in vegetable plots are typically soft, uneven dirt. Thought should be given as to how the gardener will have access to the plot for watering, maintenance, and harvest. Don't be concerned with spacing seeds exactly; you can always thin later. Straight rows might not be the easiest for some people to plant; planting in blocks or containers may be easier. As with all Kentucky GROW programs, providing needed accommodations is an individualized process. Below are some ideas to get you started, but the best route to take is to listen to the person, as he or she will usually have the best ideas of all!



For those with mobility impairments, ensure adequate leg and knee clearance under all worktables. Ensure that all materials are placed at an accessible height and reach. Consider providing smaller portions of soil mix rather than large, heavy bags. Consider a lapboard as a workstation for a person using a wheelchair if accessible tables are not available. Consider the advantages of vegetable gardening using containers (see container gardening module). Adaptive gardening tools can be beneficial to help increase reach and efficiency for gardeners. Other ideas for those who use wheelchairs or who have difficulty kneeling or bending include using a length of PVC pipe can be used for transplanting vegetable plants. The length should be the distance from your hands when in your normal gardening position to the ground. Cut both ends at 45-degree angles. Set the tube in your lap or hold it so that the plants slide down the tube into a prepared hole. A length of bamboo can be used in the same way to plant seeds. Tape a pointed stick to the bottom of the bamboo pole to make a dibble to poke holes for the seeds. Mix seeds with a homemade gel if you have trouble handling seeds. To make the gel, mix 1 tablespoon of cornstarch with one cup of water. Simmer over low heat until it has the consistency of honey. Cool, then pour into a plastic bag containing your seeds. Knead both together to mix, clip one corner of the bag, then squeeze the seed/gel mix into the planting hole.



For those who have cognitive impairments, consider working as a team for this module. Use photos or pictures to demonstrate each step. Provide options of different kinds of vegetables that can be planted and let participants choose what they would like to grow.



For those with learning disabilities, provide the information in a variety of methods. Some individuals learn best by hearing the instructions, others will prefer to see the step by step procedure in writing with pictures or photos, or have the instructions on tape. Written instructions will also be helpful for those with hearing impairments. Show examples of the vegetables that will be produced from the different plants.



For individuals with visual impairments, review placement of the needed materials. Don't move items without informing the person. Make sure that all tools and planting materials are out of the flow of traffic. Ensure that the area is well lit. A magnifying glass can make materials easier to see. Provide any written instructions in large print and other alternative formats as requested. Mix seeds with flour or powdered limestone, as the white powder will show up well against the dark earth. Small seeds can be mixed with fine sand or used coffee grounds to make sowing easier. Some small seed is also available in a larger pelleted form. There are seed dispensers available, also. Seed tapes are seeds sealed in biodegradable paper slips that are planted directly in the ground. Or make your own with 1" strips of newspaper and a flour-and-water paste. Space the dabs of paste according to the proper spacing of your seeds. As vegetables are planted, place markers with contrasting colors (i.e. black text on a white background) or Braille to identify them.

## **Where to go from here:**

“Home Vegetable Gardening in Kentucky”, University of Kentucky College of Agriculture Cooperative Extension Service Publication ID-128.

“2002-2003 Vegetable Production Guide for Commercial Growers”, University of Kentucky College of Agriculture Cooperative Extension Service Publication ID-36.

“Vegetable Cultivars for Kentucky Gardens-2002”, University of Kentucky College of Agriculture Cooperative Extension Service Publication ID-133.

“Organic Gardening and Pest Control”, University of Kentucky College of Agriculture Cooperative Extension Service Publication HO-72.

Accessible Gardening, Tips and Techniques for Seniors and the Disabled, by Joann Woy, Stackpole Books, 1997

Denny McKeown's Complete Guide to Midwest Gardening, Denny McKeown, Taylor Publishing Company, 1985.

Burpee: The Complete Vegetable and Herb Gardener: A Guide to Growing Your Garden Organically, by Karan Davis Cutler et al., John Wiley and Sons, 1997.

Square Foot Gardening, by Mel Bartholomew, Rodale Press, 1981.

Vegetable Gardening for Dummies, by Charlie Nardozzi, Hungry Minds, 1999.

This material is available in alternate formats. Contact Kentucky GROW for more information.