



Cantaloupe Production

Jim Motes
Extension Vegetable Specialist

Warren Roberts
Extension Vegetable Specialist

Jonathan Edelson
Entomology Specialist

John Damicone
Extension Plant Pathologist

Jim Duthie
Extension Plant Pathologist

Oklahoma Cooperative Extension Fact Sheets are also available on our website at: <http://osufacts.okstate.edu>

Production Requirements

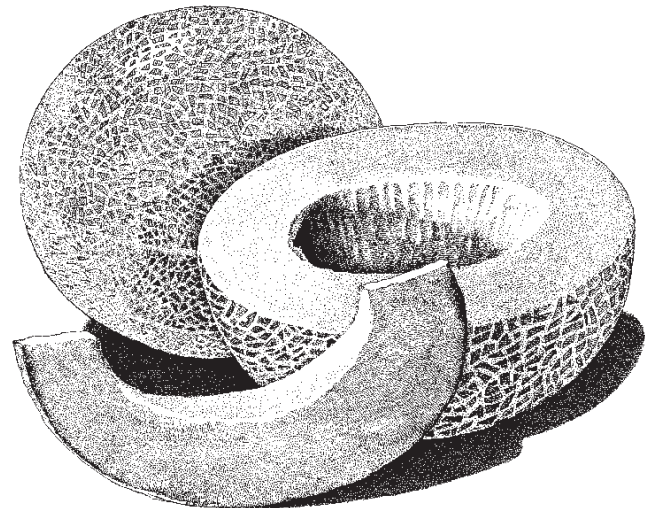
The words cantaloupe and muskmelon are used rather loosely and are interchangeable. All varieties and types of muskmelon belong to the same genus and species; however, cantaloupe belongs to a different botanical variety (subgroup) than winter type muskmelons. Muskmelons with netted, green and yellow-green rinds are called cantaloupes by growers and the market trade. The specialty type muskmelons are called winter melons, and compared to cantaloupe, they are later maturing, having firmer and thicker flesh, and can be stored.

Cantaloupes are the most important type of muskmelon grown in Oklahoma. Other types of muskmelons grown on a very limited scale are honeydews, Casaba, and Crenshaw. These winter type muskmelons are becoming more popular and could increase in importance in Oklahoma. Cantaloupes, and more specifically the winter type muskmelons, are better adapted to the drier southwestern areas of the state where foliage diseases are less prominent. Although hot, dry weather is favorable for cantaloupes, they can be grown successfully in most areas if diseases can be managed. Cantaloupes are not as well adapted as watermelons and winter melons to extremely hot summer weather.

Good cantaloupe yield under irrigation in Oklahoma is 8 tons per acre. Under ideal conditions over 10 tons per acre have been achieved. Winter melons can exceed the yield of cantaloupes.

Sites and Soils

Cantaloupes grow best on well drained, warm, sandy or silt loam soils, but a variety of soil types can be used. Where early harvest is of importance, lighter soils located where there is good air drainage are best. Heavier soils produce higher yields and are better for later season production. Windbreaks are advisable on sandy soils to reduce "sand blast" damage and stunting to young seedlings during spring winds. To reduce



the risk of diseases, do not plant on land where cantaloupe, watermelon, squash, cucumber, or pumpkin have been grown during the past three years.

Varieties

Several varieties of cantaloupe are grown in Oklahoma. For the shipping market, the smaller heavily-netted, broadly oval or round and slightly-ribbed varieties are used. The larger, more deeply ribbed and lightly-netted varieties are sometimes preferred for short-distance shipping, local markets, and roadside stands. Listed below are varieties that have performed well in Oklahoma. Varieties vary greatly in disease resistance. Disease resistance should be considered, particularly to powdery mildew and Fusarium wilt, if diseases have been a major problem. No varieties have shown insect or nematode resistance.

Shipping and Local Market Varieties

Ambrosia	Mainstream
Burpee Hybrid	Magnum .45
Caravelle	Mission
Classic	Saticoy
Cordele	Summet
Gold Star	TAM-Uvalde
Imperial 4-50	

Winter Melon Types and Varieties

Winter melons are not as well adapted to Oklahoma growing conditions as cantaloupes. Except for some honeydew varieties, winter melons are susceptible to most melon diseases. Winter melon production should only be attempted with a careful foliar disease management program. Without a protective spray program against disease, complete crop loss can result.

Honeydew. The TAM-Dew Improved variety (95 days) is round in shape and about 5 inches in diameter. It is resistant to powdery and downy mildew. Fruit is whitish at maturity, smooth with no ribs. Flesh is lime green in color.

Casaba. The Golden Beauty variety (105 days) is globe-shaped, pointed at the stem, and about 8 inches in diameter. Fruit is yellow with corrugations but no netting. Flesh is white, thick, juicy, with a pleasing sweet flavor. It stores well. Golden Beauty is susceptible to diseases, especially powdery mildew.

Crenshaw. The Crenshaw variety (110 days) is somewhat acorn-shaped, pointed at the blossom end, and 8 by 6 1/2 inches. Fruit is yellow and green, rough, corrugated, with no netting. Flesh is salmon colored, thick, juicy, and sweet in flavor. Crenshaw requires careful handling and packing for shipping. Crenshaw is susceptible to diseases.

Soil pH and Fertilizer

If needed, apply lime to increase soil pH to between 6.0 and 6.5. Soils that are more acid than pH 6.0 may produce weak plants that do not properly mature the fruit. Based on OSU soil test results the following quantities of P₂O₅ and K₂O are recommended.

Phosphorus per acre					
When test shows	0 to 19	20 to 39	40 to 69	70 to 99	100+
Add lbs P ₂ O ₅ /A	100	75	50	25	0

Potassium per acre					
When test shows	0 to 99	100 to 149	150 to 199	200 to 249	250+
Add lbs K ₂ O/A	250	150	100	50	none

Nitrogen. Apply 50 lbs N/A preplant incorporated with recommended P₂O₅ and K₂O or sideplace all P₂O₅ and up to a combined total of 100 lbs/A N and K₂O beside and below the seed with the planter. Make sure seeds are 3 to 4 inches away from the fertilizer band since cantaloupe seedlings are sensitive to fertilizer burn. When young plants are about to “tip-over” and run, sidedress with an additional 50 to 60 lbs N/A. If heavy rainfall has caused leaching on light textured soils, a topdressing to replace lost nitrogen may be needed later in the season.

Soil Preparation

Soil should be plowed and disked well in advance of planting to allow soil to settle. Just before planting, go over the soil with a smoothing harrow to prepare a seed bed. Cantaloupes are usually grown on the flat. Under normal conditions there is no advantage in bedding-up well drained sandy soil. On low, tighter bottom ground, bedding can be

beneficial. Where wind and blowing sand are a problem, windbreaks of fall planted wheat or rye will provide some protection to young plants.

It is important that the windbreak be early enough, wide enough, and tall enough to provide protection just after cantaloupe emergence. Late-planted windbreaks do little good when they are needed most. The greatest wind protection is achieved close to the windbreak row. Little protection is achieved when short windbreaks are farther than 30 feet from the cantaloupes.

Planting and Thinning

Plant cantaloupe seed 1/2 to 1 1/2 inches deep. Use deeper planting on sandy and drier soils. Planting begins in late March in southern Oklahoma and mid-April in northern areas. Seed will not germinate at soil temperatures below 60°F, and the most rapid germination occurs at 90°F.

Plant cantaloupe seed at the rate of 1 1/2 to 2 pounds per acre in single rows 6 to 8 feet apart or in twin rows 3 feet apart on 9 to 15 foot centers. After plants are well established, thin to 12 to 15 inches between plants in the seeded row. Unirrigated cantaloupe should be thinned to 24 to 30 inches in the row.

For early production, cantaloupes can be transplanted in bare soil as well as seeded or transplanted through plastic mulch. Black plastic should be laid 10 to 14 days before the expected planting date to increase soil temperature. Black plastic can hasten maturity by seven to ten days and is effective in controlling weeds and conserving soil moisture. Cantaloupes are difficult to transplant. Seedlings must be grown in containers such as peat pots, Speedling trays, or Jiffy pots to be successfully transplanted. Transplanting must be delayed until after the danger of frost is past. See OSU Extension Fact No. 6020 *Growing Vegetable Transplants* for information on transplant production. For transplant and plastic mulch use to be economical, a premium price must be obtained for the earlier production. Removing black plastic mulch from the field at the end of the season is a major drawback to its use.

Weed Control

Shallow mechanical cultivation and hand hoeing are needed to control weeds before plants have vined. Pruning roots and vines with cultivating equipment slows melon development and reduces yield. Cantaloupe roots often spread horizontally faster than the vines and many roots are very shallow. A limited number of pre-emergence herbicides are available that will control germinating broadleaf weeds and grasses in seeded and transplanted cantaloupes if used properly. Chemicals are economical when used in narrow band applications in the planted row. Other chemicals can be used as a layby application between the rows before vines begin to run. Consult the most recent revision of OSU Extension Current Report No. 6008 *Weed Control in Vegetables* or the latest edition of the Extension Agent’s Handbook.

Irrigation

Cantaloupe vines require abundant moisture while making their most vigorous growth, and until the early set melons are fully sized. Do not irrigate or irrigate lightly just before and during the ripening period or sugar content will be reduced and

stem-end cracking and fruit rotting may occur. When overhead irrigation is used, water should be applied early in the day so the plants can dry before nightfall to reduce the incidence of fruit and foliage diseases. Do not operate a sprinkler system between 7 a.m. and 11 a.m. during the flowering and fruit-setting period since bees may be prevented from pollinating the open flowers.

Field Scouting for Plant and Pest Development

Fields should be scouted at minimum once per week after planting by walking across the entire field in a V-shape or X-shape pattern and recording plant development, and weed and insect occurrence and numbers. Results of surveys will be needed to make decisions regarding projection of harvest date, need to bring in honeybees for pollination, and pest control decisions.

If known, scout for diseases in areas of a field in which diseases tend to appear first. Otherwise, use the V-shape or X-shape sampling pattern outlined for insects. Some foliar diseases will appear where air circulation is reduced and leaves remain wet, such as in low areas and along borders sheltered by trees. Foliar diseases typically appear first on crown leaves close to the base of the main stem. Shaded crown leaves often die and can be mistaken as diseased. Root diseases tend to appear where soil remains wettest, such as in low areas and in heavier soils.

Insects

Fields previously in sod or having heavy infestations of weeds in the prior year should be treated with a soil-applied insecticide at planting to control soil insect pests including cutworms. Small seedlings are extremely susceptible to feeding damage from adult striped and spotted cucumber beetles and may need to be treated with a foliar-applied insecticide to prevent complete defoliation and/or infection by bacterial wilt that is transmitted by cucumber beetles. Adult cucumber beetles must be controlled in mid-season to prevent them from laying eggs near fruit where larvae can feed and damage the rinds, resulting in non-marketable fruit. Squash bugs must be controlled early in the growing season and can best be located by examining the undersides of leaves for eggs which are laid in groups. Aphids and mites can cause damage to leaves and leave deposits on fruit, reducing marketable yield. Low numbers can be tolerated throughout most of the season and scouting survey results will indicate whether populations are increasing and should be controlled.

Good fruit set and development are dependent upon insects, primarily honeybees, to pollinate the female flowers. Flowers are receptive to pollination for a matter of hours on the day they open. Flowers should be examined to determine activity of honeybees. If fewer than one bee per ten flowers is noted during the morning hours, the producer should bring beehives into the field to ensure adequate pollination.

Diseases

Cantaloupe is susceptible to several diseases that attack the roots, foliage, and fruit. The most common diseases in Oklahoma have been Fusarium wilt, anthracnose, powdery mildew, downy mildew, virus diseases, and fruit rots. Bacte-

rial wilt, alternaria leaf spot, gummy stem blight, damping off, root rot/vine decline, and root-knot nematode also have been problems. Consult OSU Extension Circular E-853 *Cucurbit Production and Pest Management* or E-929 *Guide for Identification and Management of Diseases of Cucurbit Vegetable Crops* to help identify these diseases.

Disease control is essential in the production of high-quality cantaloupes. A preventive program that combines the use of cultural practices, genetic resistance, and chemical control as needed usually provides the best results.

Cultural practices are useful for limiting the establishment, spread, and survival of pathogens that cause cantaloupe diseases. Many of the fungal, bacterial, and nematode pathogens survive in old crop debris and in soil. Fields should be rotated with non-cucurbit crops for at least three years to reduce pathogen levels. Grass crops are ideal for rotations where nematodes are a problem. Fields with the proper soil characteristics should be selected. Avoid acid soils or fields with a history of Fusarium wilt or root rot/vine decline. The selection of well-drained soils is essential for minimizing fruit rots. Late plantings should not be situated nearby and downwind of early planted cucurbit fields where foliar or virus diseases already exist. Avoid moving contaminated soil or plant debris into clean fields on workers or equipment. Diseases such as anthracnose, gummy stem blight, and Fusarium wilt are known to be carried on seed. This can lead to rapid disease development and spread in greenhouse transplant production and to the introduction of diseases into fields. Purchase seed from reputable sources and apply a fungicide seed treatment prior to planting. Carefully inspect plants to ensure only healthy ones are transplanted into fields. Most foliar diseases are spread by water-splash or favored by long periods of leaf wetness. Utilize drip irrigation or avoid frequent sprinkler irrigation with small amounts of water. Finally, use tillage practices that promote the rapid decomposition of old vines and melons soon after harvest.

The use of disease-resistant varieties is an economical means of controlling diseases. In several cantaloupe varieties, resistance is available to powdery mildew, Fusarium wilt, and to a lesser degree, downy mildew. Consult OSU Extension Circular E-853 for a listing of locally adapted varieties with disease resistance.

Management of foliar diseases such as anthracnose, downy mildew, and powdery mildew may require fungicide sprays. Fields should be monitored at least weekly for early disease detection. Late planted fields are most vulnerable to foliar diseases. Spray programs should be initiated shortly after the first appearance of disease, or beginning at flowering to prevent disease in late plantings. A 14-day schedule has been effective in most instances, although a 7-day schedule may be required where downy mildew or powdery mildew is severe. Management of bacterial wilt may require the use of insecticide to control cucumber beetles which spread the disease. Consult OSU Extension Circular E-832 *OSU Extension Agent's Handbook of Insect, Plant Disease, and Weed Control* for a listing of fungicides approved for use on cantaloupe.

Pesticide Applications

Insecticide applications should be made only when necessary as determined using results of field surveys. For control of diseases, fungicides are most effective when ap

plied before disease begins to increase. The potential for rapid increase is greatest shortly before harvest when the canopy is most dense and anytime during rainy periods. Insecticides and fungicides should be selected based on proven effectiveness. Ground applications should be made in a minimum spray volume of 20 gallons per acre at 40 psi pressure to ensure adequate canopy penetration and foliar coverage. Aerial application should be made in a minimum volume of 5 gallons per acre. Chemigation is an effective method for applying some fungicides.

Beehives maintained near fields for pollination must be protected from spray drift by removing the hives or covering them. Additionally, the bees working the fields must be protected by using insecticides with a low toxicity to bees and by withholding applications until late in the day when bees are less active.

Animal Pests

Animal pests are not as great a problem in cantaloupes as in watermelons. Field mice and rats can cause extensive damage by destroying planted seeds before germination. The fungicide thiram, when used as a seed treatment, has some repellent action against mice and rats. Fence row sanitation and brush control around fields will reduce the population of mice and rats.

Crows, coyotes, raccoons, and other animals can destroy ripe cantaloupes. Many devices have been used to keep crows out of fields. Aluminum foil strips or shiny can lids hung from poles placed at various intervals are sometimes effective. A propane or carbide gun is usually effective in repelling crows during the day. A propane gun, loud radio, and flashing light can effectively repel coyotes, raccoons, and other animals at night. To maintain effectiveness, the noise makers and lights should be moved to a new location each day and the explosion interval of the propane gun changed frequently.

Harvesting

Harvest from early plantings usually begins in late June in southern Oklahoma growing areas. Harvesting requires a great deal of hand labor. Melons are usually picked every other day for the first two or three picking days and every day for the next 20 to 25 days. Length of harvest in a planting depends on condition of the vines, number of melons, season of year, and the market.

When properly matured for shipping (market maturity), cantaloupes should be "half slip," firm, well netted, and not deeply colored. At half slip, the abscission layer between the stem and fruit is half formed and will allow the remaining half to separate from the melon with a slight pull. A cantaloupe that has not reached half slip is not fully developed and has not obtained maximum sweetness, flavor, and aroma. Eating maturity follows about three days after half slip harvest when the cantaloupe is held at room temperature. The best flavor

is attained if melons are held near 70°F for final ripening, then chilled for serving. Cantaloupes are either handpicked into picking bags or buckets which are emptied into field trailers, or they are picked and placed directly into a nearby hauling vehicle.

Honeydew, Casaba, and Crenshaw melons are cut from the vines at market maturity. Casaba and Crenshaw should have developed some yellow skin color and a slight softness on the blossom end when firm pressure is applied with the thumb. Honeydew melons are at market maturity when (1) normal size has been obtained, (2) ground spot is white to slightly greenish, and (3) a waxy skin coating is just beginning to develop.

At the packing location, melons are graded, sorted, and packed into crates or cartons according to size for the shipping market. For short-distance shipping or local markets, melons are often hauled in bulk. Several sizes are packed: 12, 15, 18, or 23 melons in a 1/2-carton or crate weighing 35 to 40 pounds. The smaller the number, the larger the melons. The 15's are generally the most desirable.

Until recently, few Oklahoma cantaloupes were cooled before shipment. However, cooling prior to shipment improves marketability and increases the time for melons to reach full ripeness, which extends shelf life. Most buyers will be demanding that melons be cooled prior to shipment.

Handling and Storage

Cantaloupes are highly perishable. Even when harvested, handled, and held under optimum conditions, they will be of only fair quality two weeks after harvest. If cantaloupes that are half slip to three-fourths slip are held or stored, they should be at 35° to 45°F. Ripened cantaloupes (equivalent to full slip) may be stored at 32° to 35°F. Winter melons (honeydew, Casaba, and Crenshaw) should not be held or stored below 45°F. They are subject to chilling injury at lower temperatures.

Marketing

The bulk of the commercial crop is shipped out of state and sold on the open market at prevailing prices. Many are sold from smaller plantings through temporary or permanent roadside stands or at farmers' markets. Although earliness usually results in higher prices, quality and maturity should be of prime importance in marketing cantaloupes and other muskmelons.

Related Extension Publications

- E-853 Cucurbit Production and Pest Management
- E-929 Guide for Identification and Management of Diseases of Cucurbit Vegetable Crops
- E-832 OSU Extension Agent's Handbook of Insect, Plant Disease, and Weed Control

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, gender, age, religion, disability, or status as a veteran in any of its policies, practices, or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert E. Whitson, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 20 cents per copy. 0606 GH.