

WATERMELON
PRODUCTION
IN
TULARE COUNTY

UNIVERSITY OF CALIFORNIA
AGRICULTURAL EXTENSION SERVICE

POST OFFICE BUILDING

VISALIA

UC Cooperative Extension

This pamphlet has been written for Tulare County conditions. The information has been reviewed by Dr. William L. Sims, Extension Vegetable Crops Specialist, Davis.

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Some of the information has been taken from the publication entitled, "Watermelon Production in California," dated March, 1949, by Glen N. Davis* and P. A. Minges**

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GROWING WATERMELONS
IN
TULARE COUNTY

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INTRODUCTION

The watermelon is a warm-season crop of the cucurbit group well adapted to Tulare County conditions. It is highly regarded as a dessert food in hot weather, but has little consumer appeal in cold weather.

About half of the California crop is marketed within the state, with the remainder moving to markets in the Pacific Northwest, the mountain states and western Canada. Occasionally a few cars of the early crop move into the Middle West.

Competition is strong for the Midwest markets as the southern states also supply these markets.

VARIETIES

Relatively few varieties are well-adapted to Tulare County, so care should be taken in selecting the variety for commercial use. A melon weighing 18 to 25 pounds is preferred on the West Coast markets.

In Tulare County the green rind types are the most popular, however, the striped types can also be grown.

Only varieties resistant to *Fusarium* wilt should be

planted on land that has been previously planted to watermelons.

Klondike 155, Klondike R7, Klondike RS 57, and Blue Ribbon are wilt-resistant varieties that have been developed for California growing conditions. The Klondike 155 and Klondike R7 have a solid green rind. Klondike RS 57 and Blue Ribbon are striped varieties.

The fruits of these varieties weigh 18 to 25 pounds. Klondike RS 57 has excellent shipping ability because of its rind toughness. These varieties may be planted on new land or on soil previously planted to watermelons. The Charleston Gray variety, a light colored rind type, is gaining some popularity in the area.

Klondike, Peacock and Striped Klondike are the main wilt-susceptible varieties used. The most popular green rind type is the black seeded No. 3 strain, also known as Natural Klondike. The Peacock, a black seeded strain, has excellent shipping ability.

CLIMATE

Watermelons require at least a four month, frost-free growing season. Optimum soil temperatures for germination are 70° to 95°F. Below 60°F. germination is slow and poor. Seeds will germinate over a wide range of soil moisture. Germination may be hastened as the soil moisture is increased toward field capacity.

SOIL

Well-drained, sandy soils or sandy loams are preferred for watermelon production. Heavy clay and adobe soils should be avoided.

SOIL PREPARATION

Some type of crop rotation should be practiced. Deep rooting perennials or a cover crop may help to solve water penetration problems.

The soil should be worked into seedbed-shape by plowing, chiseling, discing and floating or other working as needed.

The soil should have good moisture to a depth of 6 feet or more, as the plants will root this deep if they are not restricted by dry soil or a compacted layer. A preirrigation may be necessary to insure an adequate moisture supply.

SEED REQUIREMENTS

When seed is stored under cool, dry conditions, it will remain viable up to five years.

One ounce of seed contains approximately 225 to 300 seeds. When rows are alternated at 7 and 10 feet, 2 pounds of seed per acre will allow one seed each 6 to 8 inches in the row.

If transplants are grown, the plants should be grown in containers such as peat pots. Plants cannot be transplanted with bare roots.

PLANTING

Planting is usually done on the flat in Tulare County. Most of the planting is done between March 15 and April 1. Early seeding requires extra seed to obtain a good stand. Some growers use a sled planter that will span and plant two rows in each pass. A cotton or corn planter can be used with the proper plates.

In small fields, hand planting may be practical. A short handled hoe is used for planting. From 5 to 8 seeds are dropped per hill at 7-foot spacings in the row. The plants are later thinned to 2 plants per hill. The seeds are planted from 1 to 1½ inches deep.

ROW SPACING

Each plant requires about 25 square feet of area for best growth. Rows should be spaced 6 feet or more apart. Usually the rows are alternated at 7 and 10-foot spacings. The vines are turned into the 10-foot space as they form. The irrigation ditch is made in the 7-foot space.

Some growers make two irrigation furrows spaced to match the wheel width of the duster. A mounted duster travels in the furrows to apply insecticides.

Row spacing can be determined by the cultivator to be used. Some growers disc or springtooth the middles for cultivation.

Field drives every 12 rows are made by allowing 16 feet instead of the 10-foot bed.

PLANT SPACING

When rows are drilled, the plants are thinned to 1 plant every 3 to $3\frac{1}{2}$ feet in the row. When hill planting is done, 2 plants are left per hill with hills 7 feet apart. Plants are thinned at the 2 to 3 true-leaf stage of growth.

PLANT COVERS

Most growers do not use covers. Most years the small sized caps are of doubtful value. With clear weather the covers speed germination, early growth, and afford some frost protection. The caps are put on at time of seeding. Two-inch slits are made in the cap to provide ventilation when the plants develop the first true leaf. The covers are removed at the time of thinning.

CULTIVATION

Hand hoeing is usually required at the time of thinning. Cultivation for weed control should be shallow, as watermelons send out numerous long, shallow roots, and injury to these by deep tillage may seriously retard growth.

Permanent irrigation ditches should be formed early to avoid serious root pruning. Permanent ditches are usually made when the plants begin to form vines.

IRRIGATION

The soil should be filled with moisture to a depth of at least 6 feet at the time of planting. Water-

Cost Analysis Work Sheet
 SAMPLE COSTS TO PRODUCE WATERMELONS IN TULARE COUNTY - 1962

Based on a yield of 12 tons per acre

	Sample Costs:		Your Costs:	
	per acre	per ton	per acre	per ton
PRE-HARVEST CASH COSTS:				
Land preparation: man and tractor - 3 hrs.	\$ 7.38			
Plant: (machine) 2 men and tractor - $\frac{1}{2}$ hr.	1.86			
Seed: 2 lbs. @ \$2.00	4.00			
Hoe and thin: 8 man hrs.	10.00			
Cultivation: 4 x man and tractor - 2 hrs.	4.92			
Fertilize: man and tractor - $\frac{1}{2}$ hr.	1.23			
Fertilizer: 80 lbs. Nitrogen @ 12¢	9.60			
Ditch for irrigation: man and tractor - 0.5 hrs.	1.23			
Irrigate: 12 x - 12 man hrs.; dam - 2 hrs.	17.50			
Water: power and tax 2 $\frac{1}{2}$ ac. ft. @ \$3.00	7.50			
Turn runners: 4 x - 4 man hrs.	5.00			
Dusting: 1 x hand - 1 man hr., 2 x plane - 70# @ 5¢	4.75			
Dust: 80 lbs. - avg. cost @ 15¢	12.00			
Prune culls: included in irrigation labor	--			
Misc.: 2 man hrs., 1 tractor hr., material \$1.00	4.71			
County taxes:	8.00			
Office, car, operating capital, etc.	5.15			
Repairs on equipment except tractor	3.50			
Total Pre-Harvest Labor and Cash Cost	\$108.33	\$ 9.03		
HARVESTING COSTS:				
Picking: contract @ \$2.50 per ton	30.00	2.50		
Pitch and haul out of field: contract @ \$5.00	60.00	5.00		
Load and pack truck: @ \$1.50	18.00	1.50		
Misc.: straw, etc. + equipment use @ \$1.00 per ton	12.00	1.00		
Total Harvesting Cost	\$120.00	\$10.00		
TOTAL CASH AND LABOR COSTS	\$228.33	\$19.03		
DEPRECIATION:				
Irrigation system: \$120 original cost	7.00			
Tractor: 7 $\frac{1}{2}$ hrs. @ 69¢	5.18			
Equipment: cost \$25 - 10 yrs. life	2.50			
Total Depreciation	\$ 14.68	\$ 1.22		
TOTAL CASH AND DEPRECIATION COST	\$243.01	\$20.25		
INTEREST ON INVESTMENT @ 6%:				
Irrigation system: on $\frac{1}{2}$ cost (\$60)	3.60			
Tractor: 7 $\frac{1}{2}$ hrs. @ 31¢	2.33			
Equipment: on $\frac{1}{2}$ cost (\$12.50)	.75			
Land: at \$800	48.00			
Total Interest Cost	\$ 54.68	\$ 4.56		
TOTAL COST OF PRODUCTION	\$297.69	\$24.81		

Cost Per Ton At Varying Yields

Yield - tons per acre	8	10	12	14	16	18
Total cost per ton	\$32.21	\$27.77	\$24.81	\$22.69	\$21.11	\$19.87

Man labor @ \$1.25 and \$1.35 per hour. 40 H.P. diesel wheel tractor per hour cash cost \$1.11, depreciation \$.69, interest \$.31

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melons root rapidly and the root system, when fully established, penetrates to a depth of 6 feet or more. Accordingly, the moisture present at the time of planting will carry the crop well into the growing season. Irrigations later in the season are essential and at least 20-acre inches of water should be provided. The crop should not be allowed to suffer from lack of moisture at any time. As harvest approaches, the bottom of the irrigation ditch should be kept moist by more frequent light irrigations.

Most growers put in just one fairly deep "V" ditch in the center of the 7-foot row space as the runners form.

The finished ditch is usually 16 to 18 inches deep and 36 to 42 inches wide at the top. Some growers make two flatter furrows spaced to match the wheel width of the duster that is used to apply insecticides. The two furrows also give better water distribution to the plants.

FERTILIZERS

Nitrogen fertilizers are needed to produce maximum yields. Phosphorous applications may be beneficial in some areas of the county.

A light application of fertilizer at planting time is advisable. This should supply about 20 pounds of nitrogen and 60 pounds of phosphorous per acre. It should be applied at planting, 3 inches to the side and 2 inches deeper than the seed.

A common practice is to inject ammonical nitrogen

into the soil shortly before the permanent irrigation ditch is formed. The fertilizer is usually placed about 12 to 18 inches from the plant and drilled 8 to 10 inches deep. A total of 80 to 100 pounds of actual nitrogen is applied per acre.

Barnyard manures worked into the soil will give some plant food and usually helps to obtain better water penetration.

FRUIT SET AND FRUIT PRUNING

Male and female flowers develop on the same plants at the ratio of about 7 to 1. Insects, usually bees, do the pollinating. Poor or inadequate pollination is sometimes the cause of misshapen fruits. The fruits set more or less irregularly throughout the season, but a vine will seldom mature more than 2 good melons. Fruit pruning is sometimes practiced to increase size or to obtain greater uniformity of size and shape. After several melons set, 2 or 3 of the best ones are selected, and the rest are cut from the vines. Pruning or other disturbance of the vines is detrimental.

One to 2 hives of bees per acre placed in the field when the blooms begin to appear will help insure a good early set of melons.

DAYS TO HARVEST

The length of the growing period from seeding to first harvest will vary with the variety and the season of the year. Early plantings may require up to 130 days, while later plantings may require about

100 days. Warm days and nights favor rapid plant development and hasten ripening. March plantings usually have some ripe fruit in early July, with a good picking by July 10. One planting may be harvested several times, usually at 5-day intervals.

YIELD

Twelve tons per acre is considered a good commercial yield in Tulare County. Some growers report yields up to 18 tons per acre. Yields depend on the length of the picking season. Picking usually ceases when prices drop to an unprofitable level.

If the plants are spaced at $3\frac{1}{2}$ -foot intervals in the row, and the rows are alternately spaced at 7 and 10 feet, there will be about 1400 plants per acre. If one 20-pound melon is harvested per plant, the yield will be about 14 tons per acre, therefore, closer spacing is not advisable.

HARVESTING

Harvesting is usually done by contracting with experienced pickers. Selection of ripe melons is based on changes in the bloom on the melon, thumping for changes in sound, and changes in the color of the ground spot. The ripe melons should be cut from the vine. Usually they are placed next to the irrigation ditch as they are picked.

A loading crew is made up of 5 workers. One packer on the wagon, a receiver next to the wagon, and three pitchers that walk in the 3 irrigation ditches next to the wagon. The melons are tossed from man to man

toward the wagon. The melons should be packed in padded wagons on their side. Melons crack easily when set on end or are bumped on the ends.

MARKETING

Watermelons are handled and shipped in bulk. Most of the crop is shipped by truck carrier. Large van types are used for out-of-state shipments. Some out-of-state shipments are by railroad cars. Straw is used on the floor and to line the sides of the carrier.

Finding suitable markets for melons may be difficult for growers when they sell their crop. Most growers contact local brokers, or chain store buyers to dispose of their crop. Small plantings can be handled through roadside stands.

CONTROL OF DISEASE

Watermelon wilt

Watermelon wilt (Fusarium wilt) is a fungus disease that lives from year to year in the soil. No control other than resistant varieties is practical at the present time.

Verticillium wilt

Watermelons are susceptible to Verticillium or cotton wilt. Planting on soil known to be infested is not advisable. Usually the entire plant is not killed by Verticillium wilt, but the yield will be reduced. There is no recommended control

for Verticillium wilt.

Damping-off

This problem often arises following a late rain when the soil surface is wet around the plant. Cultivation or hoeing around the plants to dry the soil will be of some help.

INSECT CONTROL

Insect controls change from year to year. For up-to-date recommendations call, write, or visit the Farm and Home Advisors Office, Post Office Building, Visalia, REdwood 4-7481.

The common insect problems are wireworms, nematodes, aphids, mites, and leafhoppers.

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