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Cabbage, Cauliflower, and Broccoli

Production in Mississippi

MISSISSIPPI STATE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION

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STATE COLLEGE

MISSISSIPPI

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Literature Cited

- (1) Bain, D. C. and Hare, W. W. Vegetable Diseases and Their Control in Mississippi. Miss. Agr. Expt. Sta. Bull. No. 453: pp. 10-11. 1952.
- (2) Green, H. B. and Thomas, W. O. Cabbage Insect Control. Miss. Agri. Expt. Station Inf. Sheet No. 574. February 1958.
- (3) U. S. Standards for Bunched Italian Sprouting Broccoli. U.S.D.A. Agri. Marketing Service. January 1955.
- (4) U. S. Standards for Cauliflower. U.S.D.A. Agri. Marketing Service. December 1952.

CABBAGE, CAULIFLOWER, AND BROCCOLI PRODUCTION IN MISSISSIPPI

By W. O. THOMAS

Cabbage, cauliflower, and broccoli have many similar requirements and present about the same problems in production.

The cabbage marketing and shipping season in Mississippi extends from mid-April to late May. Cabbage are moved from the Mississippi market by car and truck lot shipments to distant markets. Mississippi growers usually produce a good yield of high quality cabbage. This is primarily due to the growing of locally adapted varieties and following recommended cultural practices. Certain varieties of broccoli and cauliflower are adapted to spring and fall growing conditions. These crops are produced for the fresh market and freezing industry.

Production

Land Selection: Cabbage, cauliflower and broccoli require a well drained soil for maximum production. These crops produce well on a wide range of soil types, but grow best on a deep loam soil.

Fertilizer Requirements and Soil Preparation: Fertilizer recommendations for these crops should be based on a soil test. In case no soil test is made, about 1200 pounds of 6-8-8 or equivalent should be applied in the drill prior to transplanting. The spring crop should be sidedressed with 100 pounds of ammonium nitrate per acre when all danger of late freezes is over. The fall crop should be sidedressed about one month after transplanting. On most soils in Mississippi the addition of 20 to 40 pounds of borax per acre, either mixed into the initial fertilizer application or applied with the sidedressing will prevent brown stem in cabbage, hollow stem in broccoli, and brown core or malformed heads in cauliflower.

Irrigation: These crops require a constant supply of available moisture if high quality produce and good yields are expected. If the soil moisture is depleted

to an extent where wilting of the foliage occurs during midday, $1\frac{1}{2}$ to 2 inches of irrigation should be applied at seven-day intervals; continue irrigating at regular intervals until a good rain occurs.

Plant Growing: For spring production, cabbage, cauliflower and broccoli seed are usually planted in a plant bed and plants are transplanted to the field. Under certain conditions seed of these crops may be planted in the field without coldframe protection. If plants are grown in the field, seed should be planted in rows or beds during the first week in October; plants will be ready to transplant to the field by mid-January. If seed are planted in the coldframe, they should be planted about mid-October and transplanted to the field in January.

For fall production, plant seed from mid-July to August 1 in a prepared seedbed. The fall crop should be transplanted from mid-August to September 10. Seed should be sown sparingly in the seedbed; overcrowding tends to produce spindly plants. One pound of seed for these crops planted in a 10 x 70 foot coldframe will produce enough plants for about three acres. (See steps in coldframe preparation and use of soil sterilants).

Planting: When transplanting these crops, always set plants in the afternoon. If the soil is dry at time of transplanting, it is advisable to dip the roots of the plants in a mud slurry when they are pulled from the seedbed and irrigate immediately after transplanting. Cabbage should be spaced 10 to 12 inches in the row and cauliflower and broccoli about 16 inches in the row. Light but frequent cultivations are necessary to keep down grass and weeds.

Varieties

Cabbage: Table 1 lists seven varieties of cabbage in order of general preference.

Although a variety produces a high yield, this does not necessarily mean that it is adapted to a local or specialized market. Round Dutch is well adapted for the commercial market in Mississippi. This variety is very resistant to bolting under field conditions. Growers who wish to extend their harvesting season should make successive plantings of this variety. Early Round Dutch and Glory of Enkhuizen produced the highest yields for the four-year average. Early Glory produces a satisfactory yield. This variety appears to be well adapted to hill land. Bonanza matures later than Round Dutch. Resistant Glory produces large heads and tends to be variable in yield from season to season. Greenback is well adapted to local growing conditions. This variety is slightly earlier than Round Dutch. Greenback has dark green foliage and makes a compact round head.

Cabbage are harvested for the fresh market when the heads are firm. When harvesting, two or three outside wrapper leaves are cut with each head. Cabbage are usually sold by the ton or in 50-pound

Mountain and Texas 107. Broccoli will usually produce 2 to 4 tons per acre. Table 2 presents yield data of several cauliflower and broccoli varieties grown in the fall.



Figure 1. A terminal head of broccoli ready for harvest.

Table 1. Cabbage variety trials 1956-59.

Variety	Avg. no. days to 1st harvest	Avg. head wt., lbs.	Avg. yield tons per acre
Regular Round Dutch	97	2.2	10.2
Early Glory	97	3.1	11.2
Greenback	85	2.3	10.3
Glory of Enkhuizen	97	3.5	12.2
Early Round Dutch			
Large Strain	97	3.0	14.0
Resistant Glory	97	3.4	11.9
Bonanza	100	2.8	8.7

sacks. The fresh market prefers a cabbage with an average head weight of 2.0 to 2.5 pounds. To obtain the desirable weight, large-headed varieties should be spaced close together in the row (10 to 12 inches apart) and grown on hill land or light soils. The small-headed varieties should be grown on bottom land or heavy soils.

Broccoli: The leading broccoli varieties for spring and fall production are Green



Figure 2. Lateral shoots of broccoli. Terminal buds harvested at the peak of maturity.

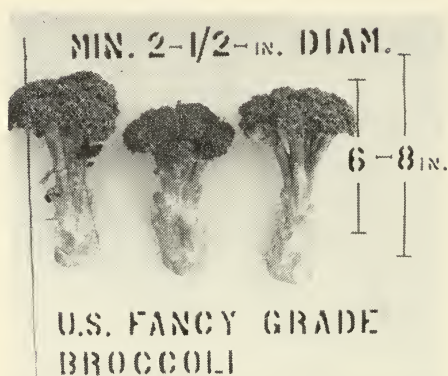
Table 2. Broccoli and cauliflower yield data.

Varieties	Tons per acre
Broccoli	
Green Mountain	2.22
Texas 107	2.15
Medium Strain	1.90
Early Medium	1.85
Cauliflower	
Snowball-Y	4.32
Snowball-X	4.14
Snowball-M	3.25
Snowball-E	2.22

Unopened flower buds of broccoli make up the edible portion. The central inflorescence with approximately six inches of stem is harvested before any of the flowers begin to open. As the lateral shoots develop, these are harvested with 4 to 6 inches of stem. The lateral shoots produce a continuous harvest for several weeks.

Broccoli that fits into the U. S. Fancy classification has the following characteristics. Each bunch shall be free from decay, over-maturity, discoloration of buds and leaves, free of dirt and other foreign matter, and free of disease and insect injury. The bud clusters in each bunch shall be generally compact. Each bunch shall be trimmed and neatly tied. The minimum diameter of each stalk shall be two and one-half inches unless otherwise specified. The length of each stalk shall not be less than six inches or more than eight and one-half inches.

Cauliflower: Tests during the spring and fall indicate the two leading varieties of cauliflower are Snowball-Y and Snowball-M. Cauliflower will produce from 4 to 7 tons per acre. In order to produce a high quality pure white curd it is necessary to exclude the sunlight. Three to four jacket leaves should be tied around the curd when about two inches in diameter. The curd will be ready to harvest in 4 to 8 days. High quality cauliflower should be harvested when the curds reach a marketable size of 4 to 8 inches. Snowball-Y, Snowball-M, and Snowball-E tend to be of equal quality if each is harvested

**Figure 3. U. S. Fancy broccoli. Terminal buds harvested at the peak of maturity.**

at the proper stage of maturity.

U. S. No. 1 cauliflower must meet the following specifications. The curds should be compact and show no discoloration. They should be free from decay and insect damage. The jacket leaves should be green, free from disease and insect damage and well trimmed. Unless otherwise specified curds should not be less than four inches in diameter, free from rice-ness and hollow stem.

Disease and Insect Control

Downy Mildew or Blue Mold (*Peronospora parasitica*). This is principally a disease of seedlings. During unfavorable weather conditions downy mildew can be recognized on seedlings by the yellow appearance of the leaves and the violet downy growth on the lower surface of infected leaves, with eventual shriveling of infected leaves. Plants that survive seedling infection are usually stunted. On older plants the disease can be recognized by flecking or rusting of older leaves which are completely killed.

Control: Spraying or dusting will control downy mildew if the program is started soon after germination and continued while plants are in the seedbed. For mild infection treat at 7-day intervals. For severe infection treat twice a week.

Dust tends to be more effective in controlling downy mildew. Apply dust when



Figure 4. Cauliflower curd ready for blanching.

plants are wet with dew. For effective control good coverage must be obtained on the upper and lower leaf surface. Use a good duster.

Dust Mixture: Spergon Wettable — 6 parts or 5 ounces. Clay Talc — 94 parts or 4 pounds 11 ounces. A five-pound mixture will adequately cover one cold-frame.

Spray: For spraying to be effective the seedlings should be dry and thorough coverage should be obtained. Spergon Wettable $3\frac{1}{4}$ ounces, soap powder $\frac{1}{2}$ ounce, or sticker spreader (follow directions on container), water 5 gallons. This mixture will adequately cover an average size coldframe. Continue treatment until three weeks before transplanting.

Damping-off (caused by soil fungi complex). This is a common seedbed or seedling disease. The early symptoms are wilting of the seed leaves. The stem is girdled at or below the soil line; following this stage of infection, the plants fall over. Damping-off occurs in low, poorly drained areas of the seedbed.

Control: Seedbed sterilization (see

seedbed treatments). Seed treated with chemicals — Arasan or Tersan-75, mix $\frac{1}{2}$ teaspoon per pound of seed. Good seedbed drainage and aeration will aid in controlling damping-off.

Blackrot (*Xanthomonas campestris*). This disease is very destructive to maturing cabbage and cauliflower. The bacteria are seed borne. Under certain conditions the bacterium can live in the soil from season to season. It is easily spread by moving through field when the plants are wet. The conspicuous symptom of blackrot on cabbage is the firing of leaf margins. The symptoms on cauliflower vary from wilting to spotting and eventually shedding of the leaves. Blackrot is a warm weather disease and is evident on cabbage when the plants are forming heads. Often diseased cabbage wilt and die. This is a vascular disease and if stems of diseased plants are cut, blackened strands may be seen in the diseased stem.

Control: Blackrot may be controlled by practicing all of the following recommend-



Figure 5. Jacket leaves of cauliflower pulled around the young curd for blanching.

ations:

1. Seed treatment with hot water.
2. Use of clean seedbed each year.
3. At least a 2-year crop rotation.
4. Keep out of fields when plants are wet. Cultivate when the plants are dry.

Hot Water Treatment of Seed: Do not treat old seed or seed that have previously been coated or treated with chemicals. Place seed to be treated in a cloth bag and soak in water at a temperature of 122° F. Soak cabbage 25 minutes, and cauliflower 18 minutes. Constantly agitate the water and maintain the temperature level during seed soaking period. After treatment place the seed in cold water so they may cool quickly. The seed may be planted immediately or dried and planted later.

Steps in Coldframe Preparation

1. Select a well drained site, usually on the protected side of a hill.

2. When preparing the soil, pulverize and add 6-8-8 fertilizer, or equivalent, at rate of 50 pounds per 10 x 60 foot coldframe. Broadcast fertilizer during last stages of soil preparation.

3. The soil surface should be raked until even and smooth (no low places left). This will make for good surface drainage and aid in reducing disease problems.

4. Construct coldframe out of lumber or any suitable material. Use white muslin cloth or plastic for cover.

5. Temporary soil sterilants may be used to sterilize the soil for grass and weeds, soil disease and soil insect control.

Seedbed Preparation and Chemical Application

Soil in old hotbeds and coldframes may be used for more than one year if sterilized after each season or after the removal of each crop of plants. Certain practices must be carefully followed for best results.

1. The soil should be finely pulverized and contain enough moisture for seed germination. All operations for making a plant bed except seeding should be completed before applying the treatment.



Figure 6. Jacket leaves of cauliflower tied in place. The curd will be ready for harvest in 4 to 8 days.

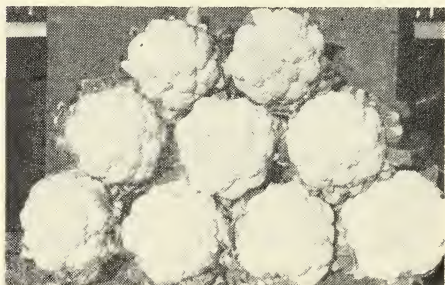


Figure 7. Mature cauliflower trimmed and ready for market.

2. For even distribution and penetration the seedbed should be thoroughly watered immediately after application of the soil sterilant.

3. Any equipment suitable for drenching may be used, for example, a greenhouse sprinkler can. When applying dust, it should be evenly distributed over the surface and worked into the top two inches of soil.

4. After sterilant application and just prior to planting, break the crust and plant seed. Cover lightly and water if necessary.

Application: Bedrench or Vapam — Apply 1.5 quarts of either for 100 square feet of seedbed area. Dilute with enough water (2 to 4 gallons) to evenly cover the soil surface. Thoroughly water the

seedbed immediately after application.

Mylone W-50 — Apply 1.5 pounds per 100 square feet of seedbed area. Mix with enough water (2 to 4 gallons) to cover the soil surface evenly.

Mylone as a dry powder — Distribute evenly and work into the top 2 to 4 inches of soil 1.5 pounds per 100 square feet of seedbed area. Water the seedbed thoroughly immediately after application of Mylone W-50 or Mylone dry.

Wait 15 to 20 days before planting seed when Bedrench, Vapam or Mylone is used.

Insect Control: Timely insect control plays a vital part in producing high quality broccoli, cauliflower and cabbage.

Application of Insecticides

The application of insecticides is very important. Get complete plant coverage and maintain good insect control. Old established infestations of insects are hard to control. Apply insecticides to the top and underside of leaves. If as much as one-half inch of rainfall occurs within 24 hours after application repeat immediately.

Dust when the air is still, usually in



Figure 8. Mature heads of Round Dutch cabbage. Note the round head type and large, close folding wrapper leaves.

the late afternoon or early morning.

Spray: The amount of spray mixture (insecticide and water) per acre varies with most spray equipment and the size of plants. The important point is to use enough water with a given amount of insecticide to get good coverage. In many cases this takes from 35 to 100 gallons of water per acre.

The insecticide program in Table 3 will control insects attacking cauliflower, broccoli, and cabbage. If followed as directed, it will meet the tolerance limits of the Federal and State Pesticide Regulations.

Table 3. Insect control recommendations.

Insects	Insecticide	Rate per acre	Method of application
Aphids	1% parathion	10-20 lbs.	Dust ¹
	4% malathion	10-20 lbs.	Dust
	Parathion	¼-½ lb.	Spray ²
	Malathion	½-1 lb.	Spray
	Demeton	½-1 pt.	Spray
Cutworm and Seedcorn Maggot	20% toxaphene	10-20 lbs.	Dust
	Toxaphene	2-3 lbs.	Spray
Do not apply after young heads begin to form.			
(A) Early Season Control, Cabbage Looper and Imported Cabbage Worms	2% endrin	10-20 lbs.	Dust
	20% toxaphene	10-20 lbs.	Dust
	1% parathion	10-20 lbs.	Dust
	Endrin	¼ lb.	Spray
	Toxaphene	2-3 lbs.	Spray
	Parathion	¼-½ lb.	Spray
May apply up to harvest.			
(B) Late Season Control, before harvest	2% phosdrin	10-20 lbs.	Dust
	100% ryania	10-20 lbs.	Dust
	3% rotenone	10-20 lbs.	Dust
	Phosdrin	¼-½ lb.	Spray
	50% ryania	10-20 lbs.	Spray
	5% rotenone	10-20 lbs.	Spray

¹Dust—10 to 20 pounds per acre for good coverage.

²Spray—35 to 100 gal. water per acre for good coverage.