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CANTALOUPE GROWING.

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Cantaloupe growing, as developed since its origin near Rockyford, Colorado, in 1885, requires unusual judgment and cultural skill on the part of the farmer. Cooperative organization and good business management are also essential, for only by these means can the crop be properly timed and prepared for shipment, and necessary arrangements made with transportation and selling agencies.

In Arizona the first noteworthy acreage of cantaloupes was grown in Salt River Valley in 1899. Since that time the industry has expanded steadily until, in 1908, 308 cars of melons from about 1250 acres were shipped through five growers' associations, principally to markets east of the Mississippi.

A Timely Hint on so large a subject cannot assume to treat it fully; but may profitably introduce prospective growers to the practice of this branch of farming.

Climate for cantaloupes: The most important prerequisite to successful cantaloupe culture seems to be an arid or semi-arid climate. In such a climate, in Colorado, under irrigation, melons from eastern seed developed the superiority which gave rise to a new industry. An early growing season is an added advantage in that it gives the producer a wider range, in point of time, of markets for which to calculate his plantings. Dry, sunny climate, early seasons, fertile irrigated soils, and necessary commercial facilities are all to be found combined to excellent advantage in the irrigated valleys of the arid Southwest. To the resulting excellence of the product, and its successful management, is due the rapid development of cantaloupe growing in Arizona.

Soil: Cantaloupes are grown to excellent advantage on light, warm loams, properly fertilized by the addition of the organic matter and nitrogen in which our desert soils are usually deficient. Heavy soils may also be used for cantaloupe culture, but are less easily prepared and tilled during the progress of the crop. Old alfalfa ground is most excellent for cantaloupe culture; and well rotted barnyard manure is effective. Bermuda sod, plowed up and exposed to the sun without irrigation the preceding summer, makes excellent cantaloupe ground, the intensive cultivation necessary serving both to benefit the crop and to restrain this formidable weed.

Alkaline lands should be avoided, since soluble salts in excess, even though insufficient to kill the plants, are commonly believed to be detrimental to the quality of the melons.

Layout of the ground: The soil should be so arranged that the rows may be irrigated without submerging the vines and the fruit. One good way to accomplish this, and also to fertilize the soil, is as follows: The field is first irrigated, plowed, and harrowed to a condition of fine tilth. With a twelve-inch plow, at intervals of six feet, double furrows are then broken out, going and returning along the same lines. In the deep, wide furrows thus formed, well rotted barnyard manure is distributed to a depth of three or four inches, then plowed in and the field again harrowed level. By then plowing towards the middle of the spaces between the fertilized furrows, the soil is finally left in oval ridges separated by back furrows for irrigation. The rough furrows and ridges are then finished with a harrow and the newly prepared ground irrigated to establish the water line for guidance in planting.

Seed: Seed should be selected most carefully with reference to flavor and appearance of the fruit; to good shipping characters, including small cavities and heavy netting; and to a tendency to produce melons of standard size. Early strains are desired for some situations; but in Arizona, rust resistance is not a necessary character, as this class of diseases is little to be feared under our arid conditions.

Seed should be purchased only from the most reliable sources. Rockyford growers are at present the principal means of supply. Some associations go so far as to send a representative to Colorado to select, in person, the seed melons from which to supply their members. Home-grown seed in Arizona is sometimes sprouted and inferior, due to the heat to which the mature melons are oftentimes subjected in the field.

About one pound of seed is required for an acre. Cantaloupe seed improves to some extent with time, and is stated by experienced growers to germinate better at two years of age than at one.

Planting: With irrigating furrows six feet apart, rows may be planted one on each side of each furrow. The hills should be ten feet

apart in the rows, "breaking spaces" between rows. On this plan the ground will be quite uniformly occupied, with a distance across the ridges of about six feet between adjacent hills.

With a hoe, each hill is planted by making a small furrow a foot long just above the water line. About ten seeds are dropped in this furrow, covered an inch deep, and the soil pressed down lightly with the blade of the hoe. After early plantings, when frosts are feared, a second set of hills may be planted alongside the first, ten days or two weeks later. When danger from frost is past, while the plants are still small they are thinned to one or two of the strongest to each hill. Care must be taken not to overcrowd the ground with vines, as a high percentage of pony melons will follow. Under Arizona conditions the six foot spacing of hills recommended above, with not more than two plants in the hill, gives best results.

Irrigation and cultivation: A dependable supply of irrigating water is essential to successful cantaloupe culture. Early in the season when the plants are small and the irrigating supply is cold, water should be applied sparingly. But between the setting of the crop and the ripening of the first fruits, when both vines and melons are developing rapidly, and when the weather is usually hot and dry, frequent and copious irrigation is necessary, for if water is stinted at this time a large percentage of small or pony melons is likely to follow. During the picking season water should be again applied sparingly—just enough to prevent the vines from wilting. This procedure gives quality and solidity to the melons, and, incidentally, maintains the field in convenient condition for picking.

As long as the vines will permit, the middles should be kept free of weeds by means of a one-horse cultivator, and the furrows run through with a small plow after each irrigation. The young plants should also be hoed by hand two or three times. When the ground is once well covered with vines, weeds will make but little headway, even Bermuda grass being effectually checked by the dense cover.

Marketing the crop: The first shipment of melons from Arizona in 1908 was made at Yuma, June 13, about 130 days after planting. The season closed August 17 in Salt River Valley.

The critical operations of picking, packing, and shipping are usually under the supervision of the receiving company's agent. Riper grades are sent to local and coast markets; but for more distant Eastern markets the melons must be picked considerably before full maturity, when they first part easily from the stem. In favorable weather the melons ripen so rapidly as to require picking two or three times daily. At the packing shed, which must be provided with padded benches to prevent bruising, the cantaloupes are sorted into three sizes—Ponies, Standards, and

Jumbos, which are packed each in its own sized crate. The wrapped and crated melons are then hauled in spring wagons to the Association shed, where they are inspected and received, usually by a representative of the commission firm handling the crop. The accepted melons are shipped in refrigerator cars, for the most part to Eastern markets.

Enemies: The two principal enemies to cantaloupes thus far known in Arizona, are the melon aphid and nematode worms. The aphid is especially favored by the mild climatic conditions of the Southwest, and is always to be expected even in new districts. It is much affected by extremes of temperature, being repressed by cold or wet weather and also by extreme heat. In southern Arizona the aphid is usually in evidence early in June, increasing rapidly until the crop is harvested and the vines destroyed. Kerosene emulsion checks but does not usually exterminate the aphid, which is difficult to reach with spraying apparatus on the under sides of the leaves where it is chiefly to be found. Preventive measures are more satisfactory than curative ones in the case of the aphid, which is first established at comparatively few points in a field by means of old females which have wintered over in protected situations. These pioneers colonize on the young vines early in the season, at which time, when the plants are small and easily treated, the grower would do well to assume the presence of aphids and spray the whole of his plantings thoroughly with kerosene emulsion, diluted thirty times. Professor C. P. Gillette, of the Colorado Experiment Station, recommends fumigation with hydrocyanic acid gas, which he accomplishes by means of washtubs and potassium cyanide at the rate, to each three cubic feet of space, of one gram of cyanide dissolved in sulphuric acid in the usual manner. The fumigations are continued five to eight minutes, and by means of several tubs used in rotation, may be rapidly operated. California growers, also, have colonized their fields with lady bugs (*Hippodamia convergens*) brought from high mountains to feed upon the aphid. It is common practice among growers, also, to burn or bury infested plants early in the season. These are discovered by the wet or greasy appearance of the infested leaves, due to the excretion of honey dew by the aphids or by the presence of a species of ladybird which preys upon them. It is important to burn all the old vines at the end of the season, thus lessening the number of possible holdovers for the following year.

Nematode worms occasionally damage or destroy the roots of cantaloupe vines, especially when following crops that favor the development of these organisms, such as tomatoes, chili, eggplant, peas, and preceding crops of melons. Affected roots may be recognized by their characteristic swollen, knotty appearance.

No satisfactory method is known for the eradication of nematodes, but infested ground may be sown to unaffected crops, such as alfalfa, and new ground employed for cantaloupes.

Yields and profits: The average yield in Arizona during the season of 1908 was about 117 crates to the acre. Skillful growers frequently secure over 200 crates, and in one instance 345 standard crates were grown by Mr. E. L. Crane of the Station, on a measured acre near Yuma. The profits vary greatly with the grower, the season, and market conditions for the time being.

The following table relating to the operations of the Mesa Melon Growers' Association summarizes, in part, the experience of that organization for several years of its history:

Year	Acreage	Crates	Net return per standard crate.
1902	27	2,960	\$1 11
1903		5,530	1 20
1904		27,454	1 00
1905		18,130	1 70
1906		54,808	.80
1907		65,297 (est)	
1908	605	77,027 (")	.72

Under favorable cultural conditions, with good markets and a well placed crop, small, thoroughly cultivated fields frequently yield gross returns of from \$100 to over \$200 an acre—sufficient to leave a handsome profit after costs of seed, water, crates, wrappers and labor have been subtracted. On the other hand, in 1908, three out of five Arizona associations, by reason of demoralized markets, bad weather, scant irrigating water, and unseasonable yield, conducted operations at a loss. Such combinations of adverse circumstances, however, are not likely to occur again soon; and the natural advantages of this region—long season, productive soil, and superior quality of product, insure this new industry a place among southwestern farming developments so long as present cultural and commercial conditions endure.

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