



Vegetable Gardening Tips

Growing Information for the Home Gardener Series



Cole Crops

Broccoli, Brussels Sprouts, Cabbage and Cauliflower

Broccoli, Brussels sprouts, cabbage and cauliflower are members of the Brassicaceae family and often called Brassicas or cole crops. These cool-season crops are somewhat hardy and will tolerate various degrees of frost. They grow best in the fall when the weather turns from warm to cool. When these crops mature in cool weather, they are of the highest quality. An early spring crop is possible, but you should select varieties that are heat-resistant and mature early.

Use the chart below to help determine the optimum planting dates for Brassica crops in both north and south Louisiana.

If you grow your own fall or spring seedlings to transplant into the garden, start the seed five to six weeks ahead of time in a germinating mix. Keep moist, and do not fertilize until after the first true leaf has emerged.

Cultural Practices

Soil Preparation

The best soil for cole crops is one that is rich with organic matter and well-drained, yet able to supply plenty of soil moisture. Select an area where cole crops were not grown the previous year. Average soils in Louisiana will require about 1/2 pound of an 8-24-24 fertilizer or about 1.5 pounds of 8-8-8 for each 20 feet of row. When applying fertilizer, especially compost, it's best to do so several weeks before planting the garden.

If the soil is very acidic, it needs an application of lime, based on soil test recommendations. Apply lime several months before the planting season, because it acts slowly. The best soil pH is 6.0. High pH can cause head browning.

When preparing the seed bed or garden row, rake all the soil into high beds for good drainage. In areas where drainage is adequate, lower beds may be formed. Just before planting the seeds, rake or drag off the top of the row to expose fresh, moist soil. Plant the seeds 1/4 inch deep. Firm the loose soil over the seed with a rake. When you are planting in soils that tend to form a crust after rains, seed a little heavier or cover seed with a loose potting soil. The germinating seed is at a delicate stage and must receive adequate soil moisture. If the moisture is sufficient, the seeds should sprout in about four to seven days.

Set out transplants about the depth in which they were originally grown. Plants grown in full sun from the start will be short and healthy green. Plants grown in some shade will stretch and be a little lighter green. Young plants and transplants will quickly run their tap roots deep into the ground even though they may look very poor during the late summer heat. When the cooler fall weather arrives in late September, they will take on life and grow like weeds. Allow 12 to 18 inches between plants and a little more 24-36 between cauliflower plants.

Sidedress young plants with fertilizer about three to four weeks after transplanting, and then again in two to three weeks. Most soils need only nitrogen as a sidedressing. About 1/4 pound of ammonium sulfate or 2 pounds of calcium nitrate per 20 feet of row is the recommended rate. On light, sandy soils, sidedress with about 1/2 pound of 8-8-8. This sidedressing placed 4 to 6 inches away from the base of the plant, along with good moisture, will keep the plant growing vigorously until harvest. Such growth is very important for a top quality head or sprout.

Optimum Planting Dates for Brassica Crops

Crop	Fall transplant date	Fall direct-seed date	Spring transplant date
Broccoli	08/01-10/31	07/01-09/10	01/15-03/15
Brussels sprouts	08/01-09/30	07/01-09/10	Not recommended
Cabbage	08/01-11/30	07/01-09/10	01/15-03/15
Cauliflower	07/15-10/31	07/01/08/30	02/01-03/15

Broccoli

Broccoli, also called sprouting broccoli, is easier to maintain than cauliflower. It requires no special treatment to maintain its color or quality and will tolerate more heat and cold. It freezes well and is a good source of vitamins C, A, B2 (riboflavin) and potassium. Early maturing varieties recommended for Louisiana include Packman, Everest and Premium Crop (AAS). Marathon, Gypsy, Patriot, Arcadia and Green Magic are good late maturing selections. For your spring crop, choose an early maturing variety.

Broccoli heads are harvested at or near full size, but before the flower heads have begun to open and show a yellowing. Over-maturity tends to cause woodiness in the outer tissues of the stem. The head is cut out of the plant with about 4-6 inches of stem remaining. The plants may be left in the garden for a second or third cutting of broccoli. Lateral shoots develop after the central head is cut. These shoots are not as large as the central head but are fine for fresh table use or freezing.



Brussels sprouts

Brussels sprouts are a form of nonheading cabbage that develops small heads (called sprouts) at each node, where a leaf attaches to the stem. Some varieties form dozens of sprouts and terminate in a small cabbage head on top. The young and tender leaves of all cole crops may be eaten as greens. This vegetable is a good source of potassium and vitamin C. Brussels sprouts have a long growing season, requiring about three months from transplanting to first harvest. They are the coldest hardy of these three crops. For best quality, plant Brussels sprouts only in the fall so that they mature before warm weather sets in. Hybrid varieties recommended for Louisiana include Jade Cross and Oliver.

Harvest the sprouts when they are 1 inch or larger in diameter. Harvest while they are still firm and before their companion leaf turns yellow. De-budding the top bud forces sprouts to mature more quickly and evenly. Sprouts maturing in very warm weather are usually looser and stronger in flavor. At harvest, the companion leaf is normally snapped off as the sprout is pulled to make harvesting easier. To ensure a longer harvest season, keep sprouts picked regularly, including over mature sprouts. Some gardeners even cut off the entire stalk and snap off leaves, leaving the small heads attached to the stem.



Cauliflower

Cauliflower also is called “heading broccoli.” It is harder to grow than broccoli or Brussels sprouts but is a good source of vitamin C. It needs rapid and continuous growth, especially in the early stage, for proper head development. If growth is impeded by a lack of moisture or fertilizer or by insect and other problems, the head, or curd as it is sometimes called, will be small or fail to develop.

Intense heat from planting too early or too late also may cause a failure of the curd to form. Cauliflower will mature in about two months, depending on varieties. Recommended early hybrids are Snow Crown and Majestic. Candid Charm is a large-head, early hybrid that self-wraps. A good open-pollinated variety is Self Blanch (fall only). Good late varieties include Freedom, Incline, Cumberland, Wentworth and White Passion.

Cauliflower is harvested by cutting out the curd when it is about 6 inches or larger in diameter. Curds left on the plant too long will loosen and become “ricey.” It is better to cut a little early than a little late. Even slight over-maturity reduces the quality.

When the curd is about 3 inches in diameter, it is usually blanched. Blanching is tying or clamping the leaves over the curd to protect the curd from direct sunlight. Blanched curds are snowy white, more delicate in flavor and smooth in appearance. The time from blanching to harvesting depends on the temperature. In warm weather, cauliflower may reach harvestable stage in three to four days after being tied. In cool weather, growth is slower and may take 7-10 days. Check as needed to avoid over maturing of the head.

Cabbage

Cabbage is an ancient vegetable with many uses. It is rich in iron and vitamins K, C and B6. Production of highest quality heads depends on rapid growing conditions and good fertility through head maturity. Cabbage requires 2 to 2 1/2 months from transplant to maturity.

Cabbage is usually ready to cut when the green cover leaves begin to curl back slightly, exposing the white leaves beneath. At this stage cabbage is about as hard and heavy as it will become without bursting and without being

too crisp and brittle for good handling. Cabbage may be harvested as soon as it is large enough, regardless of its stage of maturity. However, the quality of the produce is also inferior when harvested soft. Generally speaking, harvest heads when they feel about as hard as a softball.

Varietal selection is important. This determines disease resistance, earliness, leaf color and texture. Highly recommended early maturing hybrids include Green Cup, Blue Vantage, Green Boy, Stonehead, Quick Start, Savoy Ace (AAS) and the reds of Red Dynasty and Red Jewel. Best main season hybrids have been Blue Dynasty, Blue Thunder, Cheers, Platinum Dynasty, Quista, Solid Blue 780 and Rio Verde in fall or winter only.

Mature heads will split if high moisture and good growing conditions persist after head maturity. If these conditions persist, harvest heads. Bolting or premature formation of seed can be a problem with the over-wintering crop grown in Louisiana. Bolting is caused when plants are exposed to temperatures around 40° F and below for several weeks. Plants are especially sensitive when the largest leaves are 3 to 4 inches wide or wider. To reduce this problem, plant varieties that are most resistant to bolting during the part of the growing season where these temperatures are most likely to occur.

The size of the transplants also influences bolting. With all other factors equal, the larger the seedling at the time it is transplanted, the more likely it is to bolt if exposed to the 40° F temperature range for several weeks after transplanting. Holding plants because of inclement weather can present a problem. The gardener at some point must decide to discard oversized plants. Cabbage seed of poor quality will also show a higher percentage of plants bolting than will high quality seeds.

A physiological disorder known as “tip burn” has been observed in cabbage that did not receive ample moisture. Reports indicate that because of low soil moisture, insufficient calcium is translocated to the growing tips of the leaves. Tip burn is not visible until the heads are cut open. The center of the head will have leaves that are dark and appear as brown streaks in a cross section. Usually the problem develops as the crop approaches maturity. Tip burn resistant varieties are Quisto and Solid Blue 780.

Pest Control

Manage weeds in and around the garden area, use appropriate plant spacings and water and fertilize cole crops to help them achieve maximum growth and the ability to tolerate some pest pressure. Read all labels before applying pesticides, and follow directions. The proper use of pesticides will benefit you, your crops and their environments. Proper timing of application and amount used are important for the safe use of pesticides. Be sure to wait the recommended time between applying and harvesting.

Weeds

Cole crops are generally grown in the fall and early spring garden where winter annuals can be a problem. Black plastic mulch is a very effective means to controlling weeds in large gardens. In addition to providing weed control, the plastic warms the soil and controls moisture. In smaller gardens, organic mulches such as pine straw,

leaves and hay are effective materials for weed control.

Two herbicides are approved for use with cole crops: trifluralin and sethoxydim.

Trifluralin (Treflan, Miracle Gro Weed Preventer) is a herbicide that controls many weeds before they emerge from the soil. It should be applied prior to transplanting cole crops and incorporated into the top 2 inches of soil. Sethoxydim (Poast, Hi-Yield Grass Killer) controls grasses such as ryegrass it emerges without injuring the cabbage. However, sethoxydim does not control annual bluegrass, a common winter annual grass.

Insects

The most common insect pests of these crops include aphids and various caterpillars. Caterpillars are controlled with a biological spray formula containing *Bacillus thuringiensis*. Apply alone or with permethrin or spintor, or as needed. Aphids are often controlled by sprays containing malathion. Apply as needed. Foliage sprays often benefit with the addition of a spreader-sticker.



Diseases

Blackleg, black-rot and soft-rot are three diseases associated with cole crops. The blackleg fungus forms ashen gray spots that have tiny blackened dots on leaves and stems. Stems become girdled, and the plants wither and die. The black rot bacteria blacken the veins and central areas of the stem. Leaves will yellow at the margins and drop. Both diseases are carried on or in the seed and may live in fresh refuse in the soil. Bacterial soft rot can develop in heads nearing maturity. The center of the head turns mushy and usually exhibits a foul odor. To control these diseases, buy clean western-grown seeds, and rotate garden areas growing cole crops from year to year. Spray fixed copper.

Downy mildew produces small yellowish splotches on leaves with a white-to-purple downy growth on the lower surfaces. This fungus can be controlled with chlorothalonil, maneb, Ridomil or fixed copper fungicidal sprays. Apply at first appearance and then every 7-10 days. Wash off residue if you spray within a week of harvest.

Root rot caused by *Phytophthora*, a fungal-like microorganism is very common in water-logged compacted soils. All Cole crops are susceptible to root rot. Symptoms appear as purple discoloration of older leaves and a purple canker on the stem. Severe root rot occurs and diseased plants are easily pulled up from the ground. Good cultural practices such as reducing compaction, improving soil drainage and maintaining adequate soil fertility are critical in managing root rot. Use fungicides containing phosphorus aids as preventative sprays.



Authors

Kathryn Fontenot, Assistant Professor (School of Plant, Environmental and Soil Sciences)

Mary Sexton, Extension Associate (School of Plant, Environmental and Soil Sciences)

Raj Singh, Assistant Professor (Department of Plant Pathology and Crop Physiology)

Sebe Brown, Assistant Area Agent (NE Region)

Ron Strahan, Associate Professor (School of Plant, Environmental and Soil Sciences)

Thomas J. Koske, Ken Whitam, James Boudreaux, Dale Pollet and Don Ferrin (Retired)

Visit our website: www.LSUAgCenter.com

William B. Richardson, LSU Vice President for Agriculture, Louisiana State University Agricultural Center
Louisiana Agricultural Experiment Station, Louisiana Cooperative Extension Service
LSU College of Agriculture

Pub. 2310 (online only) Rev. 04/17

The LSU AgCenter and LSU provide equal opportunities in programs and employment.