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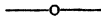
OKLAHOMA AGRICULTURAL AND
MECHANICAL COLLEGE AND
UNITED STATES DEPARTMENT OF
AGRICULTURE, COOPERATING

EXTENSION SERVICE
COUNTY AGENT WORK
STILLWATER, OKLAHOMA

Distributed in Furtherance of the Acts of Congress of May 8 and June 30, 1914

WATERMELONS

BY D. C. MOORING,
Extension Horticulturist



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Commercial watermelon growing in Oklahoma if properly handled usually pays a fair dividend.

Oklahoma* is listed ninth in commercial watermelon production among twenty-two melon states during the past four years (1923 included). The annual production averaged one thousand three hundred sixty-seven cars per year. The four years' average acreage was four thousand one hundred forty-seven acres. The average farm value was two hundred fifteen thousand two hundred fifty dollars or fifty-one dollars and ninety cents per acre.

Soil

Watermelons do best in a warm sandy soil which contains a fair supply of humus. It is important that the vines grow off quickly in the spring. This type of growth better enables the plants to resist insect and disease pests. A strong healthy vine will set on fruit better than a weakling plant and at the same time produce better melons. A sandy soil will permit good drainage in case of heavy rains and the presence of humus will enable the soil to retain sufficient moisture to meet the requirements of normal growth during an average season.

Melons do well under a variety of climates so far as rainfall and temperature are concerned. Too much rain during the growing season results in excessive vine growth at the expense of fruit production. A high temperature during the growing season is desirable. The light sandy soils in many localities in the state seem to be almost ideal for the production of good watermelons.

Preparation of Soil

A good seed bed is important. Fall plowing, where the land does not blow, is especially desirable. If manure is plentiful, apply a good coating of manure in the fall; disk it in, and then break the ground. Do not permit manure to lie on the top of the ground longer than necessary as it will lose much of its manural value. Blowy soils may be listed in the fall in the opposite direction from the prevailing winter and spring winds.

Fertilizer

The watermelon is a gross feeder and should have a constant supply of ready available food material for quick and constant growth. Where the soil is not naturally fertile, fertilizers will pay. Where an abundant supply of barnyard manure is available, ten tons per acre may be applied in the

*Weather, Crops and Markets, U. S. Department of Agriculture, Vol. 4, No. 26.

drier portions of the state, and in the eastern part this amount may be doubled. Barnyard manure is an exceptionally good fertilizer. An economical use of manure is to apply it in the furrow or in the hill. Where applied in the furrow, it is desirable to mix it with the soil. Where applied in the hill use two or three shovelfuls; mix with the soil and cover with three or four inches of soil before planting. On account of insects, diseases and gross feeding habits of watermelons, they should not be grown on the same soil twice in succession. Where crop rotation is practiced melons should follow a legume.

Commercial fertilizers in Oklahoma have not generally proved profitable where the annual rainfall is below thirty-five inches. East of that line it would generally be profitable to use commercial fertilizer under melons.

In the common sandy soils and especially the coarse sands, a good complete trucking fertilizer such as one containing two and one-half per cent nitrogen, eight per cent phosphorus, four per cent potash or one containing twelve per cent phosphorus, four per cent nitrogen and four per cent potash should give profitable returns. The rate of application should be from two hundred to three hundred pounds to the acre. The nitrogen element stimulates vine growth; the phosphorus increases the fruiting and generally hastens maturity, while potash content will add quality and firmness to the melon.

It is doubtful whether commercial fertilizers will ever prove profitable west of the line of thirty-five inch rainfall. There will be seasons when the rainfall will be above the average and distributed fairly well for the season when commercial fertilizer would become soluble to the plant and prove profitable, and it is possible in early spring plantings that it would do so under average conditions, but there is no evidence in the past to warrant the general use of commercial fertilizers in regions where rainfall is a limiting factor.

Varieties

Only one standard variety of watermelons should be grown commercially in a community. A car of mixed melons cannot be packed nor sold to advantage. Where melons are to be grown to supply a local market, the growing of more than one variety may be justified.

The Tom Watson is dark green in color, red flesh and fair quality, good size, good shipper and prolific, but on account of color of skin shows sunburn badly. This has been the leading commercial variety of melon in this state.

The Irish Gray is a comparatively new melon in this state, has been grown two or three years only but appears to be increasing in popularity. The skin of the melon, as the name indicates, is light gray in color, does not show sunburn as badly as the Tom Watson, and has red flesh and better flavor than the Tom Watson. It has a tendency to be too prolific at the expense of size. With proper spacing, cultivation and thinning, the size can undoubtedly be increased. The Irish Gray sells better on the average local market.

Among some of the better quality melons for home use or local market are Kleckley Sweet and Halbert Honey.

Time to Plant

Watermelons are tender plants and very susceptible to injury from cold or frost. If melons come up too early and cold weather follows, they are stunted: so that later plantings may produce ripe melons earlier. There are advantages in making two seed plantings about ten days apart in the same hill. The first planting on account of unfavorable conditions may not produce a stand, or may be injured by cold, fungi, or insects. It is desirable to

plant plenty of seed, ranging in number from ten to fifteen seeds per hill at each planting. Scatter the seeds pretty well over the hill and cover an inch and one-half deep. Seed should not be planted too early.

Seed

It pays to secure good seed even though the cost may seem to be high. From one to two pounds per acre will be required depending on the number of seed per hill and the number of hills per acre. In the drier sections of the state, greater distance is usually given between the hills. There will be 435 hills per acre if the hills are 10 feet apart each way; 365 hills where the hills are 10x12 feet apart; 302 hills where they are 12x12 feet apart; 222 hills where they are 14x14 feet apart and 193 hills where they are 15x15 feet apart.

Cultivation

The first cultivation should be as close to the vines as practicable. Where the hills are checked cultivation in both directions is possible.

It is important to keep a mulch about the young plants and at the same time not permit the growth of any grass or weeds. Some hand hoeing is usually necessary. Disking is an efficient and economical method of cultivation. Keep a soil mulch on the melon patch as long as possible. During the later cultivations it will be necessary to move the vines in one direction to facilitate cultivation; however, this should not be done after the melons have begun to set. Some growers even question the advisability of moving the vines at all. Some growers make a practice of planting a few rows of cowpeas in the middle of the melon rows late in the season which will serve as a windbreak and shade.

Thinning Vines and Melons

The thinning of the plants should begin when the third leaf appears. Remove all vines except one or two.

The thinning of the melons consists of removing all defective melons as soon as their imperfection is recognized. As a rule, defective melons, as to shape, can be determined when the melons are three to five inches long. The number of melons left on a vine will influence the size and uniformity of the melons. The smaller the number of melons left per vine, the larger the melons will be, and the melons will be more uniform in size. Size and uniformity are two very important characteristics for melons to have in order to meet ready and good sales. Those who have had considerable experience in marketing melons uniformly agree that about thirty pound melons or above, which are uniform in size, shape, color and freeness from imperfections are easily marketed.

Fewer vines per hill and fewer melons per vine are especially desirable during a dry season.

Demonstrations in the thinning of vines and melons have been conducted in Grady county, Oklahoma, during the past two years with very favorable results.

In a demonstration in 1922 where the vines were thinned one to a hill and two melons left per vine, a car of melons averaging 36½ pounds per melon sold for \$270.00 per car. The average for the district where no thinning was practiced on the same date was 23 to 25 pounds per melon, and the car sold for \$150.00. Other sales for the season ran in about the same proportion. This shows a difference in favor of thinning of \$120.00 per car.

In 1923, a five-car average where vines and melons were thinned the same as in 1922 was 33 pounds per melon and sold for an average of \$316.00 per car. The district average where no thinning was practiced was \$185.00 per car. This demonstration shows a difference in favor of thinning of \$131.00 per car.

Harvesting and Marketing

To establish and retain a market, whether local or at a distance, good melons are necessary. Among the essential characteristics of a good melon are size, uniformity, freeness of imperfections, good quality and ripeness and freeness of white centers. Watermelons, unlike cantaloupes, do not ripen after being pulled. A melon too ripe is undesirable. There are a number of ways frequently used in determining whether or not a melon is ripe. An experienced melon grower can usually tell a ripe melon by merely looking at it. The best way of testing, as to ripeness, is by thumping the melon and listening to the sound. A familiar "plunk" most often determines the pulling. The yellowish color on the under side, if accompanied by a rough under surface is fairly reliable. A dead curl on the opposite side of the stem to which the melon is attached is often used, but is not always a reliable test as the curl may be dead and the melon green. If a melon is pressed and gives way slightly with an inner cracking sound, it is usually ripe. This test is not advisable for a shipping melon or one not to be used right away as it injures the flesh.

Remove the melons from the vine by cutting the stem with a sharp knife, leaving at least three inches of stem on the melon for subsequent treatment. In large plantings, a wagon road is left between each six to eight rows. In loading from the field, it will be necessary to carry the melons across only three to four rows. In harvesting and loading, care should be exercised not to injure the vines any more than necessary.

It is preferable to have springs on the wagon, straw in the bottom of the wagon box and the sides padded. The stems of the melons are usually treated at the car. Quick but careful handling from harvest to market is important.

Loading Car

Large, good quality and uniform melons are the ones that sell most readily. Stock cars are most often used in which to ship melons. The average weight of a car of melons is about thirty thousand pounds. The number of melons per car, therefore, will depend upon the size of the melons. In the bottom of the car, place a liberal supply of straw. If the melons average twenty-five pounds or less, they should be five tiers high. If the melons average more than twenty-five pounds, they should be four tiers high.

Loading Five High.—Place ends of melons in the first row against end of car, and load full width of car. Start next row, placing melons end to end. Rest the next row on top of the first two rows so that one will rest on four melons. Pack space left at end of car in second and fourth rows with hay or straw. Continue as above until required height is reached.

Loading Four High.—Start first row one-half the length of the melon from the end of the car running same across car and leave space half the width of the melon at each end of the row at the sides of the car. Pack the spaces thus left at the end and sides of the car with hay or straw. To start the next row on top place the first melon against the side of the car with end of the melon placed firmly against end of the car, continuing across the row so that melons on top will rest between the melons on the bottom row. Start next row on the floor with ends against the ends of melons in the first row. Place melons on top allowing the top melon to rest on four melons. Continue as above until required height is reached. Build the melons up in steps to the required height, loading from each end of car so that load will be completed at doorway.

Where melons vary considerably in size, load larger melons four high in one end of the car and the smaller ones five high in the other end. In loading do not roll melons or walk over them. Board up doorways and cracks in car sufficiently to prevent the melons from being cut into. A well loaded car has better market value and pays well for the extra care taken.

OKLAHOMA WATERMELON GRADES

(Oklahoma State Marketing Commission)

Extra Choice.—This grade shall consist of ripe, sound, well shaped, freshly clipped melons, free from sunburn, over-ripeness, hail or insect damage, and practically even average.

Choice.—This grade shall consist of melons not fully meeting the requirements for the grade "Extra Choice," and shall have the percentage of objectionable features enumerated and shown on the certificate of inspection, which objectionable features shall not exceed fifteen per cent of the lot.

Grade 3.—This grade shall consist of any lot of melons not meeting the requirements of either of the foregoing grades.

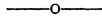
The certificate of inspection of watermelons shall contain the per cent of objectionable features (if any) and the condition of the car and loading, together with the name of the grower or shipper, the variety, count and weight.

In case of weight and count on watermelons, because of rapid loading and slight variations in scales, one per cent (1%) in weight or count is permissible.

Because of natural shrinkage and some breakage two per cent (2%) of the weight shall be deducted from the scale weights as the true net weight of the car, and the shippers shall not be held liable for any short weight at destination where sold f. o. b.

Any inspector, grower, shipper, packer or shipper's agent who shall falsify his count, weight, or grade or violate any provisions relating to standards of grades and packs, or who shall refuse to conform to the standards of grade and pack as herein above established, or hereafter to be established, or who shall abstract or destroy the certificate of inspection placed in a car, or who shall refuse to submit to the inspector employed by the association or the shippers' agent handling the products for the growers, or a representative of the Oklahoma State Market Commission empowered to make such inspection, shall be fined in any sum not more than one hundred dollars (\$100.00) or thirty days in jail for each separate offense. One certificate shall be tacked on the inside of the car, and one each shall be given to the consignee, consignor, and the State Marketing Commission.

A good local inspector is an advantage to a melon growers' association. The inspector determines the grade and certifies it. Arrangements as to an inspector can be made through the Oklahoma State Marketing Commission.

**INSECTS AND DISEASES***

Striped Beetle.—The striped beetle is one of the most common melon insect pests. The striped beetle is yellow with black head and three black stripes down its back. The larval or worm stage is known as the southern corn root worm. These insects live during the winter in the woods, fence rows and other protected places, and emerge early in the spring. In a few days they lay eggs near the stem of the young plants. The eggs soon hatch into slender larvae. These larvae bore into the roots or stem of plants. Sometimes they tunnel into the under side of the melons. Where numerous, the attacks on the roots of the plant may result in causing the plant to wilt or die.

Spotted Beetle.—The twelve spotted beetle is a little larger than the striped beetle, greenish in color with twelve black spots on the upper surface. The beetle feeds on the leaves, flowers and stems, and may burrow into the rind of the melon.

*In Preparing the subject matter on insects and diseases, Missouri Extension Circular No. 110 and Farmers' Bulletin 821 have been consulted freely.

Beetle Control.—It is very important to control the two above beetles, aside from their direct injury as they may spread the wilt disease.

Nicotine sulphate dust is very effective. This dust should be applied every five to seven days during the first three weeks of the plant's life. One pound of dust economically applied should dust three hundred hills the first application, two hundred hills the second and one hundred fifty hills the third application.

Melon Aphis.—The melon aphis or melon lice (honey dew) is a small spider-like insect varying in color from yellow to green or almost black. These insects suck juices from the plants, cause the leaves to roll up and where the attack is severe, will kill the plants. The nicotine dust used in combating the beetles should hold the aphis in control, but subsequent attacks of the aphis should be handled in the same way. Early control is very essential as the aphids multiply very rapidly. At any time the aphids appear, dusting with nicotine dust should be resorted to.

Sometimes the attack is only in local spots in the patch.

Nicotine Dust.—Nicotine dust is becoming very popular as a contact dust spray and also acts as a repellent. It is not very common on the average Oklahoma market at present. Nicotine dust may be made as follows:

Use at the rate of one and one-half pints of nicotine sulphate (Blackleaf 40) to twenty-five pounds of hydrated lime for beetles. This is a 3 per cent strength. A 1 per cent strength is strong enough for the lice. Sprinkle the nicotine sulphate on the lime in a container, then cover as completely as possible and mix thoroughly. Avoid the use of the hand in case it has sores or cut places on it. The object in having the container covered is to enable the lime to absorb the nicotine fumes. Add an ounce to one pound of hydrated lime where only a small quantity is desired and in that case a closed container, larger than necessary to hold the ingredients, can be used and shaken thoroughly, and then allowed to stand for a few hours to absorb the fumes and finally become thoroughly mixed.

Anthracnose.—Anthracnose on watermelons, cantaloupes and cucumbers is fairly common in this state. This disease is caused by a fungus, and can be controlled by timely and thorough spraying with Bordeaux mixture (4-4-50). The foliage, stem and melons may be affected. Dark dead spots occur on the foliage which finally dries up. The appearance on the stem is very similar to that on the foliage. Water soaked spots, which later become sunken and covered by a pinkish color (spores of the fungi) appear on the melons. The sources of infection are from the soil and probably the seed. The disease requires moisture to develop. Spores may remain dormant for some time during dry weather and hence almost develop over night under moist conditions. For this reason, a grower should watch carefully for the first signs of the disease and spray immediately.

Bordeaux Mixture (4-4-50).—Four, four, fifty Bordeaux mixture consists of four pounds of copper sulphate, four pounds of unslaked lime (6 hydrated) and fifty gallons of water. Dissolve the copper sulphate in water by suspending it in a gunny sack in water over night in a wooden or earthen vessel. Slake the lime with water. Dilute the lime and copper sulphate solutions separately up to twenty-five gallons each with water. Pour the two into the spray tank, through a strainer, simultaneously in order to make the proper mixture. Where bordeaux mixture is not properly mixed it may result in serious burning of the foliage. Where the mixture is not strained it will clog the spray nozzle.

Watermelon Wilt.—Watermelon wilt, so far, has not been very bad in this state, but it is well to know how it affects plants and the precautions to take in case of its occurrence in any locality. The wilt is a fungus (germ) disease and usually enters the roots of the plants from an infected soil. Texas Station says it is also transmitted by the striped beetle. An affected vine

shows the wilt attack by a runner wilting, beginning at the end. Finally, the entire plant may wilt and die. The attack is usually greater at fruiting time. An affected stem cut open will show a dark brown or blackish discoloration. Upon the first appearance of the wilt grub out, remove and destroy the affected plant which may save the spread to a certain extent.

The disease may be spread by feet of animals, striped beetle, infected manure (manure from animals which have eaten infected melons or hay with wilt spores on it) and drainage water.

This fungi remains in the soil a long time, and it is recommended that infested soil not be used for growing melons for ten to twelve years.

Stem End Rot.—Stem end rot is a disease usually starting at the stem end of the melon. This disease may develop rapidly in transit and destroy the market value of the car of melons. The first indication of an attack is usually a browning and shriveling of the stem leading into the stem of the melon where the rind softens and assumes a water soaked appearance. A similar appearance may occur on the side of the melon where bruised. Finally, the affected portion becomes shriveled and decayed. A healthy melon may become ruined in three to five days.

Remove and destroy all affected melons in the field. Treat the stem end of melons with a bluestone starch paste at loading time. This paste is made as follows: Place eight ounces of bluestone in three and one-half quarts of water in an enameled pan and bring to a boil. Mix four ounces of starch with a pint of cold water and stir until an even paste is formed. After the bluestone is dissolved and boiled, add the starch mixture by pouring in a slow stream and stirring the hot solution vigorously to prevent lumping; continue the boiling and stirring until the now starchy solution thickens evenly. Usually the last stirring and boiling will last for two minutes. This paste will keep a week or ten days in a glass or earthen vessel and will treat two to four cars.

Recut the three to four inch stems of the melons to two inches, and apply the paste with a brush to the newly cut surface of the stems.

Root Knot.—The root knot has been observed in the southeast portion of the state and may occur in other portions as well. This disease is caused by a nematode and affects a large number of vegetables and field crops. The apparent effect above the ground is the stunting of the plant which affects the quality of the melon on account of the checking of the vine growth. The most conspicuous injury is seen on the roots of the plant which become swollen, distorted and knolled. Crop rotation is the only known remedy.