Watermelon Production

Jim Shrefler
Area Extension Horticulture Specialist

Lynn Brandenberger
Professor, Food Crops

Eric Rebek
Extension Entomologist

John Damicone
Extension Plant Pathologist

Merritt Taylor
Professor, Agricultural Economics

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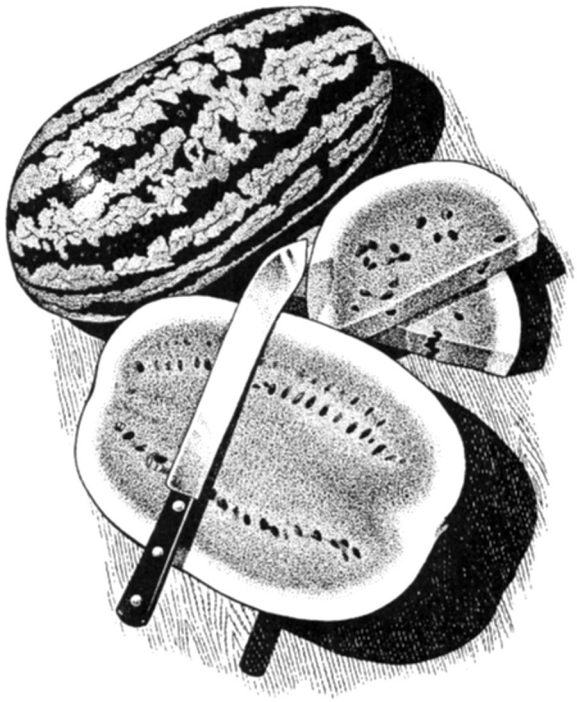

Production Requirements

Watermelon production requires a long and warm growing season. Acreage for watermelon is the largest for a vegetable crop in Oklahoma. Although watermelon can be grown in many areas of the state, current major production areas include west central, south-central and eastern areas. Watermelon consumption has increased in the U.S. in recent years, with some of this supply accounted for by an increase in imports. Some acreage decrease in the state has been due to increased yields and decreased labor availability. Efforts of the National Watermelon Promotion Board have helped increase consumer awareness of the nutritional value and culinary uses for this crop. Increased availability of smaller-fruited and seedless types, as well as the development of techniques for selling watermelon as a precut packaged product, has improved the convenience of serving watermelon.

To show a profit, a grower must produce good yields of high-quality melons. High yields of quality melons can be obtained only with careful management. A good watermelon yield with irrigation is eight tons per acre in Oklahoma; however, the average yield is about five tons. With ideal conditions and certain varieties, more than 15 tons per acre have been achieved.

Sites and Soils

Watermelons grow best on sandy loam soils, with good drainage and a slightly acid pH. When planted in very heavy soils, the plants develop slowly and fruit size and quality are usually inferior. Fine sands produce the highest quality melons when adequate fertilizer and water are provided. Windbreaks are advisable on sandy soils to reduce “sand blast” damage and stunting of young seedlings caused by spring winds. Wind may also cause plants grown on plastic mulch to spin, which can damage the crown of the plant. To reduce the risk of diseases, do not plant on land where vine crops have grown during the past three years. Highly experienced growers often prefer an even longer rotation period.

Variety Selection

Selecting a suitable watermelon variety or varieties is among the most important decisions made by a producer. Planting a variety not suited for the available market and particular production situation leads to lower profits or possibly an enterprise failure. For example, some varieties popular for local sales are not suitable for shipping. In addition to market acceptability, a variety must have acceptable yield, be adapted to the production area, and have high levels available of certain disease resistance features.

Light green and gray-green watermelons are less subject to sunburn injury than dark green and striped varieties. Resistance to races of Fusarium wilt and anthracnose diseases is an important varietal characteristic to consider. Most varieties have varying levels of resistance to one or more races of Fusarium wilt and/or anthracnose. Resistance to race 2 anthracnose disease, the prevailing race, is not available. Black Diamond, Texas Giant, Florida Giant and Tendergold are not disease resistant. Because no watermelon varieties are resistant to all races of Fusarium or anthracnose these diseases can infect a variety even though it is labeled as having resistance. No watermelon varieties have known insect or nematode resistance.

The major watermelon varieties and types produced in Oklahoma are Charleston Gray strains, Crimson Sweet, Jubilee, Allsweet, Royal Sweet, Sangria, triploid seedless and Black Diamond types. Brief descriptions of several varieties grouped by rind color and fruit shape characteristics are listed below. All are red-fleshed watermelons unless noted otherwise. The weights are average market sizes and may vary with growing conditions.

Gray-green rind and round shape:
Mickylee — 10 pounds (F)
Gray-green rind and oblong shape:
Charleston Gray strains — 25 to 35 pounds (F)
Green-stripe rind and oblong shape:
Jubilee II — 28 pounds to 35 pounds (F)
Allsweet — 25 pounds to 35 pounds (F)
Jubilee — 25 pounds to 45 pounds
Jamboree — 24 pounds to 30
Sangria — 22poundsto 26 pounds (F)
StarBrite — 22 pounds to 28 pounds (F)
Tendergold — 22 pounds to 28 pounds, orange flesh
Green-stripe rind and round oblong shape:
Delta — 24 pounds to 30 pounds
SummerFlavor series: 800 (F), 860 (F)
Crimson Sweet — 20 pounds to 30 pounds (F)
Royal Sweet — 20 pounds to 30 pounds (F)
Green-stripe rind and round shape:
Petite Sweet — 6 pounds to 10 pounds (F)
Green rind and round shape:
Black Diamond, Florida Giant — 30 pounds to 50 pounds
Jade Star — 13 pounds to 16 pounds
Desert King, light green rind color — 20 pounds to 30 pounds, yellow flesh

F=resistant to Race 0 or Race 1 of /Fusarium wilt.

Hybrid Triploid

A triploid hybrid is a cross between a common diploid (two sets of chromosomes) variety and a tetraploid (four sets of chromosomes) line. Commonly referred to as seedless watermelon, triploids have undeveloped seeds, but occasionally one or more developed seeds. Triploids plantings must include a seeded watermelon variety interspersed throughout the field as a pollen source needed for setting of seedless fruit. Use either an edible fruited variety or a pollenizer variety that serves only to provide pollen. Triploids can be produced anywhere conventional watermelons are grown. Seedless types are generally established in the field with transplants, due to seed cost and difficulty in stand establishment. Numerous varieties exist and may have light, medium and/or dark green stripes; may be round, oval or oblong shaped; weights vary from about 12 pounds to 22 pounds and most have red flesh. A few of the available varieties are:

Millionaire 18 — 22 pounds (F)
Sweet Delight 17 — 22 pounds (Crimson Sweet stripe)
Cooperstown 16 — 22 pounds (F)
Super Seedless series: #7187,
Tri-X 313 16 — 20 pounds
Tri-X 212 13 — 18 pounds
Sweet Gem 13 — 15 pounds (dark rind)
Solitaire 3 — 7 pounds
Orange Crisp 14 — 18 pounds (orange flesh)

F=resistant to Race 0 or Race 1 of /Fusarium wilt.

Soil pH and Fertilizer

Watermelon is fairly tolerant to soil pH as low as 5.5, but grows best where soil pH is between 6.0 and 6.8. Apply lime if soil pH is below 5.5. Based on OSU soil test results the following amounts of P_2O_5 and K_2O are recommended.

Phosphorus per acre					
When test shows	0-9	10-19	20-39	40-65	65+
Add lbs P_2O_5/A	150	125	100	55	0

Potassium per acre					
When test shows	0-74	75-124	125-199	200-249	250+
Add lbs K_2O/A	150	125	100	50	none

Nitrogen

Because the sandy soils on which watermelons are grown may be highly susceptible to nitrogen loss to leaching, nitrogen application should be carefully planned. A traditional approach to nitrogen fertilizer application is to use 50 lbs/A pre-plant of actual N in a band along with recommended P_2O_5 and up to 50 lbs/A K_2O. To avoid seedling injury, broadcast and incorporate any additional K_2O as needed. Commonly, preplant fertilization is accomplished by opening a six-inch-deep furrow or trench with a lister. Apply the fertilizer in the trench, then fill the trench and form a raised seed bed with implements, such as a pair of listers or a disk bedder. Three weeks after plants have emerged, sidedress with an additional 60 lbs N/A. Once harvest is underway, if the crop shows potential for a second cutting, an additional sidedress application of 40 lbs N/A may be justified if the vines appear nitrogen stressed.

The use of drip or trickle irrigation is becoming more popular with market garden and larger scale vegetable growers. Drip irrigation enables the use of fertigation to provide the crop with a continuous supply of nitrogen without applying large amounts at one time. If potassium and phosphorus are applied pre-plant, as is recommended, only nitrogen is should be applied through fertigation.

When transplanting, a starter solution high in phosphorus should be applied at a rate of one-half pint of solution per plant. Three pounds of soluble 15-30-15 dissolved in 50 gallons of water can be used to make the starter solution.

Soil Preparation

Soil preparation and fertilizer application well in advance of planting promotes improved seed bed moisture and firmness. In addition to plowing and disking, use of a chisel plow or subsoil tillage implement beneath the row promotes deeper rooting in soils having a compacted layer. Where winds are a problem, windbreaks of fall-planted wheat or rye, or spring-planted hybrid Sudan will provide some protection to young plants. The windbreak crop between the rows is destroyed with a disk harrow as the watermelon vines begin to run. A narrow windbreak strip can be left standing between rows for wind protection later in the season, but it should be undercut or killed with chemicals to reduce competition with the watermelon crop.

It is important that the windbreak be in place early, wide and tall enough to provide protection just after watermelon emergence. The greatest wind protection is achieved close to the windbreak row. Little protection is achieved when windbreaks less than 3 feet tall are farther than 30 feet from the watermelon plants.

Planting and Thinning

Watermelon 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 optimum germination rate range is 70 F to 95 F. Seedless watermelon varieties have comparatively weak seeds and are most often established by using transplants. If direct seeding will be used, planting should be delayed until soil temperature at seed depth is above 70 F. Soil temperatures can be estimated using a soil thermometer placed at or slightly below the seeding depth. Soil temperature information can also be obtained using the Oklahoma Mesonet system for 120 sites across the state at: www.mesonet.org.

Plant open-pollinated varieties using one pound to two pounds of seed per acre and place seed at a depth of 1/2 inch to 11/2 inches. Use the greater planting depths for sandy or dry soils. Hybrid varieties have seed costs about 20 to 30 times greater than open-pollinated varieties. Therefore, reduced seeding rates of hybrid varieties are used to reduce costs. Some planters and planter plates can be modified to plant single seeds at desired in-row plant spacing. With this technique, one pound of seed can plant several acres with a good chance of achieving an acceptable stand.

Various plant spacings are used in Oklahoma and are often determined by the type and size of available equipment, the availability of irrigation water and the availability of land. Typical in-row plant spacings range from one plant every 3 feet to 6 feet in the row on irrigated land, to one plant every 6 feet to 10 feet on dry land. Row spacing generally varies from 6 feet to 18 feet apart. High yields are reported for spacings as close as 9 square feet to 18 square feet per plant, but average melon size will decrease as plant spacing decreases. Cultural practices involving soil fertility and insect and disease control may need to be adjusted according to the plant spacing. Growers should adjust their plant spacing to obtain the best size, quality and quantity of melons for their market. Some growers seed in twin rows 36 inches apart. This allows young plants to vine together and provides additional protection from wind damage.

For early production, watermelons can be transplanted in bare soil or transplanted or seeded through plastic mulch. Watermelons are difficult to transplant, so seedlings must be grown in suitable containers such as peat pots, peat pellets or in trays to be successfully transplanted. It is critical that seed be germinated with proper moisture, temperature and light and that plants do not get too large before transplanting. See Extension Fact Sheet HLA-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. See Extension Fact Sheet HLA-6034, Use of Plastic Mulch and Row Covers in Vegetable Production for more information on early planting techniques. If using such techniques, temperatures low enough to injure watermelon are not uncommon in late April in Oklahoma.

Cultivation and Chemical Weed Control

Depending on the various weed species and densities present in a given field, some growers produce watermelon without the use of chemical weed control. Shallow mechanical cultivation and hand hoeing may be needed to control weeds before plants have vined. Take caution that pruning roots and vines with cultivating equipment slows melon development, reduces yield and may favor the incidence of problems, such as blossom end rot. Several herbicides are available to control germinating broadleaf weeds and grasses in seeded and transplanted watermelons. Other herbicides are available to control emerged weeds, and these products are especially useful for the control of weeds in the grass family. Chemical costs may be reduced by using band applications in the planted row and spot applications for emerged weeds. Less expensive chemicals can be used as a layby application between the rows before vines begin to run. Consult the current Extension Agent's Handbook (Circular E-832) for chemical weed control recommendations.

Irrigation

Eight inches to ten inches of timely rainfall or irrigations on a deep, sandy soil is needed to produce a good crop of watermelons. Growers with limited irrigation capabilities can often increase yields with only one or two irrigations. Critical periods, when moisture stress is most harmful, are before seedling emergence, at early bloom and during fruit sizing. Inadequate moisture at planting will result in poor and uneven emergence. Moisture shortage at bloom results in poor fruit set and misshapen fruit. Moisture stress during fruit development reduces melon size and results in rapid vine decline. When irrigating, apply one inch to two inches of water. Avoid irrigating in the late afternoon or at night to reduce foliage diseases. Do not operate a sprinkler system between 7 a.m. and 11 a.m. during the flowering and fruit-setting period. It may interfere with pollination activities of bees. It is also important to limit irrigation as the melons approach maturity, because excessive moisture at this time can cause a white heart, lower sugar content and fruit bursting.

Field Scouting for Plant and Pest Development

Fields should be scouted at minimum of 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.

Scout for diseases in areas of a field where diseases typically appear first. Otherwise, use the sampling plan outlined for insects. Some foliar diseases will first 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-knot nematode and Fusarium wilt often are unevenly distributed in fields. Clumps may be random or may occur where drainage is poor or soil texture is most sandy, favoring nematode growth and development.

Insects

Fields previously in sod or having heavy infestations of weeds the prior year should be treated with a soil-applied insecticide at planting to control soil insect pests including cutworms. Seedling plants 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. Squash bugs must be controlled early in the growing season and can best be located by examining the undersides of leaves for orange, oval eggs, which are laid in clusters. Aphids and mites can damage leaves and leave deposits on fruit, which reduce marketable yield. Low numbers can be tolerated throughout most of the season. Pest monitoring is important because aphid populations can increase rapidly and cause severe crop losses. Scouting survey results will indicate whether populations are increasing and should be controlled.

Good fruit set and development are dependent upon honeybees and other insects to pollinate the female flowers. Flowers are receptive to pollination only on the day they open. Flowers should be examined to determine activity of honeybees. If less than one bee per ten flowers is noted during the morning hours, the producer should bring beehives into the field to ensure adequate pollination. Some growers are finding purchased bumblebee hives to be effective for watermelon pollination.

Diseases

Watermelons are susceptible to several diseases that attack the roots, foliage and fruit. The most damaging diseases in Oklahoma have been Fusarium wilt, anthracnose, downy mildew and virus diseases. Cercospora leaf spot, gummy stem blight, powdery mildew, bacterial fruit blotch, damping-off, root rots/vine declines and root-knot nematodes also have been problems. Disease control is essential in the production of high quality watermelons. A preventive program combining the use of cultural practices, genetic resistance and a fungicide program as needed usually provides the best results. The use of disease-resistant varieties is economical for controlling diseases. Several varieties have resistance to Fusarium wilt. Some varieties also are resistant to anthracnose, but these appear not to be the case for the strains occurring in Oklahoma.

Cultural practices are useful for limiting the establishment, spread and survival of pathogens causing watermelon 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 acidic soils or fields with a history of Fusarium wilt or root rots/vine declines. Late plantings should not be situated nearby and downwind of early planted cucurbit fields where foliar or virus diseases already exist. Avoid the movement of contaminated soil on workers or equipment or plant debris into clean fields. Diseases such as anthracnose, bacterial fruit blotch, 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 are favored by long periods of leaf wetness. Use 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.

Management of foliar diseases such as anthracnose, downy mildew, Cercospora leaf spot and gummy stem blight require a fungicide spray program for effective control where they occur. Fields should be monitored at least weekly to enable early detection of disease. Late-planted fields are often most vulnerable to foliar diseases. Spray programs should be initiated at the first appearance of disease or when flowering begins 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 is severe or when rains are frequent. Downy mildew is a sporadic foliar disease, generally occurring in late season from August through September. In untreated watermelon plantings, downy mildew can rapidly defoliate entire fields. The disease does not overwinter in Oklahoma, and sources of disease outbreaks are airborne spores, traveling long distances in air currents and deposited onto local fields. Consult the Downy Mildew Forecast webpage (http://cdm.ipmpipe.org/) for updates on recently reported downy mildew outbreaks and report suspected outbreaks to the local county Extension educator. Consult Extension Circular E-832, “Extension Agent’s Handbook of Insect, Plant Disease, and Weed Control” for a listing of fungicides approved for use on watermelon.

Pesticide Applications

Insecticide applications should be made only when necessary, using results of field surveys. For control of diseases, fungicides are most effective when applied before the disease begins to spread. A preventative application at the initiation of flowering can be an economical and effective treatment. The potential for very rapid disease increase is greatest shortly before harvest, when the canopy is most dense or anytime during rainy periods. Insecticides and fungicides should be selected based on proven effectiveness. Make applications using ground equipment in a minimum spray volume of 20 gallons per acre at 40 psi to ensure adequate canopy penetration and foliar coverage. Aerial applications should be made in a minimum of 5 gallons per acre. Chemigation with sprinkler systems is an effective method of applying some fungicides.

Beehives maintained near fields for pollination must be protected from insecticide 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 or early evening when bees are less active.

Fruit Pruning

Fruit pruning in watermelons should begin as soon as defective melons are noted. Remove misshapen and blossom-end rot affected fruit to promote additional fruit set and larger growth of remaining melons. If a market demands larger melons, remove all but two or three well-shaped melons from each plant. To avoid disease spread, do not prune melons when vines are wet.

Animal Pests

Animal pests can cause major damage to vine crops, particularly watermelons, and to a lesser degree cantaloupes. Field mice and rats can cause extensive stand reductions by feeding on seeds before they germinate. The fungicide thiram, used as a seed treatment, also acts as a good repellent against rats and mice. Fence row sanitation and brush control around fields will reduce the rodent population, as well as overwintering sites for insect pests, such as cucumber beetles. Some growers set traps for mice and rats in advance of seeding.

Raccoons, coyotes, dogs and deer are highly attracted to ripe watermelons. Propane or carbide guns, loud radios and/or lights at night can provide short-term deterrence of coyotes. County trappers can be contacted through the county sheriff's office or animal damage control for assistance with coyote control. Shooting can be used as a last resort, when crop damage persists. Raccoons usually cause less damage than coyotes. Feral hogs have become a serious problem for watermelon producers in some areas of the state.

Crows are the main bird pest of cucurbits, especially watermelons and cantaloupe. They tend to move from fruit to fruit creating holes, making the melons unmarketable. Strings stretched across the field with aluminum pie-plates or aluminum strips can be an effective daytime repellent. Bright wind-socks hung from stakes flap in the wind, deterring birds. Propane or carbide guns can be employed for repelling birds. Crows may be hunted during specified seasons. Chemical animal repellents have not been widely used in vine crops because of poor deterrence, impractical application over large areas and/or the high cost per acre.

Harvesting and Handling

Watermelons reach harvest maturity five to six weeks after pollination, depending upon variety and season. Varieties may differ in certain characteristics that indicate maturity. With experience, a ripe melon can be identified just by glancing at the glossy rind surface. Other indications of ripeness include a change in the color of the ground spot from white to light yellow; a change of tendrils nearest the fruit from green to brown and dry. Fruit thumping, which produces a metallic ringing sound indicating immaturity and a more muffled or dull sound to indicate maturity or over-maturity. Thumping is a reliable method to detect over-maturity in round-shaped melons. The best method is to cut a few melons in various parts of the field and carefully associate ripeness with outward fruit appearance. Harvesting and marketing green or overripe melons reduces customer satisfaction and lessens the demand by the consuming public. Sugar content does not increase after harvest; however, red color will continue to develop after a slightly immature melon is picked.

Melons should be cut from the vine rather than pulled, twisted, or broken off to reduce chances of stem decay. Leave a long stem on the fruit. To avoid bruising melons, handle carefully at all times. Never stand melons on end to avoid bruising and flesh separation from the rind. Do not place melons with bottom sides turned up, because the ground spot is easily sun scalded. Haul melons from the field in straw or paper-padded vehicles to reduce bruising, punctures and rind abrasion. To help prevent bruising, do not allow field hands to ride on top of the load. After harvest, load melons directly into trucks for shipment to market or haul them to a central grading station for reloading and shipment. Melons are usually graded and sized during the loading operation. Traditionally, melons have been bulk hauled in trucks. The use of pallet-sized containers has gained popularity because they are more efficient in unloading, and fruit damage related to rough handling during loading and unloading is reduced. Bulk bins made of corrugated fiberboard holding around 1,000 pounds as well as cartons holding three to five melons are used.

Storage

If necessary, watermelons will keep for two weeks to three weeks when stored at 52 F to 60 F. Relative humidity should be 85 percent to 90 percent. Higher humidity may promote stem-end rot. Watermelons are not adapted for long storage. They are subject to chilling injury and lose flavor and color at temperatures lower than 50 F. Decay, mainly black rot, can be expected on watermelons previously stored at 50 F or lower. At higher temperatures, watermelons are subject to decay. Holding watermelons for up to a week at room temperature can improve flavor and color. However, after several weeks at room temperature, they have very poor flavor and texture. Watermelons are sensitive to ethylene and should not be stored or shipped with products that emit ethylene, such as ripe cantaloupes, apples, pears, tomatoes and bananas.

Marketing and Economics

U.S. watermelon production in 2012 totaled more than 39 million cwt, more than the crop from 2011. The value of fresh market watermelons that year was nearly $520.8 million, also more than the previous year. The average price dropped 60 cents from 2011, falling to $13.30 per cwt. (USDA National Agricultural Statistics Service)

Most of the U.S. watermelon production is consumed fresh. Per capita fresh watermelon consumption in 2010 was 15.5 pounds (USDA Economic Research Service). According to consumption data, women tend to eat more watermelon than men. About 85 percent of watermelons purchased at the retail level are for home consumption. Processed products include roasted seeds, pickled rind and watermelon juice.

Several marketing methods are used for watermelons in Oklahoma. The method used depends on the grower and amount of production. Marketing methods include selling an entire field of production, using a broker or supplier, selling directly to truckers or stores or selling directly to customers at farmers' markets or roadside stands. The bulk of the Oklaho-

ma commercial crop is shipped out-of-state through brokers. These are sold by the hundredweight at harvest time Free On Board (F.O.B.) the packing shed and are subject to packaging requirements specified by the shippers and buyers. Many smaller scale growers sell their watermelons through temporary or permanent roadside stands or farmers' markets. Generally, these watermelons are sold by the melon. An important consideration in successful marketing is to have adequate facilities for transporting the crop to market outlets. Although earliness usually results in higher prices, quality and maturity should be of prime importance in marketing watermelons.

Information on approximate production costs and returns for Oklahoma watermelon production may be found at: http://agecon.okstate.edu/budgets/sample%20files/Watermelon2.1.pdf

Fruit Disorders

Misshapen melons (gourd-necked or bottlenecked) are commonly produced by varieties with long fruits. Moisture stress and inadequate pollination are causes. Occasionally, melons of any variety may be misshapen because they lie on uneven ground or were injured while small. Shape irregularities in tiny fruit will not be corrected as the fruit develops.

Blossom-end rot is a deterioration of the blossom end of the fruit. The usual order of development is softening, slight shriveling, browning, blackening with extensive shriveling and sometimes secondary decaying. Poor calcium nutrition and moisture stress cause blossom-end rot. Hot, dry winds, nematode damage, excessive fertilizer, low levels of calcium in the soil, pruned roots from late cultivations and other conditions are contributing factors.

Bursting or cracking may result from an uneven growth rate, which is particularly associated with heavy rainfall or irrigation when fruits are maturing. The percentage of burst fruits is usually low, and types with round fruit are more susceptible.

White heart is the presence of white streaks or bands of undesirable flesh in the heart (center) of the fruit. This is caused by excessive moisture (and probably too much nitrogen) during fruit maturation.

Hollow heart is a disorder that varies among varieties. Causes are unknown, but tends to be more common in fruit set near the plant crown and in seedless watermelon varieties.

Sunburn occurs most frequently in varieties with dark green rinds. Charleston Gray types and other melons with gray-green rinds rarely sunburn. Good healthy foliage will minimize sunburn, but favors good yields and high quality. Strong winds can blow unprotected vines away from the developing fruit along the edges of the rows and cause full exposure of the fruit to the sun.

Rind necrosis is an internal disorder of the watermelon rind. Symptoms are brown, corky or mealy textured spots in the rind, which may enlarge to form large bands of discoloration that rarely extend into the flesh. Experienced pickers often can detect affected melons by the subtle knobbiness visible on the surface of affected melons. The cause of rind necrosis is unknown. Bacterial infection has been reported to be a cause, although similar bacteria are found in healthy melons. Drought stress also is reported to predispose melons to rind necrosis.

Related Extension Publications

E-832 OSU Extension Agent's Handbook of Insect, Plant Disease, and Weed Control.
E-995 Oklahoman's Guide to Growing Fruits, Nuts, and Vegetables
HLA-6035 Commercial Vegetable Varieties for Oklahoma
HLA-6036 Soil Test Interpretations for Vegetable Crops Vegetables

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Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, the 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. Revised 0515 GH.

HLA-6236-4