

PRACTICAL HINTS TO COMMERCIAL AVOCADO GROWERS

W. F. Ward

Avon Park, Fla.

About 10 years ago the avocado industry of Florida was confined entirely to the lower East Coast Section. At that time there were some growers who believed it was possible to raise avocados successfully in the Ridge section of the State if suitable locations with respect to temperature were selected. However, when such growers tried to get facts to support their theories and to get information regarding the best varieties to plant for commercial production, the best time for planting, the best soil types, the fertilization of the trees, expectancy of production, etc., they learned that there was no data available. There had been no experimental work conducted to give any information on these subjects and only opinions and guesses were available and these varied widely.

It is true that some individuals and a few companies had tried planting some trees but no authentic information was available which could be relied upon. The Buckeye Nurseries had planted some avocados in Polk County, Mr. Morley had a few varieties at Auburndale, and Mr. Pierce tried some at Lake Hamilton and many residents around Sebring had planted seedlings in their yards but none of these trees were old enough nor had fruited enough to permit one to draw any accurate conclusions, regarding varieties to use, etc. For the most part they had tried varieties which had done well on the lower East Coast or in California or had planted a few of the new Guatemalan varieties introduced by Mr. Popenoe of the U. S. Department of Agriculture, or planted what the avocado nurseries recommended. The nurserymen of that time were recommending the planting of the Fuerte to the exclusion of practically all others, not because it fruited heavily in Florida, but because it withstood cold well and because it was considered the best commercial variety in California. In Florida it has been a complete failure.

The result of these conditions was that growers like J. L. Ivey of Lake Placid and the writer, who believed there was a future for this fruit in the Ridge Section were forced to get as much information as possible and then plant a large number of varieties to determine which ones might prove desirable and profitable. Mr. Ivey planted about twenty-five varieties and the writer planted more than thirty varieties as well as about 300 seedlings, to see how many of them would develop into profitable trees. For ten years the work has been carried on, careful observations made, experience gained which has been quite costly and could have been done much better by experiment stations had they the funds available, and many mistakes were made which have been quite costly for the growers, but beneficial to those who expect to plant groves in the future.

Of approximately thirty-five varieties which have been tried out and several hundred seedlings, it has been learned that there are only about six varieties which have proven

to be both satisfactory and profitable for commercial production, and about 98 per cent, of the seedlings have proven unprofitable for one reason or another. It is from the experience gained during this time as well as observations made in groves in various parts of the State and information gathered from growers both in Florida and California that enables me to venture some suggestions to prospective growers in this State.

There is yet so much we do not know about this industry, and so much we thought we knew a few years ago that is not true today, that when we find someone who can tell definitely everything which should be done for profitable production of avocados, we can usually put him down as one who is new in the business, or who has some special axe to grind or as an opinionated ignoramus.

To get down to my subject however, there are certain things which we believe to be true and certain pitfalls which we can warn the inexperienced growers against that may save them considerable money. One of the most important things to be considered most carefully if a success is to be made, is the location of the grove. Land well suited to avocados is worth ten times as much as land which will prove unsuited for them, for a good avocado grove is an expensive proposition when compared to farming or even to citrus growing, despite the fact that certain nurserymen who raise trees to sell may state that a good grove can be produced both easier and at less cost than a citrus grove. If it were true we would all be growing avocados because the fruit sells for many times as much by weight or by volume as citrus. The site selected should be in a warm location, protected if possible on the northwest by lakes or other bodies of water, it should be on a slope so as to have good air drainage and water drainage, the water table should be low enough so the tap roots will not be in water and quite important is that the water table be almost stationary if it is near the surface, as fluctuations in the water table will cause the death of many trees from drowning or drought. The roots cannot be constantly adjusting themselves to a fluctuating water table which is within five feet of the surface. As a rule the groves planted along the shore lines of lakes in the Ridge have failed for this reason. A good well-drained, warm soil is desired and if the vegetable matter is not there it can be added. The best citrus soils are usually good avocado soils. Do not select an undesirable site for the grove regardless of how cheap it can be bought. An avocado grove justifies the purchase of the best location which can be obtained.

The selection of the varieties is a much more simple matter now than formerly. It is essential in Florida that we have both A and B type varieties and it is believed that these should be intermixed in planting and furthermore that when bearing age is reached that hives of bees should be placed in the grove to assist in pollinating. Remember that the sale check is the yardstick for measuring the value of commercial varieties and not beauty of tree, desirable shape, heavy bearing or any other one desirable character. Up to the present the following varieties have proven the most satisfactory and profitable from a commercial viewpoint in the Ridge Section: Luly Taylor, Collinson, Linda, Eagle Rock and Winslowson. The Winslowson has been severely criticized because it cuts black when shipped under ice, but it is a regular bearer of heavy crops and it is possible that by picking earlier and shipping without ice that this trouble can be reduced. At any rate it is a splendid fruit for home consumption and bears heavily most every year. It is quite a valuable B type tree for pollinating others. We have not yet given

it up. The Lulu, Taylor and Collinson have been the most profitable ones in our grove and are our favorites. The Spinks which is in ill repute in California and parts of Florida, has done well with us and for two years sold higher than any other variety, however, because of its reputation, we are not planting any more of these trees neither are we top-working those which we have.

The following varieties which were formerly considered as having much promise have been discarded entirely by us for one reason or another and have been top-worked to other varieties: Puebla, Gottfried, Taft, Nimlioh, Panchoy, Itzamna, Perfecto, Hawaii, Mayapan, Tertoh, Collins and Schmidt. The Fuerte and Winslow were never planted by us; otherwise they would have been discarded also. The Sanchez, Pollock, Hardee and Spinks are still being kept but may be topworked in the future. Several varieties which look very promising as Nabal and Benik and several hybrids are being tried out but it is too early to report on them.

With respect to distance between trees and the most desirable method of planting I cannot say, but I believe greater distance is necessary in the Ridge than on the East Coast because our trees get larger, but personally I like a planting with 25 feet between the rows and the trees 16 to 20 feet apart in the row. The spray rig can work nicely down the 25 foot middle and trucks can go through for gathering the fruit without breaking limbs.

I prefer digging holes two and one-half to three feet across and of the same depth and mixing top soil, muck, leaves, a little bone meal or old bones and a small amount of manure together and fill the holes with it about four to six feet before planting the trees.

In selecting the trees for planting select only strong, vigorous trees of young age, which have never been stunted. Never permit anyone to sell you weak spindling trees, nor trees which are too old and large, nor trees growing in small tin cans, as they will invariably be a failure. You would lose money if such trees were given to you for planting. The standard avocado box is the best container for a tree and a tree in it can be planted without disturbing the roots.

We prefer a grafted tree to a budded tree if a tip graft from bearing wood was used in grafting, for the grafted tree immediately forms several large primary limbs near its base and starts off as a well-headed tree instead of growing up as a shoot and heading out later. Then, too, we believe if tip grafts are used from bearing wood that the trees will bear earlier and heavier than the trees grown from buds cut from any part of a tree. Some may not agree with this statement but our experience leads us to believe it is true.

Use plenty of water when planting, and be sure to set the trees at the same depth as when they were growing in the nursery. Mulch them with grass, leaves, sphagnum moss or litter of some kind immediately after planting and water them 2 or 3 times a week until they get well started. Protect them from the hot sun with a sack on the south and west sides or a sack over the top, which is tied securely to four stakes driven deeply into the ground and which can be raised or pulled partly up as the tree grows. Shading is unnecessary after the first season, but very desirable just after planting.

The young trees should be strip harrowed the first year with a one-horse acme harrow

and have a cover crop planted in the middles if they are not heavily mulched. The strip harrowing will stimulate growth and keep weeds and grass from choking them, or shading them too much or taking too much moisture from them. Cover crops should be grown in the middles every year, then cut and used as mulching. In many cases it will pay to have mulching material hauled into the grove.

Avoid deep cultivation. The cover crop can be cut up by discing several times with intervals between discings for materials to dry, and left in this manner, or the crop can be plowed in after discing if orange plows are used and they are set very shallow—two to two and one-half inches only. This is desirable if the grove is to be fired with wood for cold protection. If firing is never to be practiced the grove may be thoroughly mulched by hauling in trash and grass and the grove never plowed nor disced.

We bank our young trees in the early winter and now we leave the banks up until March 15th. One year we removed the banks on March 9th and 10th and on the night of March 11th the thermometer dropped to 26 degrees and we had some damage. This year on March 13th we expected a temperature of 28 degrees but the cold wave shifted its direction and while at Brooksville the thermometer dropped to about 26 degrees, the temperature in our grove at Avon Park did not go below 50 degrees.

Wood will probably be the cheapest fuel for firing avocado groves in most sections for several years to come, since fires may not have to be lighted often. During the last nine years we have lit the fires but two nights and in both cases saved the trees and most of the bloom.

In fertilizing the grove we use a fertilizer with fifty per cent, or more of the nitrogen from organic sources and in addition use stable manure, chicken manure and plenty of mulch. The avocado is a rank feeder and in our sandy soils responds to heavy application of manure, trash and litter of all kinds. We usually fertilize 3 times a year and then spot fertilize such trees as are carrying a very heavy crop or show signs of hunger. When given good care and attention the avocado will grow faster than citrus trees but they also need more fertilizer than a citrus tree of the same age.

Irrigation of avocados in the Ridge Section is still in the experimental stage. It may be exceedingly profitable to have water in times of dry years such as the last two and in the spring of most every year for bringing out bloom, setting heavy crops and holding such crops after being set. It must be used with care however, for its injudicious use may cause the trees to throw off a crop of fruit. Research work along this line is extremely desirable and the growers should demand that their State Experiment Stations take up studies of irrigation and then should insist that the legislature provide sufficient funds for the Station to do such work.

Spraying will doubtless be discussed by others here but a Bordeaux spray of 3-3-50 in the bloom and one or two others about three weeks apart are beneficial in keeping down scab and having clean fruit. It is also a stimulant to plant growth. The growers should continue their work to get a reasonable tariff placed on Cuban avocados. The present tariff on avocados from other countries than Cuba is undoubtedly too high and will cause criticism, but a moderate tariff on Cuban fruit is essential or we will have to produce fruit that ripens after the Cuban crop is marketed. This is being done by many growers. To do this it is necessary to topwork the trees which ripen fruit from July to

November 1st. This is a tedious job but it can be successfully done after one learns how. I spent more than two thousand dollars in cash before we learned a successful method and we tried several. For that two thousand dollars spent we secured less than a dozen trees but during the last two years our percentage of living grafts have run between 60 and 85. This last winter over 85 per cent, of the limbs grafted have produced strong, vigorous grafts. Some of our grafts inserted 12 months ago in 8-year-old trees are 5 to 8 feet tall, as large as a man's arm and have set a crop of fruit. Most of our two-year-old grafts on old trees will bear a nice crop this year. We use a modified left graft, and use large scions from our heaviest producing trees. In two years we convert a tree which is a non-producer or one which produces fruit in midsummer when the price is low, into a tree which produces heavy crops during the winter months when the price is high. During the period from November 15th to February 15th of the present season our Lula, Taylor, Collinson and Linda fruit sold for 9 to 16½ cents per pound on the tree *Net*, after paying all expenses for picking, hauling, packing, icing, transportation and 10 per cent, commission for selling. Our summer fruit as Gottfried, Hardee Pollock and seedlings netted from 1 to 4 cents a pound. That is why we favor the fall and winter fruits—the return checks converted us. Last year the fall and winter fruits netted us seventeen and one-half cents a pound and the year before when the East Coast had little fruit following the storms, we netted twenty-four and one-half cents a pound on the tree. Is it any wonder we like to raise avocados? They are profitable for us, and will be for others who use good judgment in the undertaking.

I wish to take this opportunity of inviting those interested to visit the Ward & Du Pont grove and nursery just two miles east of Avon Park on the road to the Rex Beach Farms. My superintendent, L. L. Crews, who lives on the property, will be glad to show you our 30 acres of avocados and explain what we are doing.

Mr. Brooks: It's not what we raise, but what can be marketed profitably.

Member: I would like to ask if you think, at the present time the establishment of a U. S. standard grade would assist the marketing of avocados under present conditions?

Member: And what per cent, do you think the establishment of a U. S. No. 1 grade on avocados would help other fruit industries.

Mr. Dorn: It's hard to determine. There is more and more demand for U. S. standardization. I think probably it would be an advantage. I think I can fairly say that the Avocado Exchange and a number of other shippers, and Mr. Krome, have maintained a grade equal to what would be considered U. S. No. 1. The Avocado Exchange makes four grades, and we consider it to our own interests to maintain those grades.

Member: Is it time to start working toward the establishment of U. S. 1 grades?

Mr. Ward: Nothing has been done on it yet, but I would say that it is working toward that. As the volume becomes sufficient, I think it will be found necessary; perhaps it's necessary today.

Member: We will be glad to render any assistance we can along that line when growers see fit to take it up.