Horticulture

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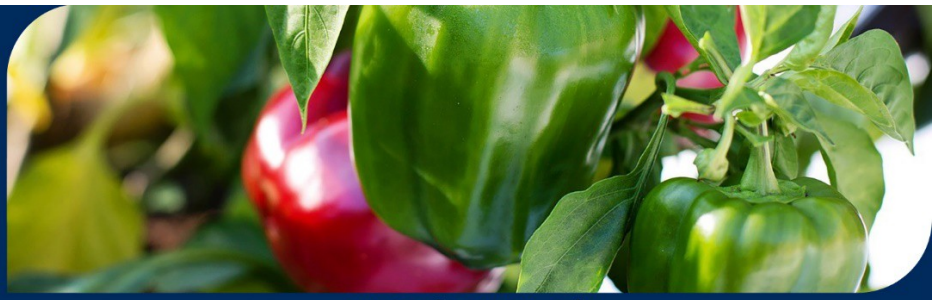

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Revised April 2020 HG/2005-12pr

Peppers in the Garden

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Summary

Peppers prefer a sunny location, long growing season, and fertile, well-drained soil for best yields. Plant pepper seeds directly in the garden 10-14 days before the last frost date. For earlier maturity, transplant peppers through black plastic mulch. Use row covers or hot caps to protect the plants when transplanting before the frost-free period. Side dress with additional nitrogen fertilizer to help grow a large plant. Irrigation should be deep and infrequent. Plastic and organic mulches help conserve water and reduce weeding. Do not apply organic mulches until soils have warmed to 75ºF. Control insect and diseases throughout the year. Harvest peppers when the fruits are fully colored but still firm. At the end of the season, gather all mature green and slightly colored fruits and store at 55ºF.

Varieties

Peppers can be categorized by maturity class (early, mid-season or late), fruit types (cherry, bell, wax, pimento, paprika, cayenne, jalapeno), fruit color (green, red, yellow, orange, purple), or pungency (non-pungent, mildly, moderate, or highly pungent). When choosing varieties, consider your growing environment, primary use, and available garden space. Most varieties grow in Utah, but are not be available locally. Garden centers and nurseries typically provide a limited selection of varieties that have proven to do well in our location. It may be necessary to purchase seed and grow your own transplants to obtain a specific variety you want.

Fruit Type	Suggested Varieties
Sweet	Ace, Banana Supreme, Bell Boy, Big Bertha, California Wonder, Gypsy, Keystone Resistant Giant, King Arthur, Pimento, Sweet Red Cherry, Yolo Wonder L
Hot	Anaheim, Ancho, Early Jalapeno, Hungarian Yellow Wax, Habanero, Long Thin Cayenne, NuMex Big Jim, Seranno Hot, Slim Jim
Specialty	Prairie Fire, Riot (edible ornamental), Paprika Supreme

How to Grow

Soil: Peppers need well-drained soil and do poorly in heavy, wet soils. If planting in an area that does not drain well, it is advised to plant in a raised bed.

Site Preparation: Before planting, determine fertilizer needs with a soil test and then follow the recommendations given with the test report. If fertilizer applications are warranted, work the fertilizer into the top 6 inches of soil. If you fertilize with compost, apply no more than 1 inch of well-composted organic matter per 100 square feet of garden area.

Plants: Allow 8-10 weeks to grow transplants. Transplants should have 6-9 mature leaves and a well-developed root system before planting. Germinate seeds at 80ºF until the seed root emerges, then transfer seeds to sterile seeding mix and grow out at 65-75ºF. Adequate light is essential to produce quality transplants. Cool fluorescent tubes 2-3 inches above the plants, lit for 14–16 hours per day will ensure plants grow big and healthy. Water regularly and feed weekly with half strength soluble complete fertilizer before planting into the garden. Transplants mature about 4 weeks before seeded peppers and are recommended for the cooler growing areas of Utah.

Planting and Spacing: Peppers should be transplanted when soils are 60ºF or after all frost danger has passed. Seed can be planted in the garden 2 weeks before the last frost. Plant 4-6 pepper seeds ½ inch deep and 18 inches apart in the row. After the seedlings have two leaves, thin to a single plant Transplants should be planted 18 inches apart in row, with rows 18-24 inches apart. Transplants that are stocky, dark green, have 6-9 leaves and are 5-8 inches tall, grow most rapidly. Transplants with flowers or fruits establish slowly and yield poorly so remove them before planting.

Mulch: Black plastic mulch warms the soil, conserves water, and helps control weeds. Plastic mulches allow earlier planting and maturity, especially with transplants. After amending the soil with compost or fertilizer, lay the plastic, secure the edges with soil, and cut holes for the seeds or transplants. To avoid heat injury to the transplant, the stem should not touch the plastic mulch. When using plastic mulches and row covers, seeds or plants can be set out several weeks before the last frost date. Do not apply organic mulches such as grass clippings, straw, or newspapers around the plants until soils are warmer than 75ºF. Both plastic and organic mulches help conserve water and control weeds.

Row Covers: Row covers enhance growth and earliness. Hotcaps, plastic tunnels, fabric covers, and other devices help protect seedlings and transplants from cool air temperatures. Row covers enhance growth and earliness. Peppers grown under row covers require ventilation when air temperatures exceed 80ºF. High temperatures during flower development and early fruit growth can cause flower and fruit abortion. Remove covers when weather has stabilized.

Irrigation: Water peppers deeply and infrequently, applying 1-2 inches per week. Use drip irrigation if possible. Mulch around the plant will help conserve soil moisture and reduce weed growth. Irrigate so that moisture goes deeply into the soil. Irregular watering (over or under) can cause flower drop or blossom-end rot, a dark leathery spot on the bottom of the fruit.

Fertilizer: Avoid over-fertilizing peppers which encourages excessive foliage growth and delays fruit set and maturity. Side dress each plant with 1/4 tablespoon of (21-0-0) fertilizer, 4 and 8 weeks after transplanting. Place the fertilizer 6 inches to the side of the plant and irrigate it into the soil.

Problems

Weeds: Plastic and organic mulches (straw, leaves and grass clippings) effectively control weeds. Healthy vigorous plants outcompete weeds, once they are established. Cultivate shallowly to avoid root damage if weeds are a problem.

Insects and Diseases: For more detailed information on insect and diseases visit the Utah Pests website (www.utahpests.usu.edu).

Insects	Identification	Control
Aphids	Green or black soft-bodied insects that feed on underside of leaves. Leaves often crinkle or curl. May transmit virus diseases. Plants appear shiny, wet, or sticky from honeydew.	Use insecticidal soaps or strong water stream to dislodge insects.
Flea Beetles	Small black beetles that feed on seedlings. Adults chew tiny holes in cotyledons and leaves. Beetles can reduce plant vigor or may kill seedlings.	Control beetles with insecticide dust at seeding or transplanting.

Hornworms and Fruit worms	Larvae feed on leaves and fruits causing defoliation and fruit damage. Look for damaged leaves and black fecal matter.	Hand removal is an easy control method. Use Bt or other insecticides for heavy infestations.

Diseases	Symptoms	Control
Leaf Blights or Spots	Dark spots on stem, leaves or fruits. The diseases eventually spread to all plant parts. The foliage eventually dies, exposing fruits to the sun, which causes premature ripening.	Diseases promoted by cool, wet conditions. Don't apply over-head irrigation late in the day and let soil dry between watering. Apply appropriate fungicide once disease identified.
Wilt Diseases	Leaves wilt from the bottom of the plant and plants often die. Look for vascular discoloration, slime formation, or gummy exudates visible on or in stems. Diseases are caused by different pathogens.	Identify the causal disease. Plant resistant varieties if available. Crop rotation and soil solarization can help reduce wilt diseases.
Virus	Leaves are light green, mottled, malformed, dwarfed and curled. Early infection affects fruit shape and flavor. Viruses can be transmitted by aphids and leafhoppers, brushing against infected plants, or from tobacco products.	Control aphids. Destroy infected plants and weeds. Don't use tobacco products when handling plants.
Disorders	**Symptoms**	**Control**
Blossom End Rot (BER)	Blossom-end-rot is caused by a localized calcium deficiency brought on by poor water management, excessive nitrogen, root pruning, and drought stress. Affected fruits become dry, brown or black on the flower end.	Better water and nutrient management can reduce BER. Maintain uniform soil moisture during hot weather particularly when plants are flowering. Mulch around plants.
Sunscald	Sunscald is caused when fruits are exposed to direct sunlight during hot, dry weather. Sun exposed areas over-heat, dry out, and do not color uniformly.	Maintain uniform soil moisture during hot weather. Plants with good leaf cover have less sunscald problems.

Harvest and Storage

Pepper fruits require 35-45 days to mature from flowering to full color (red, yellow, orange) depending on the temperature and variety. Fruits are generally picked green (immature) or fully colored (ripe). Fruits should be firm, plump, and smooth skinned for best flavor and quality. Pick fruits as they mature. At the end of the season, harvest all fruits that are mature green or colored slightly. Peppers will store for 1-2 weeks if held at 50-55ºF. Fruits are subject to chilling injury so do not store for long periods in the refrigerator.

Productivity

Plant 3-4 pepper plants per person for fresh use and an additional 5-10 plants for pickling, canning, drying, or freezing. Expect 75 pounds of fruit per 100 feet of row depending on variety.

Nutrition

Pepper is very nutritious, low in calories and fat and is an excellent source of vitamins A and C.

Frequently Asked Questions

What causes the flowers to drop off my pepper plants? During unfavorable weather (nights lower than 55ºF, or days above 90ºF), Pepper fruits do not set and flowers abort. The problem usually disappears as the weather improves.

My peppers often have pointed, cupped, twisted, and irregular shaped leaves. What causes these symptoms? Your peppers may have been injured by 2,4-D or a similar growth regulator weed killer. Never use the same sprayer in your vegetable garden that you use for weed control in your lawn. Use caution when applying lawn care chemicals near the vegetable garden. If you apply grass clippings to the garden,

make sure they have not been treated with herbicides not recommended for the garden.

On some of my pepper plants, the leaves are turning yellow and the plants are no longer growing. What is wrong*?* Peppers with these symptoms may be infected with the curly top virus or one of several wilt diseases. Once infected, there is no known control so it is best to destroy infected plants. The severity of curly top varies from year to year, so planting a few more plants than required will compensate for potential losses. For wilt diseases, make sure you are not over-watering.

This project is funded in part by USDA-Risk Management Agency and the Utah Department of Agriculture and Foods Specialty Crops Block Grant (SCBG 161039) under a cooperative agreement. The information reflects the views of the author(s) and not USDA-RMA or UDAF.

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