

*College of Agriculture & Life Sciences*  
 Department of Horticultural Science

**CAULIFLOWER**

Douglas C. Sanders, Extension Horticultural Specialist

Cauliflower is a cool season crop, closely related to broccoli, cabbage, kale, turnips and mustard. It is more exacting in its climatic requirements than most other crops in this family. It grows best in a comparatively cool temperature with a moist atmosphere.

The plant is extremely sensitive to unfavorable conditions, such as unusually hot weather, drought or too low temperature, which often result in the formation of premature heads or curds. These “baby” cauliflower heads are called “buttons.” With proper management, cauliflower can be grown in North Carolina as either a spring or fall crop, although the fall crop will generally produce better quality. For

more complete information consult *Commercial Cabbage, Broccoli, Cauliflower and Greens*, Extension Bulletin, AG-487.

**Transplant Production**— Greenhouses or hotbeds are necessary to produce transplants for the spring crop. If a hotbed is used the soil should be moderately fertile, easily pulverized, and capable of holding moisture.

The soil should be fumigated to control weeds and soil borne diseases and insects. Consult Plant Pathology Note 170, *Soil Treatments for Greenhouse and Plant Beds -- Vegetable and Ornamentals*, the

<b>Spring Crop</b>			
	<b>Sow Seed in Frames</b>	<b>Sow Seed in Greenhouse</b>	<b>Transplant* into Field</b>
<b>Coastal Plain</b>	Dec. - Jan.	Jan.	late Feb.
<b>Piedmont</b>	Jan. - Feb.	Feb.	Mid-late March
<b>Mountains</b>	March	March	April

<b>Fall Crop</b>		
	<b>Sow Seed in Field or Beds</b>	<b>Transplant* into field</b>
<b>Coastal Plain</b>	late-July	mid-August
<b>Piedmont</b>	mid-July	early- to mid-August
<b>Mountains</b>	June	July

Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Employment and program opportunities are offered to all people regardless of race, color, national origin, sex, age, or disability. North Carolina State University, North Carolina A&T State University, U.S. Department of Agriculture, and local governments cooperating.

current *N. C. Agricultural Chemicals Manual* or your local Cooperative Extension agent for specific information.

\*Transplanting is preferred for the spring crop since it results in a more uniform stand and earlier harvest.

Plant the seed  $\frac{1}{2}$  to  $\frac{3}{4}$  inch deep in rows 3 to 6 inches apart with 4 to 8 seeds per ft of row. A StanHay or vacuum seeder may be used for this operation. Approximately 3 to 4 oz of seed are required to produce enough plants for one acre. If there is considerable overcrowding in the plant bed, thin the plants to an in-row spacing of 1 inch. Over-crowding can be avoided by not over seeding. Proper ventilation is important and can be maintained by raising the sash or plastic covering during the hottest portion of the day. Use a soluble fertilizer, as water and fertilizer are required frequently. When the seed is planted in beds, it requires about 8 to 10 weeks from seed to plants for the spring crop and about 4 to 5 weeks for the fall crop. Reduce the amount of water to the plants, or gradually decrease the temperature in the hotbed to harden off or toughen the plants prior to transplanting.

In the greenhouse a variety of plant growing containers may be used, i.e. plastic trays, peat pots and speedling trays. Containers are filled with an artificial media, usually a combination of peat, perlite, and/or vermiculite and, in some instances, bark. The seeds can be sown directly into the containers and thinned upon emergence to 1 plant per cell. In the greenhouse it will require about 5 to 6 weeks from seed to plants for the spring crop and 3 to 5 weeks for the fall crop. **Note:** Consult extension publication AG-337, *Production of Commercial Vegetable Transplants*, for detailed information.

**Soils** — Cauliflower is grown on many different types of soil, but does best in a rich, well drained soil with a high moisture-holding capacity. A high humus content in the soil will provide better aeration and water penetration. If a soil is low in organic matter, stable or green manures can be supplied. Cauliflower grows best on a neutral or slightly acid soil (pH 6.0 to 6.5).

**Fertilizer** — Soils should be tested to determine lime and fertilizer needs. Cauliflower requires a rich soil. In absence of a soil test, a general recommendation would be 80 lbs of nitrogen, 80 lbs  $P_2O_5$ , and 80 to 100  $K_2O$  plus 15 to 20 lb of borax per acre. Without boron, hollow stems with

internal brown discoloration can result. This fertilizer should be broadcasted or mixed into the row. Sidedress 4 weeks after transplanting, with 30 lb of nitrogen. On sandy soil an additional sidedressing may be necessary following excess rain. Home gardeners should mix 2 level Tbsp. of borax with 5 qt of fertilizer and apply this to 100 ft of row. Mix the fertilizer thoroughly with the soil.

Cauliflower requires high magnesium levels and shows deficiency symptoms readily when soils are too acid or the element is in short supply. In sandy loams of the Coastal Plain, magnesium at the rate of 100 lb of  $MgO_2$  per acre may be beneficial. Molybdenum deficiency which produces “whiptailing” of the leaves is also prevalent on very acid soils.

**Planting** — Plant on 8- to 10-inch ridged rows 36 to 38 inches apart and 15 to 20 inches between plants in the row. To insure proper contact of soil with the roots, water with 5 lb of soluble high phosphate fertilizer per 100 gal of water applied at one half pint to each transplant. For fall crops, cauliflower can be planted by seeding directly in the field and thinned to the desired in-row spacing when the plants have 3 to 4 true leaves. Precision seeders are very helpful in reducing seed usage and thinning labor. Approximately 1 to 2 lb per acre of seed are required when seeded directly in the field.

**Irrigation** — One inch of water every 5 to 7 days, from rainfall or irrigation, is highly desirable to produce large yields of high quality heads. Cauliflower is quite sensitive to stress, thus, be sure to irrigate.

**Weed Management** — Consult the current *N. C. Agricultural Chemicals Manual* or your local extension center for recommendations. If cultivation is practiced it should be shallow (2 inches or less), since these plants have a spreading root system and deep cultivation will injure the feeding roots.

**Insect Management** — Insects that attack cauliflower are similar to those that attack cabbage and broccoli. Consult the current *N.C. Agricultural Chemicals Manual* for specific control measures or contact your local county agent.

**Disease Management** — Diseases attacking cabbage and broccoli will also be a problem in cauliflower. Black rot, powdery and downy mildew and alternaria leaf spot

will be found in plantings of cauliflower. For recommendations on chemicals for disease control consult the current *N.C. Agricultural Chemicals Manual* or your county agent.

**Blanching** — Exposure to sunlight discolors the cauliflower curd and can produce off-flavors. While curds are still small, the inner leaves protect them from sunlight. In most varieties, as the curds develop, they force the inner leaves apart and expose the small curd to the sunlight. Thus, cauliflower must be blanched - that is, the outer leaves are tied to protect the curd. When the curd is 2 to 3 inches in diameter the large outer leaves should be 'tied'. The leaves can be tied with rubber bands, tape or twine. Be sure your rubber bands are thick enough. Since the curds develop at different rates, the field needs to be checked every 2 to 3 days and plants tied where the curd is beginning to show. Use a different color band at each tying. If several curds of one color tie are ready, then all tied with that color can be cut. Time from tying to harvest varies from 4 to 5 days during warm weather to 14 to 21 days during cool periods.

**Harvesting** — After tying, check the fields regularly. Mature heads which are fully developed, compact, clear white in color and about 6 inches in size should be cut. Heads are cut with a large knife (a Russell knife improves labor efficiency) leaving one or more sets of leaves attached to protect the curds.

**Preparation for Market** — The heads are hauled to the packshed where the foliage is trimmed so that it extends about 2 inches above the curd for protection. Sort and pack heads of a uniform size in each crate. Wirebound and cardboard crates usually hold 6, 12 or 24 heads. In California, heads are trimmed closely, wrapped in perforated film, and packed in cartons. The film must be perforated to prevent off-colors and off-flavors after the

cauliflower is cooled. Cauliflower should be moved to market rapidly or placed in 32 to 35 °F storage. Keep it refrigerated during shipping and marketing. Many growers are trimming in the field, placing in perforated plastic bags and packing in the field to reduce costs. *Never use ice on cauliflower.*

**Yield** — A good yield would be 7 to 8 tons per acre with heads averaging 2 to 3 lb.

**Varieties** — Varieties that have proven reliable in recent variety tests are listed below.

- Snow Crown (early)
- Super Snowball (early)
- Self Blanch
- Snowball 1 2 3

### **Problems And Their Causes in Cauliflower Production**

1. **Problem:** Premature heads or curds (buttoning).  
**Cause:** Stress — too low or too high temperatures, drought or poor quality transplants.
2. **Problem:** "Riciness and fuzziness" in heads.  
**Cause:** Too high temperature.
3. **Problem:** Development of bracts or small green leaves between the segments of the curd.  
**Cause:** Too high temperature or drought.
4. **Problem:** Leaf or loosely formed curds.  
**Cause:** Excess vegetative growth caused by excessive nitrogen.
5. **Problem:** Hollow stem with internal browning and brown water-soaked areas on the curd.  
**Cause:** Boron deficiency.