

Growing Peppers in the Home Garden

Bell peppers (*Capsicum annuum*) are of the Nightshade or Solanaceae family, as are tomatoes, eggplants, and potatoes. Hot peppers belong to several other species.

Varieties

There are numerous varieties of peppers. Peppers are categorized as sweet or hot and also vary by fruit color, shape, flavor and culinary use. Sweet peppers include banana, bell, cherry, and pimiento types. Bell peppers are blocky, 3 or 4 lobed fruit that taper slightly at the bottom. Most bell peppers are sweet and depending on the cultivar, the fruit turns red, yellow, orange, brown or some other color at maturity. Many cultivar names are followed by one or more letters indicating resistance or tolerance to the disease, Tobacco Mosaic Virus (TMV)

Hot peppers include ancho, chile, habañero, jalapeño, and serrano types. The hotness of hot peppers depends on how much of the alkaloid, capsaicin, is produced. Capsaicin level varies with variety and is genetically determined, but also is influenced by temperature and by cultural conditions such as the amount of fertilizer and water provided to plants. Wearing gloves and working in a well ventilated room is recommended when working with very hot peppers because their volatile oils can cause burns or irritate sensitive skin. Avoid touching your eyes and other sensitive areas after handling hot peppers.

Learn about the different varieties of peppers from seed catalogues. A partial list of seed companies located in New England include:

Fedco, Albion ME <http://www.fedcoseeds.com/>
Pinetree Seeds, New Gloucester ME <https://www.superseeds.com/>
Johnny's Selected Seeds <http://www.johnnyseeds.com/>
Chas. Hart Seed Co., Wethersfield CT <http://www.hartseed.com/>
NESEED, Hartford CT <http://www.neseed.com/>

Soil Preparation

Peppers grow best in fertile, well drained soil where they will receive a maximum amount of sunlight. Sandy loam soils high in organic matter are best for an early crop because the soil warms up fast and drains quickly.

Organic Fertility

The organic approach to fertilization involves feeding the soil, rather than just feeding the plant. Soil organic matter is an important component of soils. Use of finished composts and rotted or composted animal manures are effective ways to add organic matter to soil. The nutrient content of manures and compost varies depending on a number of factors including the source, moisture content, handling and storage. Finished compost provides a little nutrient value, having an analysis of about 1-1-1 (N – P₂O₅ - K₂O)

Composts and manures provide some nutrient value but should be supplemented with other organic fertilizers. The following lists organic sources of fertilizer and their availability to plants.

Nitrogen: Alfalfa pellets (slow availability), dried blood (medium-rapid availability), cottonseed meal (slow-medium availability), fish emulsion (rapid availability) and soybean meal (slow-medium availability).

Phosphorus: Rock phosphate (slow availability) and bone meal (slow availability).

Potassium: Wood ash (rapid availability), alfalfa pellets (slow availability), cocoa shells (slow availability) granite dust (very slow availability) and green sand (very slow availability).

Organic sources with slow or very slow availability are not soluble or effective for short-term availability and are best used building soil reserves over long term.

Natural fertilizers can be purchased as "single ingredient" fertilizers such as dried blood, bone meal or green sand or complete fertilizer such as 4-6-6 or 5-3-3 with a combination of organic sources of macronutrients in one bag. There are dry forms of organic fertilizer such as dried blood and liquid forms such as seaweed and fish emulsion. Natural fertilizers release nutrients slowly and some very, very slowly over a period of time. Only a portion of the total nutrient content is immediately available for plant use. This means that in a garden with low initial fertility, more fertilizer will need to be added than is immediately required by the plants.

Natural fertilizers vary in their analysis. For this reason it is advised to followed fertilizer recommendations provided on the fertilizer bag/container by the manufacturer or provided by the soil test laboratory as a result of a soil test.

pH and Lime

Pepper plants are not particularly sensitive to soil acidity, however, best yields are obtained between pH 6.5 and 6.8 pH. Most soils will benefit from the application agricultural limestone applied at a rate of 5 lbs./100 square feet. It is best to have a soil sample tested by the University of Massachusetts Extension soil test laboratory and follow recommendations. Lime is more effective when applied in the fall.

Synthetic Fertilizers

Note that excess nitrogen fertilizer can result in plants with vigorous growth but little fruit production.

Prior to planting: Liquid or dry fertilizer is normally applied at the time of transplanting. Dry fertilizer is best placed 3"-4" around the stems of the plants.

Or broadcast: On loam and heavier soils, apply 2-3 pounds of 10-10-10 fertilizer per 100 square feet. On lighter or sandier soils, apply 3-4 pounds of 10-10-10 fertilizer per 100 square feet. Lime can be applied at the same time. Rake into the top few inches of soil.

Sidedress: 1-1/2 to 2 pounds of 10-10-10 fertilizer per 100 square feet (approximately 1-1/2 ounces per plant) is usually beneficial after the first fruits have been set. Apply three to four inches from the plant, then rake and water in.

Planting and Care

Pepper is a warm-season crop requiring three to four months of frost-free growing days. Due to their long growing season and temperature requirements, peppers are set out as transplants in Massachusetts' gardens after danger of frost is past. Gardeners can either purchase plants at local garden centers or start their own from seeds sown in flats or pots indoors, 6 to 8 weeks before the average last spring frost.

To purchase pepper transplants, choose plants with straight, sturdy stems. Plants should have 4 to 6 young true leaves, no blossoms or fruit, and be free of insect pests and diseases. Peppers are slow growing and are susceptible to transplant shock. Excessive hardening may delay the

resumption of growth in the garden. Set plants outdoors a week or more after the frost free date for your area or when the average daily temperatures reaches 65F. Pepper plants require warm temperatures and will not set fruit at temperatures below 55F.

Planting

Plant in rows 24 inches apart with plants spaced 12 to 18 inches apart. Stagger the plants to save space. Set the transplants about one inch deeper than they were in their original container. Press the soil firmly around the plant and water well afterwards. Using liquid fertilizer material (manure tea or starter fertilizer) is usually beneficial at this time. Non-bell peppers with weaker stems can be transplanted so that the cotyledons are at the soil surface and the root ball is about 2 inches deep.

Watering

Peppers develop a shallow root system and may need watering once or twice a week depending on soil type and rainfall. Peppers need about one inch of water per week. Peppers especially need water during flowering and fruit set to prevent shedding of flowers and small fruits. Water stress may also cause a physiological disease called blossom end rot.

Weed Control

Shallow cultivation (one to two inches deep) is best used when weeds are small. If roots are accidental injured, stunted growth and flower drop can occur. Mulching and hand pulling weeds are other methods to keep peppers weed free. Four inches of straw mulch around plants and will prevent weed growth and conserve water. Black plastic mulch is especially beneficial for peppers because it warms the soil in addition to providing weed control.

Pests

Insects

Aphids: Lady beetles, braconid wasps, green lacewings are natural enemies. Use slow-release nitrogen and avoid applying in excess. Repel with reflective plastic mulch. Spray with strong stream of water to temporarily remove from plants. Use spray of insecticidal soap.

Cutworm: Use 3"-4" vertical collars such as a paper cup with bottom removed around each transplant. Set 1"-2" into the soil.

Diseases: Bacterial spot (rotate away from solanaceous crops for at least 2 years, sanitation after harvest), cucumber mosaic virus (manage aphids and weeds, resistant varieties available), crown rot and blight (sanitation including clean tools), tobacco mosaic virus (carried in tobacco products, spread by hands and tools, resistant varieties available).

For pest management see the fact sheets "Insect Management in the Home Vegetable Garden" and "Disease Management in the Home Vegetable Garden"

<http://www.umassgreeninfo.org/homegarden/veggies.html>

Other Problems

Problem: Peppers turn brown and fall off as soon as formed.

- **Cause:** Unfavorable weather, calcium deficiency-blossom end rot. **Blossom end rot** a common problem in peppers is associated with insufficient uptake of calcium to the fruit. It may be caused by inadequate or uneven water supply and excessive nitrogen and certain other conditions which interfere with calcium nutrition in the fruit. Symptoms are sunken, leathery, blackened area at the blossom scar of immature. It usually develops during or immediately following a period of water stress, such as a drought of two or three weeks' duration. Severe blossom end rot may be greatly reduced by irrigation during dry periods.

Problem: All growth, no peppers.

Cause: Unfavorable weather - prolonged cloudy weather, too high or low temperatures.

Problem: Plenty of flowers, tiny deformed peppers, large plants.

Cause: Lack of fertilizer, side dress after plants are set (see fertilizing).

Problem: Fruit drop.

Cause: Unfavorable weather when flowers are setting.

Note: Many people believe that excessive fertility many cause all growth with few peppers. Usually the cause of this problem is unfavorable weather conditions and not soil fertility.

Harvesting

Harvest peppers by carefully snapping off by hand. Care should be taken when harvesting the fruits as branches are very brittle. In order to avoid excessive breakage of the branches, hand pruners or clippers can also be used. Peppers can be harvested when the fruit reaches full size and green (immature) or allowed to fully ripen to red, yellow, orange, purple, or other colors..

Fresh peppers may be stored for up to 3 weeks in cool, moist conditions (45 to 50° F. and 85 to 90 percent relative humidity).

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