MARYLAND COOPERATIVE EXTENSION
UNIVERSITY OF MARYLAND
COLLEGE PARK•EASTERN SHORE

Fact Sheet

Fact Sheet 451

Growing Cauliflower

Cauliflower is a cool-season crop, closely related to broccoli, cabbage, kale, turnips, and mustard. Cauliflower is much more difficult to grow successfully than the other crops in its family, because of its need for exacting climatic conditions. It grows best in relatively cool temperatures with a moist atmosphere. The cauliflower plant is extremely sensitive to hot weather or extreme low temperatures, which often cause the formation of premature heads (curds).

With careful planning and proper management, cauliflower can be grown in the spring or fall; in most of Maryland, however, fall planting generally produces a better quality crop. Producing cauliflower requires:

- fertile, moist soil, rich in organic matter;
- good drainage;
- cool, humid climate; and
- a frost-free period during curd development.

Variety Selection

Varieties that have proven reliable in Maryland include *Snow Crown* (early), *Super Snowball* (early), *Self Blanch,* and *Snowball 1 2 3*. Other varieties grown in the mid-Atlantic region that also have potential for Maryland growers are *White Sails, Icon, Amazing, Apex, Candid Charm, Ravella, Cashmere,* and *Shasta*. Be sure to select varieties suited to your climatic conditions and cropping schedule. Seed catalogs are good sources for variety description.

Soil Preparation and Fertilization

Cauliflower grows best in fertile, well-drained soil with a pH of 6.5 and high in organic matter. On soils of medium fertility, an acre of cauliflower requires 100 to 150 pounds of nitrogen, 100 pounds of phosphate, and 100 pounds of potash. Before you apply any fertilizer or lime, however, have a soil testing lab test your soil pH and fertility. For a list of soil testing labs, check with your county agent or go to the web at http://www.agnr.umd.edu/soiltesting.

For soils with a medium level of phosphate and potash, apply the following fertilizer:

- 500 pounds 10-10-10, broadcast before transplanting;
- 500 pounds 10-10-10, side-dressed 2 to 3 weeks after transplanting; and
- 25 pounds of nitrogen as a sidedress, later, if needed.

It may be necessary to apply 2 to 3 pounds of boron (B) per acre for cauliflower production because most soils in Maryland test low to medium for boron. Do not apply boron every year without a soil test, because excessive boron can injure some sensitive crops, such as snap beans.

Planting

Subfreezing temperatures may damage cauliflower plants; therefore, begin spring planting after the danger of hard frost is over. Contact your county Extension office for the average frost date in your area. Avoid spring planting in areas where the cauliflower would mature during very hot weather.

For a fall crop, the best time to transplant seedlings is between July 10 and August 10. Start seeds in a greenhouse or protected frame about 6 weeks before the desired transplanting date. In the field, set plants 12 to 18 inches apart in the row, with rows 3 feet apart.

Irrigation

Cauliflower needs adequate moisture for good growth and yield; therefore, irrigation is often necessary. The most critical period for adequate moisture is during head formation. Have either overhead or trickle irrigation available to assure production of good-quality cauliflower.

Blanching

Exposure to sunlight discolors the cauliflower curd and can produce an off flavor. When heads are 1 to 2 inches in diameter, gather the longest outer leaves together over the head and tie them with soft twine or a large rubber band to blanch the heads (keep them white). Since plants develop at different rates, check the fields every 2 or 3 days for plants ready to be tied. Use a different color twine or rubber band for each day. Heads tied with the same color twine or rubber band will be ready for harvest at approximately the same date.

Weed Management

Heavy weed populations can significantly reduce crop yields. In most instances, weeds will be more of a problem in spring plantings than fall plantings. Preparing weed-free fields is the first important step in managing weeds. Herbicides can be applied either pretransplant or posttransplant. Consult EB 236, "Commercial Vegetable Production Recommendations," or contact your county Extension office for specific recommendations. Timely mechanical cultivation is a nonchemical method of weed control; however, cultivation should be shallow (2 inches or less) since cauliflower has a spreading root system that can be damaged by deep cultivation.

Insect Management

A number of insects can pose problems for the growing cauliflower plant—root maggots, cutworms, aphids, harlequin bugs, flea beetles, cabbage worms, and loopers. Infestation by any of these insects can reduce crop yields and quality.

The *cabbage root maggot* (larva) feeds by tunneling into the roots. Young plants may be stunted or even killed. The feeding larvae can deform the roots; sometimes the deformed roots are mistaken for a disease called clubroot. A large population of root maggots can potentially destroy a young crop.

Cutworms are greyish or dark caterpillars that grow up to 2 inches long. When disturbed, they will quickly curl up. The cutworm chews the plant off above or below ground level. Most cutworm damage occurs in newly planted fields.

Aphids, which are small, soft-bodied insects, are found most often on the undersurface of the leaves, but they will also group on the stem. Aphids vary in color from black to yellow, but most are various shades of green. They feed by sucking the sap from the plant, which may cause leaves to curl. Large populations can slow crop growth.

Adult *harlequin bugs*, which can appear throughout the growing season, are light brown to reddish brown and about 5–6 mm in length. They may feed on the head (curd), causing brown blemishes that reduce the quality and marketability of the cauliflower head.

Flea beetles are small (2 mm long), shiny, black beetles. Their damage is characterized by small pinholes through the leaves. Flea beetles are most active early in the season during sunny weather. Although they usually do not cause economic damage to

older plants, flea beetles can seriously damage young plants.

The adult *cabbage worm* is a white butterfly. During the summer, females travel from plant to plant depositing eggs. The eggs hatch into velvety green larvae; each larva has a yellow stripe down the center of its back. Larvae will eat holes in the leaves and heads of cauliflower.

The *cabbage looper* is a green larva with two white stripes along its back and sides. The looper gets its name from the way it forms a loop as it moves.

Diamondback moths, which migrated from Europe in the nineteenth century, can be a serious problem. Larvae are light green, slender, and up to 1 inch long. They typically wiggle rapidly when disturbed and may drop from the plant and hang by a silken thread.

The larvae of cabbage worms, cabbage loopers, and diamondback moths eat holes in the leaves and heads of cauliflower. Populations, which normally peak and decline during the growing season, tend to be more prevalent in late summer.

Several chemical insecticides are available for controlling cauliflower insect pests. Consult EB 236, "Commercial Vegetable Production Recommendations" or contact your county Extension office for specific recommendations. For producing cauliflower without the use of chemical insecticides, select one of several materials utilizing *Bacillus thuringiensis (Bt)* for controlling cabbage worm, cabbage looper, and diamondback moth. Some selected strains may be more effective than others in combatting diamondback moths. EB 236 lists recommended brands of *Bt* formulations.

Disease Management

Some of the diseases that infect cauliflower are black rot, blackleg, bacterial head rot, clubroot, downy mildew, alternaria, white mold, and fusarium (yellows).

Generally, diseases are not a problem when growing cauliflower if you follow these practices:

1. Use disease-free seeds or plants. If you grow your own transplants, be sure seeds have been hot-water treated by the seed company. Grow transplants in soilless media.
2. Use resistant varieties or strains.
3. Use long crop rotations (do not plant cauliflower in a field where cabbage, broccoli, kale, turnips, or other members of the cabbage family have been recently grown).

Fungicides are available for disease control. Consult EB 236, "Commercial Vegetable Production Recommendations," or contact your county Extension office for specific recommendations.

Harvesting

Tied cauliflower heads may mature in as little as 3 to 5 days during warm weather. Maturation may take as long as 2 weeks in cool weather.

The appearance of the curd will determine when cauliflower should be harvested. Mature heads are fully developed, compact, firm, tight, and clear white. Overripe heads are discolored, have curds that are more open, and develop a ricey appearance.

Near harvest, untie and examine a few heads each day to determine readiness for harvest.

Harvest cauliflower at the mature stage. Delaying harvest will not make small heads grow larger. Heads past the mature stage become unsuitable for market. It is better to harvest a little early than too late.

To harvest, cut the head from the plant, including one or two sets of attached leaves to protect the curd. Before sale, the ends of the leaves are often trimmed back to just above the curd, which offers some protection to the heads during handling.

Cool cauliflower promptly after harvesting and keep cool until marketed. Do not use ice for cooling.

Mention of trade names does not constitute an endorsement by Maryland Cooperative Extension.

Table 1. Cauliflower Budget (per acre)

Item	Unit	Quantity	Unit cost (in dollars)	Total Cost (in dollars)
Variable/operating costs				
Transplants	Plant	10,000	0.02	200
Cover crop	Acre	1	30.00	30
Nitrogen	Pound	150	0.30	45
Phosphate	Pound	100	0.30	30
Potash	Pound	100	0.16	16
Lime	Ton	0.33	26.00	8.58
Herbicide, treflan	Pint	1	4.20	4.20
Lannate, 4 sprays	Pint	2	6.50	13
Tying, harvesting, and packaging	Hour	200	6.00	1,200
33-lb crates	Crate	303	1.00	303
Total of variable costs				**1,942.27**
Fixed/overhead costs (custom rates are used as a proxy for field operation costs)				
Plowing	Acre	1	12	12
Disking	Acre	1	10	10
Fertilizer application	Acre	1	6	6
Planting	Acre	1	100	100
Cultivation	Acre	2	8	16
Pesticide application	Acre	5	6	30
Land charge	Acre	1	50	50
Total of fixed costs				**224**
Interest on operating capital	$1,849.78	0.5	10%	$92.49
Total of variable and fixed costs				**2,166.27**
	Unit	Quantity	Unit price	Income
Cauliflower production	Pound	10,000	$0.45	$4,500
Net income above variable and fixed costs	$2,333.73			

		Prices		
	Yields	$0.35	$0.45	$0.55
Net income above variable	8,000	$633.73	$1,433.73	$2,233.73
and fixed costs for	10,000	$1,333.73	$2,333.73	$3,333.73
various yields and prices	12,000	$2,033.73	$3,233.73	$4,433.73

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