
AGRICULTURAL ALTERNATIVES

Cantaloupe Production

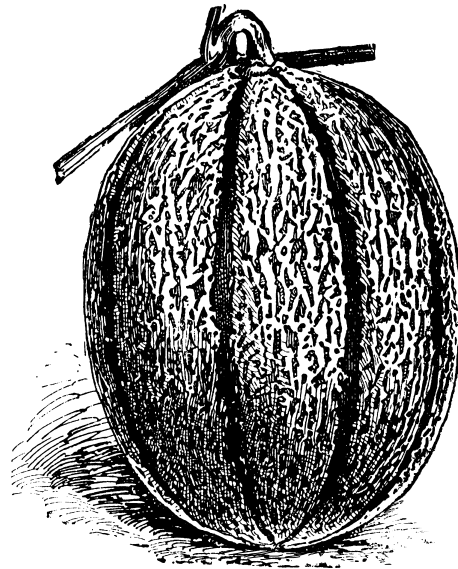
Cantaloupes (a common American name for muskmelons) are a crop that lend themselves well to small-scale and part-time farming operations. There are multiple markets for growers with 5 acres or less, and many field operations, such as land preparation, planting, and harvesting, can be custom hired.

Cantaloupes are a member of the cucurbitaceae family, which includes squash, pumpkins, cucumbers, watermelons, and gourds. Individual plants produce both male and female flowers, and fruit size varies from 3 to 7 pounds. Fruit shape and appearance are quite varied, ranging from smooth or partially netted to sutured and heavily netted.

Cantaloupes were first cultivated in the Near East and were found growing in areas from Turkey to China, including Northwest India, Afghanistan, and Uzbekistan. Several cantaloupe varieties were reportedly grown in the West Indies as early as 1494. Cantaloupes also were cultivated by Native Americans near the present city of Montreal in 1535 and in the vicinity of Philadelphia prior to 1748. Commercial cantaloupe production did not begin in the United States until the 1870s and was initially centered in Maryland, Delaware, and New Jersey.

Around 2.2 billion pounds of cantaloupes are produced in the United States annually, generating more than \$400 million in farm receipts. Pennsylvania farmers produce around 125 million pounds on 1,300 acres, generating more than \$2 million in gross receipts.

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Marketing

Fresh market cantaloupes are produced in Pennsylvania from the end of June to the end of September. Cantaloupe cultivars recommended for Pennsylvania are listed in Table 1. Fresh market cantaloupes usually are sold loose in bulk containers or in 40-pound cardboard boxes. Boxes generally contain 9 to 23 cantaloupes, depending on individual fruit size. Five basic marketing alternatives are available to the cantaloupe grower: wholesale markets, cooperatives, local retailers (grocery stores), roadside stands, and pick-your-own operations.

In wholesale marketing, producers often contract with shippers to market and ship their cantaloupes for a predetermined price. If you do not use a contractor and ship your crop to the wholesale market yourself, your product will be subject to the greatest price fluctuations. Marketing cooperatives generally use a daily pooled cost and price, which spreads price fluctuations over all participating producers. Local retailers are another possible market, but you must

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take the time to contact produce managers and provide high-quality cantaloupes when stores require them. Roadside stands (either your own or another grower's) and pick-your-own operations provide opportunities to receive higher than wholesale prices for your cantaloupes, but you may have some additional expenses for advertising, building and maintaining a facility, and providing service to your customers. With pick-your-own operations, you save on harvest costs, but you must be willing to accept some waste. For more information on marketing, consult *Agricultural Alternatives: Fruit and Vegetable Marketing for Small-scale and Part-time Growers*.

Table 1. Recommended cantaloupe cultivars for Pennsylvania.

| VARIETY | DAYS TO MATURITY | FRUIT SIZE (LB) |
|--|------------------|-----------------|
| Earligold (early season only, PMR) | 75 | 4.5 |
| Primo | 79 | 6.0 |
| Athena (FR, PMR) | 80 | 6.0 |
| Legend | 80 | 7.0 |
| Sweet Dream (green flesh) | 80 | 5.0 |
| Rising Star (FR) | 84 | 5.0 |
| Pulsar | 84 | 6.0 |
| Cordele | 85 | 7.0 |
| Ambrosia (flesh softens rapidly at maturity) | 86 | 4.0 |
| Starship | 86 | 5.0 |
| Staticoy (DMR, FR, LBR, and PMR) | 90 | 5.0 |

FR—resistant to fusarium.

PMR—resistant to powdery mildew.

DMR—resistant to downy mildew.

LBR—resistant to leaf blights.

Production Considerations

Cantaloupes grow best on soils that hold water well and have good air and water infiltration rates. Soil should have a pH of 5.8 to 6.6. Cantaloupes are sensitive to cold temperatures, and even a mild frost can injure the crop. The best average temperature range for cantaloupe production during the growing season is between 65° and 95°F; temperatures above 95°F or below 50°F will slow the growth and maturation of the crop. Cantaloupes require a constant supply of moisture during the growing season. However, excess water at any time during crop growth, especially as fruit reaches maturity, can cause the fruit to crack, which will reduce crop yields and fruit quality.

Planting and Fertilization

Commercially produced cantaloupes generally are started as transplants in the greenhouse 18 to 24 days prior to planting in the field. Because cantaloupes are a warm-season crop, they should not be transplanted until the soil temperature 3 inches beneath the soil surface reaches 60°F. Cantaloupes should be grown on raised beds covered with black or silver plastic mulch. Providing the plants with drip irrigation ensures optimum plant growth and yields and allows growers to apply fertilizer during the growing season. For more information on crop irrigation, consult *Agricultural Alternatives: Irrigation for Fruit and Vegetable Production*.

Growers generally plant approximately 2,800 to 4,400 plants per acre in single rows 5 to 6 feet apart on plastic-mulched beds with 24 to 30 inches between plants in the row. Fertilizer rates should be based on annual soil test results. If you are unable to conduct a test, the recommended N-P-K application rates are 40-50-50 pounds per acre banded at planting and 40-50-50 pounds per acre injected during irrigation.

Pollination

A large honeybee population is essential for complete pollination and fruit set. One hive per acre is recommended for maximum fruit production. Insecticides applied to flowers or weeds in bloom can adversely affect pollinating insect populations.

Pest Control

Weed control can be achieved with herbicides, plastic mulch, and a good crop-rotation system. Several preplant and postemergence herbicides are available for cantaloupes, depending on the specific weed problem and cantaloupe growth stage. If infestation levels are mild, early cultivation (prior to vine running) can help minimize weed problems.

Insects are a major problem in cantaloupe production. Cucumber beetle, aphids, squash vine borer, seed corn maggot, leafminers, and rindworms (cucumber beetle larvae) all can cause crop losses. Monitoring insect populations with traps or by scouting will help you determine when you should use pesticides and how often you should spray.

Several cantaloupe diseases can cause crop losses, including bacterial wilt, fusarium wilt, and viruses such as cucumber mosaic (CMV), squash mosaic (SqMV), and watermelon mosaic (WMV-1,2) as well as powdery mildew, downy mildew, and gummy stem blight. These diseases can be controlled by using disease-resistant varieties and by having a good crop-rotation system and soils with good air and water drainage.

Harvest and Storage

Cantaloupes are hand harvested at the full-slip stage of maturity for best taste and texture. At full-slip, the stem pulls away from the fruit, leaving a scar at the stem end. Because individual fruits are pollinated at different times, multiple harvests are quite common. After harvest, growers should check cantaloupes for size, maturity, and pest damage to ensure marketing a high-quality product.

Cooling the cantaloupes after harvest will remove field heat, which improves shelf life. You should refrigerate the cantaloupes immediately after harvest to maintain quality. Cantaloupes will retain good quality for approximately 14 to 21 days if stored at 90 to 95 percent humidity and 47° to 55°F.

Budgeting

Included in this publication is an annual fresh market cantaloupe production budget. This budget utilizes custom hire for most of the field work, which could be more economical for small-acreage growers. Farmers who own equipment should substitute equipment costs for custom hire costs. The budget summarizes the receipts, costs, and net returns of a cantaloupe enterprise. This sample budget should help ensure that all costs and receipts are included in your calculations. Costs and returns are often difficult to estimate in budget preparation because they are numerous and variable. Therefore, you should think of these budgets as an approximation and make appropriate adjustments in the "Your Estimate" column to reflect your specific production and resource situation. More information on the use of crop budgets can be found in *Agricultural Alternatives: Enterprise Budget Analysis*.

Initial resource requirements for cantaloupe production

- Land: 1 acre
- Labor: 19 hours
- Harvesting and grading costs: \$225 per acre
- Capital: \$6,000
- Depreciation on equipment: \$600

For More Information

Brewer, T., J. Harper, and G. Greaser. *Agricultural Alternatives: Fruit and Vegetable Marketing for Small-scale and Part-time Growers*. University Park, Pa.: Penn State Cooperative Extension, 1994.

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Association

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Sample Fresh Market Cantaloupe Budget

Summary of estimated costs and returns per acre.

| Item | Quantity | Unit | Price | Total | Your Estimate |
|--------------------------------|----------|--------|----------|------------|---------------|
| Receipts | | | | | |
| Cantaloupes | 12,000 | fruit | \$0.30 | \$3,600.00 | _____ |
| <i>Total receipts</i> | | | | \$3,600.00 | _____ |
| Variable costs | | | | | |
| Custom hire | | | | | |
| Applying calcium lime | | | | \$25.00 | _____ |
| Disk plowing | | | | \$9.40 | _____ |
| Harrowing and row conditioning | | | | \$9.80 | _____ |
| Planting and fertilizing | | | | \$15.60 | _____ |
| Laying plastic mulch | | | | \$50.00 | _____ |
| Bee hive | | | | \$25.00 | _____ |
| Monitoring insects | | | | \$10.00 | _____ |
| Harvesting and packing | | | | \$225.00 | _____ |
| Fertilizer | | | | | |
| Nitrogen | 80 | pound | \$0.22 | \$17.28 | _____ |
| Phosphorus | 100 | pound | \$0.26 | \$25.50 | _____ |
| Potassium | 100 | pound | \$0.13 | \$12.90 | _____ |
| Fungicides | | | | | |
| Bayleton | 0.25 | pound | \$64.00 | \$16.00 | _____ |
| Benlate 50WP | 1 | pound | \$17.00 | \$17.00 | _____ |
| Bravo 720 | 2 | gallon | \$53.50 | \$107.00 | _____ |
| Ridomil MZ58 | 4 | pound | \$10.25 | \$41.00 | _____ |
| Herbicides | | | | | |
| Gramoxone extra | 1.5 | gallon | \$33.40 | \$50.10 | _____ |
| Curbit | 0.1875 | gallon | \$42.55 | \$7.98 | _____ |
| Insecticides | | | | | |
| Asana | 0.1875 | gallon | \$132.00 | \$24.75 | _____ |
| Kelthane 35 | 1.3 | pound | \$9.75 | \$12.68 | _____ |
| Methoxychlor | 0.78 | gallon | \$16.50 | \$12.87 | _____ |
| Thiodan 50W | 4 | pound | \$6.00 | \$24.00 | _____ |
| Black or silver mulch | | | | \$300.00 | _____ |
| Cantaloupe transplants | | | | \$700.00 | _____ |
| Marketing and advertising | | | | \$25.00 | _____ |
| Harvest boxes | | | | \$50.00 | _____ |
| Labor | 4 | hour | \$10.00 | \$40.00 | _____ |
| Fuel | 11 | gallon | \$0.95 | \$10.45 | _____ |
| Irrigation labor | 15 | hour | \$7.00 | \$105.00 | _____ |
| Repairs and maintenance | | | \$8.77 | \$8.77 | _____ |
| Interest on operating capital | | | \$8.24 | \$8.24 | _____ |
| <i>Total variable costs</i> | | | | \$1,986.32 | _____ |
| Fixed costs | | | | | |
| Tractors | | | | \$5.89 | _____ |
| Implements | | | | \$17.68 | _____ |
| Trickle irrigation | | | | \$500.00 | _____ |
| <i>Total fixed costs</i> | | | | \$523.57 | _____ |
| Total costs | | | | \$2,509.89 | _____ |
| Returns | | | | | |
| Returns over variable costs | | | | \$1,623.68 | _____ |
| Net returns | | | | \$1,090.11 | _____ |