



Growing Cole Crops

Cabbage, cauliflower, broccoli, Brussels sprouts and kale make up a group of cool season vegetables known as cole crops. The word “cole” means stem and has nothing to do with the fact that these vegetables are tolerant to “cold.”

Cole crops are hardy and grow best in the spring and fall. However, growers must take care to avoid extended periods of low temperature before or after transplanting.

Successful production of cole crops is related to how each crop grows and which plant part is eaten. The edible parts of broccoli and cauliflower are the flower heads which are quite sensitive to environmental and nutritional stress. Cabbage and Brussels sprouts produce leafy heads and can withstand greater fluctuations in weather and nutrition.

Growing Conditions

Site Cole crops will tolerate some shade but full sun is always preferable. If garden space or orientation is such that some vegetables will have to be partially shaded, reserve the full-sun area for warm season crops.

Soil A wide range of soils is suitable but fertile, well-drained loams are considered best, especially for early crops. Cole crops will grow better in heavier, cooler soils than warm season crops.

Fertilizer A soil pH in the range of 6.0 to 6.8 is optimum, but a pH maintained on the high side of the range will help control the soil-borne disease called clubroot. Cole crops are heavy feeders and do best in a deep, fertile soil enriched with plenty of organic matter. A soil test will determine deficiencies of major plant nutrients and recommend ways to correct them. Because cole crops can easily become deficient in minor elements, at least part of the fertilizer material should be composted manure or composted vegetable matter to ensure a supply of these nutrients. Of the four crops, cauliflower is the most exacting in soil and fertility requirements.

Planting and Culture

Most growers grow cabbage, cauliflower, broccoli and Brussels sprouts from spring transplants rather than seeding them directly, although fall crops may be seeded directly into the garden in early summer.

A quality transplant is a vital key to a successful crop. To prevent premature flower stalk formation, keep the seedlings growing above 60° F. This is particularly true for broccoli and cauliflower. A good transplant is 5 to 6 weeks old, sturdy with good color, and has been hardened off. Older plants or those that have already formed small heads do not yield as well as younger plants.

Ensure vigorous growth once plants are set in the garden to prevent the flowering heads of broccoli and cauliflower from “buttoning”. “Buttons” are small, unusable heads borne on small plants stunted by drought, weed competition, or insect damage. A few days of low temperature (35°F to 50° F) can also cause buttons to develop. While young cabbage plants can withstand very low temperatures (even down to 10° to 15° F for a night or two), broccoli and cauliflower are not nearly so resistant. Do not plant too early!

Space rows 24 to 36 inches apart, setting transplants or thinning seedlings 12 inches apart for cabbage and 18 inches for cauliflower, broccoli, and Brussels sprouts.

When direct-seeding, plant seed 1/4 inch deep. Conserve seed by grouping 3 to 4 seeds at the desired plant spacing instead of the more traditional system of sowing a continuous row and discarding many seedlings by thinning. Proper spacing is important for maximum crop yield.

Adding a soluble starter fertilizer around each plant at the time of transplanting helps get the plant off to a good start. Before filling in the transplant hole add one cup of starter solution made up of 2 table-spoons per gallon of soluble fertilizer such as 16-32-16 or 10-45-15.

Weed Control

Avoid garden areas heavily infested with quackgrass. Hand weeding or hoeing, shallow cultivation and straw or hay mulches will provide excellent control. Black plastic mulch also provides good weed control when crops are established with transplants. An efficient planting pattern is a double row with the plants in a staggered arrangement.

Pest Control

The first line of defense against all insect pests and diseases of cole crops is crop rotation. Do not plant any cole crop in a spot occupied the previous year by another cole family member. Two or three-year rotations are even better.

Flea beetles and root maggots can cause serious damage to cole crops, chewing away the roots of young seedlings so they wilt and die. Covering beds or rows with floating row covers of spun-bonded polyester for the first month or more of growth will prevent attacks by both these pests

The larval stages of several different species of moths can also cause serious damage. Row covers left on throughout the growing season, or regular applications of Bt (*Bacillus thuringiensis*), a bacterial poison that kills only caterpillars, will control cabbage worms of all species.

Clubroot is a soil-borne disease causing stunted plants which wilt even in moist soil. Raise the pH to 7.0 to 7.2 if this disease is a problem. Practice rotation.

Harvest

Cabbage Harvest when the head is very firm. Springy heads are not mature.

Cauliflower Harvest heads when they reach a diameter of 5 to 8 inches and before the segments begin to separate. To get pure white heads, exclude light. If you are not growing a “self-blanching” variety, tie the outer leaves over the developing head with rubber bands or clothespins and keep them tied until harvest. Do not be concerned if some light gets through and discolors the head; the eating quality is not affected.

Broccoli Harvest while the head is still compact and before the small flower buds open up to show yellow. Head diameter will range from 4 to 8 inches. After this center head is harvested side shoots (heads) of 2 to 3 inches will develop.

Brussels sprouts Small, cabbage-like sprouts develop along the thick stem, maturing first at the base of the plant. As the sprouts enlarge, remove the large leaves between the sprouts. Pinch out the growing tip of the plants in early September to hasten maturity. Harvest the sprouts when they are firm and before they open up. A light frost or two improves their flavor.

Kale - Harvest kale any time leaves are large enough for intended use. Tender young leaves are best for salad; older leaves for cooking. Frost improves the flavor of kale.

Storage

Mature cole crops are quite hardy and will withstand several frosts (or even snow) in the fall; therefore, “garden storage” is feasible well into October or November, even later for the hardiest varieties of kale and Brussels sprouts.

Late fall or winter cabbage can be stored for several months if kept in humid conditions as close to freezing as possible. Store only disease-free heads. Remove loose outer leaves and place in containers lined with perforated plastic bags. Pull out the cabbages and hang in a moist cellar, roots and all, or cut heads, remove loose outer leaves and spread one layer deep on shelves or pallets in a moist root cellar.

Fact sheet originally developed by Dr. Otho Wells, former UNH Cooperative Extension Vegetable Specialist, revised 2/01

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