

COLE CROPS: A group of cool season vegetables, cabbage, Brussels sprouts, broccoli, cauliflower, kale, and kohlrabi. They grow best in spring & fall, can withstand some frost, and do not grow well in hot weather. Success depends on learning how each grows & what parts of the plant are eaten (e.g. edible parts of broccoli & cauliflower are the flowers, while cabbage & Brussels sprouts produce leafy head).

GROWING CONDITIONS

SITE: Full sun is best, will tolerate some shade.

SOIL: Fertile, well-drained loam is best. Cole crops grow better in heavier, cooler soils than warm season crops.

FERTILIZER: Soil pH 6.0-6.8 best. They are heavy feeders, & do best in a deep, fertile soil with a lot of organic matter. **Do a soil test every 3 years on your garden site.**



PLANTING & CULTURE:

Most cole crop growers grow from spring transplants, although fall crops may be seeded directly into garden in early summer. A good transplant is 5-6 weeks old, sturdy, & has been hardened off. Keep seedlings growing above 60° F. Space rows 24-36 in. apart, seedlings 12" for cabbage and 18" for others. If direct seeding, plant ¼ in. deep. Adding a soluble starter fertilizer around each plant at time of transplanting helps get plant off to a good start. Before filling in transplant hole, add one cup starter solution: 2 Tbsp. per gallon of soluble fertilizer such as 16-32-16 or 10-45-15.

WE CAN HELP YOU....

- To identify plants
- Diagnose common insect and disease problems
- Find answers to your gardening questions
- Provide soil test kits

You can see us at many local events:

- Local Farmers Markets
- Chisago County Fair
- Almelund Threshing Show
- Chisago Lakes Home and Garden Show

Spring Gardening Expo

An all day gardening event held in March:
Classes on a variety of horticultural topics
Info booth staffed by Master Gardeners
Local businesses display and sell merchandise

Bare root plant sale

Each spring the Master Gardeners offer for sale several varieties of fruit and vegetable plants as bare root stock. These varieties are University recommended for our area and are often hard to find at local nurseries. Order forms are available in January

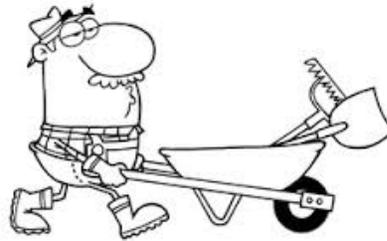
Voice Mail Line 651-277-0151

<http://www3.extension.umn.edu/county/chisago>

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Chisago County Extension Office

Our office is located at the Ag Service Building in North Branch at 38814 Third Avenue.



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Growing Cole Crops



**Chisago County
Master Gardener**

<http://www3.extension.umn.edu/county/chisago>

UNIVERSITY OF MINNESOTA
EXTENSION

WEED CONTROL: Avoid garden areas infested with quack grass. Hand weeding or shallow hoeing are suggested (cole crops have shallow roots that can be easily damaged); straw or hay mulches, or black plastic mulch should be placed around transplants.

PEST CONTROL: The first line of defense is crop rotation. Do not plant any cole crop in the same location as the previous year; 2 or 3 years are a good rotation. **Flea beetles & root maggots** can cause serious damage, chewing away roots of young seedlings so they wilt & die. Covering beds or rows with floating row covers for 1st month will prevent attacks by both pests. Larval stages of several different species of moths can cause damage. Row covers left on throughout



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 pH to 7.0-7.2 if this is a problem. Practice rotation.



HARVESTING COLE CROPS

CABBAGE: When head is very firm.

CAULIFLOWER: When heads reach diameter 5-8 in. & before segments begin to separate. To get pure white heads, exclude light. Tie outer leaves over the developing head with rubber bands & keep them tied until harvest.



BROCCOLI: Harvest while head is still compact & before small flower buds open to show yellow (4-6 in.) After center head is harvested, side shoots 2/3 in. will develop.

BRUSSELS SPROUTS: As sprouts enlarge, remove large leaves between sprouts. Pinch out growing tip of plants in early September to hasten maturity. Harvest sprouts when firm & before they open up. Light frost improves flavor.

KALE: Harvest any time leaves are large enough for intended use. Tender young leaves are best for salad; older leaves are best for cooking. Frost improves flavor.



KOHLRABI: Grown for its stem, it has a short growing season because it should be harvested when young in cool weather. Plant seeds in early spring, & then every two weeks from late June to the end of July for a long harvest. Harvest when the stem is swollen, tender, & just above ground. It should be no larger than a baseball. Large stems can get tough and woody.

The mission of the University of Minnesota Master Gardener program: "Use research-based horticultural knowledge and practices to deliver educational outreach and project-based efforts that inspire change and promote healthy people, healthy communities and a healthy planet."

STORAGE: Mature cole crops are quite hardy & will withstand several frosts in the fall. Garden storage is feasible well into October or November and 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.



For more information, visit the following site:
<http://www.vegedge.umn.edu/pest-profiles/crop/cabbage-broccoli-cauliflower/cole-crop-requirements>

Credits: Michigan State University, University of New Hampshire Cooperative Extension, and University of Wisconsin Extension. Other sites were Territorial Seed and Gertens.