

# Growing cole crops in Minnesota home gardens

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Photo by Dave Hansen

Cole crops, also known as crucifers (*Brassica spp.*), include broccoli, broccoli raab, Brussels sprouts, cabbage, Chinese cabbage, cauliflower, collards, kale, and kohlrabi. All are members of the mustard family, and grow best in cool weather. Broccoli, broccoli raab, and cauliflower produce edible flowering stalks. Brussels sprouts and cabbage produce tight heads of leaves, and kohlrabi forms an edible enlarged stem. Collards and kale produce loose leaves, like chard, lettuce and spinach. For more information on growing collards and kale, see [Growing Leafy Greens in Minnesota Home Gardens](#).

## Planting

Cole crops are generally transplanted for a summer crop. [Start seeds indoors](#) in early April or 4-6 weeks before transplanting. For fall crops, start seeds in June for Brussels sprouts or storage cabbages, and July for broccoli, broccoli raab, cauliflower, or Chinese cabbage. Kohlrabi can also be direct seeded at 1 inch apart and 1/4 to 1/2 inches deep. Thin emerged seedlings to create 4 inches of space between plants. Chinese cabbage is generally grown only as a fall crop because it tends to bolt, or produce flowering stalks, if exposed to late spring frosts or over a week of nights below 50° F. However, satisfactory spring production can be achieved with the use of floating or supported row covers that lessen the effect of cool nights.

## Soil pH and fertility

Grow cole crops in well-drained yet moisture-retentive, fertile soil. Cole crops grow best in soils with pH of 6 to 6.5. Have your soil tested (see [Understanding Your Soil Test Report](#)) to determine your soil's pH and whether it should be amended. Incorporate well-rotted manure or compost, or a garden fertilizer at a rate of 2 pounds per 100 sq. ft. before transplanting. Addition of manure or compost can add micronutrients and organic matter to soil (see [Composting and Mulching](#)). In mid-season, you can side dress the same fertilizer at a rate of 1 pound per 25 feet of row. Do not use any fertilizer containing a weed killer ("Weed and Feed"), or it will kill your vegetable plants.

Continuous use of high phosphorus fertilizer such as 10-10-10 or 15-30-15, or high rates of manure or manure compost results in phosphorus buildup in the soil. Although phosphate fertilizer applied to soil is bound tightly and resistant to movement in the soil, some runoff may occur. It can then become a major pollution concern in our lakes, rivers and streams. High levels of phosphorus support over-production of algae, which causes significant reduction in water quality (see [Preventing Pollution Problems from Lawn and Garden Fertilizers](#)). If your soil tests high in phosphorus, use a low phosphorus (such as 32-3-10, 27-3-3, or 25-3-12) or no phosphorus (such as 30-0-10 or 24-0-15) fertilizer at the rate of 1/2-1 pound (1-2 cups) per 100 sq. ft.

## Watering



Photo by Vince Fritz

Proper watering will enhance good production. Soak the soil thoroughly when watering, to a depth of at least one inch each week during the growing season. There is little or no value in light watering that only wets the soil surface. Sandy soils may require more frequent watering.

## Controlling weeds

Frequent, shallow cultivation will kill weeds before they become a problem. The roots of the cole crops are very close to the surface of the soil, so it is important not to cultivate too deeply. Cultivate just deeply enough to cut the weeds off below the surface of the soil. Be careful not to damage the plants when cultivating. Mulching with herbicide-free grass clippings, weed-free straw, or other organic material to a depth of 3-4 inches can help prevent weed emergence, decreasing the need for frequent cultivation.

# Harvesting

Harvest broccoli, broccoli raab, and cauliflower before flower buds open and when heads reach a useable size. Harvest heads by cutting. Broccoli can produce usable heads for several weeks, either as one central head or as side shoots after the central head has been removed.

For white cauliflower, gather outer leaves over heads when the heads become visible, and tie leaves loosely with string or rubber bands. This will keep the heads, or curds, white-colored (blanched) as they develop in a shaded environment. It is not necessary to tie leaves of colored (orange, green, or purple) or romanesco-type cauliflower. If curds are left on the plant for too long, they will become loose or ricey. There are self-blanching varieties available that don't require the leaves to be tied.

Brussels sprouts produce many small heads. Once the lowest heads or sprouts reach the size of a quarter, pinch out the plant's growing point to promote uniform sizing of all sprouts on the stalk. After freezing weather occurs (late October), remove the leaves, cut the plants off at the soil surface, and stack them upright in a cool cellar. The sprouts still on the plant can be picked during the winter.

Harvest cabbage when the heads reach a useable size. To harvest, cut the head off above the outer leaves. Heads can split if they are left on the plant too long. You can minimize splitting by twisting the head a quarter turn or shearing one side of the roots with a spade to reduce water flow into the head when close to harvest.

Harvest kohlrabi when the "bulb" (enlarged stem) is 2-3 inches in diameter. If the bulb gets too large, it will become tough, woody, and bitter.

## Common problems

For assistance in diagnosing unknown problems visit [What's wrong with my plant?](#)

### Insects

There are several common insect pests on cole crops. [Flea beetles](#) chew small holes in leaves. Seedlings are particularly susceptible to injury due to this feeding. [Cabbage loopers and imported cabbageworms](#) feed on the leaves of cole crops. Young seedlings and transplants are most susceptible to injury from this feeding. [Cabbage maggots](#) feed on the roots injuring plants, in some cases even killing them.

### Diseases

A variety of [diseases](#) affect cole crops including alternaria leaf spot, black rot, black leg, and club root. Since many diseases arrive on infected seed, always purchase clean disease free seed from a reliable source. Remove diseased plant material from the garden and destroy it. Rotate vegetables in the garden. Avoid planting cole crops were they were grown the previous year. Some disease-resistant varieties are available.