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## **The Avocado Today in Dade County**

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Now that the great boom of 1925 and the hurricane of September, 1926, have passed into history, it is becoming plain that they mark the end of a period in the development of the avocado industry in southeast Florida.

The growing of avocados as a commercial proposition may be said to have started in Dade County with the establishment of the first avocado nursery by Mr. George B. Cellon, at Miami, about 1900, for the propagation of budded trees. From that time on until 1925 the avocado business showed a gradually increasing growth in acreage and in fruit production. The large markets of the United States came to know the avocado better and better as a salad fruit of exceptional value, and increased shipments from Florida, as well as Cuba, laid the foundation of a large and profitable market.

The great real estate inflation of 1925 caused a sudden and important break in this normal growth. A great many groves were sold from one to five times, and in many cases passed into the hands of parties interested only in the speculative value of the land on which the trees were planted. In the vicinity of Miami and also to some extent in the vicinity of Homestead, groves were subdivided and trees destroyed. In many other cases, due to the terrific back-kick from high prices, avocado groves have since been abandoned. There has sometimes been a question as to who has been the actual owner of many grove properties. Following this the hurricane of September 18th, 1925, broke up many trees, especially the larger and older ones. The old seedling groves of Dade County suffered most of all in broken and overturned trees, but none of the groves, even of young trees or the newer budded varieties escaped without damage.

Added to this has been the fact that in the boom and for about two years after it there was no interest in further plantings of trees. Practically all plantings of avocados in recent years had been of budded varieties. The nurserymen who had been selling budded stock were forced out of business by their practical inability to sell such trees as they had made in 1925. The avocado is a difficult tree to propagate at the best, and it is only now after a gap of three years that we are seeing a small amount of new nursery stock offered for sale.

The result has been a considerable decrease in the acreage of avocados under cultivation in southeast Florida, most of which has naturally been in Dade County and particularly in the section from Miami south. There are no accurate figures as to the present amount of the fruit under cultivation, but fifteen hundred acres is a rough and sufficiently optimistic guess. There has been a probable reduction of about a third from the acreage planted and under cultivation at the beginning of 1925.

In addition to the reduction in acreage and elimination of nurseries there was during 1925 and 1926 a general lack of interest in the growing and marketing of the avocado.

Besides this we have seen at about the same time the retirement of several of the men who have been chiefly responsible for the previous up building of the industry. Oldest in service and most important in his contribution is undoubtedly Mr. George Cellon. Mr. Cellon might well be called the father of the avocado industry, being the first commercial nurseryman, the first planter of groves, and the man who selected the first two varieties commonly planted the Trapp and the Pollock.

Another pioneer in avocado cultivation whose work has been extremely valuable is Mr. W. J. Krome. Mr. Krome has been bedridden for some time, though still actively interested. In his case as in Mr. Cellon's the industry feels the loss of one of its real leaders. Since 1925 we have also seen Mr. Wilson Popenoe drop out. As assistant to Dr. David Fairchild of the Plant Introduction Bureau of the Department of Agriculture, Mr. Popenoe has done more than any other American in tracing the avocado back to its native home in Central and Northwest South America. He has been responsible for the introduction of the newest varieties to be planted here. We still have Dr. Fairchild and Edward Simmons (now in charge at Chapman Field) actively interested, as well as a number of growers whose interest dates from many years before the boom. But it is well to realize that a generation has passed since the avocado business was started and that its future will be more and more in the hands of younger men.

Another important change coming at the same time has been the entrance of California into the leading markets as a real competitor. Presenting a closely organized front, but with natural advantages which can fairly be said to be less promising than Florida's the avocado growers of California have made a very creditable and intelligent start on another industry for their state. They have not lost any time while Florida has been in transition, and their competition will, without doubt, be felt more and more from year to year in the principal markets.

In addition to this they have passed a law in California condemning any avocados as unfit for food which show less than eight per cent oil content. Whether aimed directly at Florida avocados or not this actually debars the early fruit of the South American or West Indian type. It is an unfair law. The leading West Indian varieties when fully mature do not contain eight per cent oil, though this by no means lessens their palatability. In fact for most people it increases this. The general trade through the country has preferred the Florida avocado and ordinary salesmanship should keep the balance in our favor. About two years ago there appeared an article in the Florida Grower from one of the leading California avocado growers in which he stated that tests made in California with the cooperation of the U. S. Department of Agriculture had shown that the avocado should have this eight per cent minimum oil content to be desirable fruit. If California is still using the government's name for such propaganda I believe that an energetic protest should be made. Any attack by California on Florida avocados because of low oil content, and especially the dragging in of the federal government as favoring them as against us, is exceedingly poor taste to say the least, and if properly handled by us will do them more harm than good.

We have had another handicap in the fact that a number of the newer varieties of avocados planted here since 1918 have proved to be shy bearers. These are nearly all of the Guatemalan family, and most of them were imported by our nurserymen by way of California. We can see now that avocados of Guatemalan origin coming from an

altitude of 2,000 feet or more are strangers in a sea-level location such as ours, where the West Indian type is perfectly adapted. After the successful introduction of Guatemalan avocados in California, following 1910, our growers, and especially our nurserymen here looked longingly at the list of varieties which were fruiting in California through the winter and spring. It was plain that if we also could produce avocados throughout the winter and spring and lengthen our former season, it would be immensely valuable. The general tendency of avocado prices is to advance from August to December. Our nurseryman imported the best of these Guatemalan varieties, and with the best intentions in the world they were propagated and sold to growers. Unfortunately many trees of these new varieties have never had a full commercial crop. On the other hand a few have proven to be fair to good commercial varieties, but it has taken a good many years of growing under varied conditions to segregate the sheep from the goats. What has been lacking here has been a local or a county Experiment and Demonstration Farm to team up with the government Plant Introduction Station in order to make thorough, practical tests of these varieties before turning them out for general planting.

This, then, is the situation which the South Florida grower of avocados has inherited from the boom. At a glance it looks as though the industry has received a very serious setback, but I think the disadvantages are much less than they seem. There were a few rays of light in 1927. Naturally following the hurricane and the abandonment of a good many groves there could not be a large production. I do not know actual shipments of avocados from Dade County year by year, but it is probable that from 1920 to 1925 we have shipped 25,000 to 40,000 boxes per year. In 1927 the principal variety of avocado to come back and produce in Dade County was the Trapp, justifying once more Mr. George Cellon's faith in it. Of the new hybrid varieties the Collinson and Winslowson distinguished themselves by producing a good crop in a number of places. The total shipments from the county may possibly have totaled 4,000 or 5,000 boxes. Naturally this small crop for the short season sold at very satisfactory prices.

Where do we stand today? In the first place it may be said that there has been a considerable revival of interest in the avocado as well as in all agricultural matters. Some of this, it is true, has been only the blessing of agriculture by chambers of commerce in a very general way with the idea that somehow, miraculously, the grower would benefit from a few kind words. There is, however, a real revival of interest and enthusiasm apparent among the growers themselves, and a great deal of real interest on the part of outsiders and tourists in what is being done here with avocados and other fruits.

There is fortunately a very nice bloom now set in the Redland section and along the coast for this year, with prospect of a fair commercial crop. It is probable that this crop will be fairly well divided between the leading varieties. As a result of this revival of interest and the comeback of the growers themselves there has been an increased interest in the sale of groves. A number of recent sales have been made at fair figures.

Our experiments in planting a great number of varieties have at last shown us which ones are to be preferred and can be used for further plantings. We know far more about the action of all varieties under a very wide range of conditions than we did ten or even five years ago. Among the things that we have learned I shall mention the following, the

principal of which deals with varieties:

In a hurricane the tall rangy tree is at a disadvantage. Mr. Gray of the Miami Weather Bureau states that the average occurrence of severe hurricanes here is probably not over once in fifteen or twenty years, and we may expect lighter blows sufficient to take off some fruit three or four times during that period. The seedling trees were the worst hurt by the hurricane, but tall growing trees such as the Taylor, Waldin and Lula were frequently broken off, and even such a tree as the Pollock which is of rounded growth but large, was badly broken. The Trapp was not so badly hurt because it is somewhat dwarfed, low heading and has a relatively small leaf and sparse growth. The planting of a heavy windbreak of Australian Pines, Pithecolobiums, Albizzia or similar trees is a valuable protection to any grove.

Another important point is the advantage of the Hybrid avocados in extending the growing season, which at one time ended with the Trapp. These Hybrids are mostly crosses of the West Indian with the Guatemalan type. The advantage of the Hybrid is the retaining of the fruiting ability of the West Indian type with the later season characteristic of the Guatemalan, and possible superior resistance to frost. The Hybrid tree being produced here acts like a native, and in the experimentation with new Hybrids lies the possibility of further improvement of varieties and greater length of season. The most successful of those proven out are the Collinson, which was developed by Mr. Edward Simmons at the Brickell Avenue Plant Introduction Station of the U. S. Department of Agriculture, and the Winslowson, which grew on Professor Rolf's old place at Buena Vista, from seed furnished by Mr. Simmons. Mr. George Cellon has credit for the Lula, a Hybrid containing some Mexican blood.

We have had various cold spells, which have also taught us some lessons. The most generally severe of these was in February, 1917. But we had again this winter, on January 29th, a freakish cold spell penetrating only part of the avocado region. This freeze, for such it was, killed back some terminal wood. Its results may now be studied and are profitable. The straight West Indian type, including the Seedlings, Pollocks and Trapps were worst affected. It is interesting to note that the Trapp seems to be worse hit by cold than even the Seedling stock, and the Pollock trees in some places slightly less than either Seedling or Trapp. The Winslowson was damaged almost as badly; the Collinson somewhat less. In other words while these are valuable varieties, in season and quality of fruit, they offer very little more resistance to cold than the original race here. The straight Guatemalans were less affected. I have in mind particularly the Taylor, Taft and Solano, which lost their leaves, but suffered little wood damage. The Lula was still less affected, owing probably to the presence of some Mexican blood by way of the Fuerte. The old Fuerte itself did not turn a hair in a temperature of twenty-five degrees. -While this has been one of the most valued varieties in California it does not make a fair crop or a marketable fruit of first quality under our conditions.

It is also interesting to note those trees which were badly broken up in the hurricane have since put out strong green sprouts. This heavy, sappy growth was damaged far less by cold than old wood of the same diameter. The old theory for winter care of trees that they should be held dormant and carry as little sap as possible does not hold true of the avocado. I have seen young avocado trees here without protection that were in flush come through in twenty-six and twenty-eight degrees in much better shape than old

bearing wood.

In recent years we have also learned what varieties of fruit the markets prefer. A smooth-skinned fruit is always preferred over the rough skin, peculiar to the Guatemalans. Not only is this rough appearance less desirable in the market, but it also indicates a thicker skin. This covering on many Guatemalans is like a shell, and is so thick that it is hard to judge the ripeness of the fruit by slight pressure of the thumb as the trade has been accustomed to do with the older Florida varieties. It may be that the California Avocado Association can educate the consumer to the hard-shelled pear, but so far the objection to the rough appearance and the inability to judge its ripeness has been a very serious one. The Hybrids are a compromise on hardness and roughness of skin, and as such are being taken somewhat better. The trade still prefers the green pear over the red, brown or purple. While some of the red pears are very attractive they are also mistaken for overripe fruit, and as such are not so desirable. We have also learned what sizes are in greatest demand. For the best northern retail trade the thirty-six size as shipped in the standard ventilated or iced crate has the greatest average market value. There is some extra-fancy trade and some hotel trade which takes a still larger size equally as well or better. In the south the four dozen sizes to the crate has a little advantage. Smaller fruit than this is usually discounted in any market. Some of the Guatemalans do not average larger than a true sixty when properly packed. I have seen this winter in Miami, Fuerte avocados from California, which while very attractively packed, did not run larger than our number seventy-two size.

We have also in recent years standardized the shipping of avocados. For short hauls the standard tomato crate without baskets or divider, but with a vertical center-partition has become standard. For longer hauls the iced crate has become a necessity with the fancy fruit trade. There are two common varieties of these iced crates. One, the size of an orange crate with an ice-compartment in the center, and the other the size of a pepper crate with iced compartment above the fruit. These are not only a considerable aid in getting the fruit to market sound and hard in hot weather, but the fancy trade insists on them for all shipments even in winter, when there is danger of pears being frozen, and will not ordinarily pay as high a price for ventilated shipments. In the vicinity of Miami we have a further advantage today in that the Clyde Line is now operating fast steamers direct to New York City, with refrigerated compartment. It may be that with this it will once more be possible to ship avocados to New York in the old ventilated crate, which is cheaper, and have them taken by the trade at an equally high price. At any rate it means a reduction over the current express charges to the largest avocado market in the country.

In 1924 and 1925 Drs. Robinson and Savage of the Bureau of Plant Industry established the fact that the flowers of various avocados have two periods of opening and closing. They state that it is seldom that flowers on individual trees are both open and receptive while pollen is being shed. They class all varieties as either Series "A," or Series "B," complementary in opening periods. For best results in fertilization of bloom, members of the two series should be planted in alternate grove rows. In spite of this it is a fact that some varieties, especially Trapp and I believe Winslowson and Collinson, are self-fertile and produce good crops without the interplanting of varieties of the opposite series.

All these items just mentioned mean a considerable advance in standardization in the growing and marketing of avocados. There is one more advance over the old days in the preparation of the land for planting. This is the scarifying of our rocky pineland in south Dade County with large tractor and scarifying drag. It is a real economy in pulverizing of the surface rock, over the old hand methods which were used for many years. Government men have also devised a cheap low-pressure irrigation system which is a valuable addition to any grove.

In the matter of fertilizers for avocado trees there has not been much change in practice. Most varieties of avocados are gross feeders, preferring organic ammoniates and thriving exceedingly where liberally fertilized. There has been a tendency in some cases, however, to cut down the potash in avocado fertilizers considerably below the proportions used on citrus. I believe the tendency will change back to an equal amount of potash in the summer and fall. We have had considerable trouble at times with getting the Pollock avocado to fruit freely. In fact it has been the only South American variety which has had a tendency to shy bearing. I am told that in several cases where additional potash has been applied in the fall and winter that the set of fruit has been improved.

We are standing today at the beginning of a new era in avocado growing. In the past twenty-five years we have had our growing pains and have made some costly mistakes. It should be possible in the future to avoid a lot of these mistakes and take advantage of the various advances just noted. Today the prospective grove owner has considerable information at his disposal. It is true that it is mostly word of mouth information, as we have not yet any complete, general, up-to-date, written compendium of information on the avocado. It is true there are several good government bulletins on special matters. This prospective grove owner, however, will be able to find out by inquiries that his avocado grove should be planted on high pine land because the trees will not stand overflow, and are damaged by water table remaining for any length of time within eighteen inches of the surface. He will want a location as free from frost as possible and will therefore be limited on the east coast to the section south of Miami, or fairly close to the ocean in the section north of it. He will not be scared off by any great amount of rock, as the avocado thrives on the soft coral rock of this section and does even better on it than elsewhere. He will prefer a soil in this rocky section with some brownish color, at least in the subsoil, as the presence of at least a trace of iron in the soil is an advantage to his trees.

He will clear his land and have it properly scarified with tree holes shot by dynamite, where the rock is close to the surface. He will plant his trees at the rate of not less than 70 and not more than 140 to the acre. There are several good commercial varieties which shape up as a tall, rather narrow tree, and of these it is possible to plant from 100 to 140 to the acre without overcrowding it. More than this it is not advisable. Of the broader spreading varieties 70 to the acre is enough.

He will be guided in the selection of varieties by accumulated experience. If he is planting in the Redland section proper he will give preference to those trees whose fruit is not subject to scab, and if he is nearer Miami or north of it he will not be bothered by scab and will have a wider range of varieties. He will undoubtedly choose to plant from the following list, which is arranged according to season, and to which is affixed its

family in brackets.

1. *Pollock* (West Indian). A large vigorous tree producing a large handsome fruit, weighing from one to three pounds, of smooth green skin and exceptional eating quality. Size 18 to 36. Does not scab. Season as early as July first but ordinarily from July 15 to September 15. Sometimes a shy bearer, and work remains to be done in finding whether this is due to moisture or fertilizer conditions, susceptibility of the bloom to thrips, or the necessity of combining its planting with other varieties in Dr. Robinson's Series "A."

2, *Trapp* (West Indian). A relatively weak tree, of somewhat slower growth, a prolific bearer of green fruit of good commercial quality. Fruit ideal in shape, being oblate, and ideal in size running heavily to 36 under proper conditions. Tendency of tree to overbear and produce crop in alternate years; also subject to scab. Large seed cavity; seed often loose. Season from September first and normally through October. Many Trapps have been held in the past through November and even to January first, but this is done either by withholding fertilizer or by taking a heavy loss in drops. The standard by which all other varieties are judged from the point of view of the distant fruit buyer.

3. *Waldin* (West Indian). The tree has a tendency toward height rather than width. Fairly free bearing quality, with a tendency to cluster and consequent overbearing on some branches. Free from scab and vigorous grower. Fruit rounded oblong, fine quality, a little smaller than Trapp. Normal commercial crop, mostly 36's and 48's. Season September 15 to November 1, slightly later than Trapp.

4. *Winslowson* or *Rolfs* (Hybrid). Exceptionally vigorous growing tree, good shape and good bearing ability carries its fruit well. Fruit of Trapp shape, but larger and speckled, with dark green skin of attractive appearance, free from scab. Sizes 24, 28 and 36. Season October 15 to December 1. A later season has often been claimed for the Winslow-son, but it has a tendency after December 1 to drop its fruit very fast, and in some cases it drops heavily as early as November 15.

5. *Collinson* (Hybrid). A strong grower, not quite so vigorous or free bearing as Winslowson. Fruit rounded oblong, fine appearance, color green, heavy skin, free from scab, tight small seed. Good proportion fruit 36 size. Season November and December. Some fruit can be held until January and February, but hardly its normal season.

6. *Lula* (Hybrid). Strong, rather slender upright grower, subject to scab, especially when small. Outside of the Redland section proper, scab can be controlled by reduced applications of fertilizers as compared with other varieties, and by spraying. Normally a free bearer. Fruit pear shaped, color green, skin fairly smooth and thick. Tight, small seed. Exceptional eating quality. Size heavily 36, some smaller. Season December and January. A real Christmas pear. It should not be forgotten that the holidays are the time of greatest demand for avocados at highest prices.

7. *Schmidt* (Guatemalan) Slow growing, rather bushy, tree fair producer of large rough-skin green avocados. Large, running 24 and 28. Season February and March. A really late avocado, but with the ordinary Guatemalan tendency to slow growth and light bearing.

8. *Taylor* (Guatemalan). Less desirable, but worthy of special mention. Vigorous grower, shooting upward rapidly, impossible to broaden out. If liberally fertilized a free

bearer of small rough skinned, pear-shaped green fruit. Sizes 48 to 72. Small tight seed. Its size and roughness of skin are the greatest objection to it, and because of this it is losing ground in favor of Collinson and Lula, as it is otherwise a fairly good commercial variety. Season, December and January.

There are a number of other varieties which have been planted commercially with fair success, but which for one reason or another do not class with these. I think that a more extended trial should be given the Simmons, a seedling of the Pollock, showing many of its favorable characteristics and where tried a freer bearer. Among the minor varieties are the Wagner, related to the Taylor and of similar season, but equally rough and averaging slightly smaller; the Blakeman, a good December avocado, but hard to propagate; the Linda, a large red January and February avocado; the Taft, a little larger and smoother than the Taylor, but in most cases a shy bearer. Mr. Popenoe's more recent importations have not yet been properly tried out, and especially with future hybrids of Mr. Simmons and others there are possibilities of other desirable varieties.

Our prospective grove owner, however, will not want to plant any commercial block of stock at this time to any beside those above numbered. With them, he can with the methods of fertilizing and cultivating now in common use produce a commercial grove from good nursery stock that will begin to bear a little in three years and from the fifth year on will have commercial crops. The avocado is a long-lived tree and hitherto not seriously subject to diseases. Such as they are they can now be controlled and I will not go into them here.

When a grove comes into bearing our new grove owner can find a ready market for his fruit either from local buyers, or by packing and shipping himself. We have not yet had any real movement toward co-operative marketing. (The time will undoubtedly come when this will be necessary.) As it is today the small private grower shipping for himself is inclined to play the larger markets, especially New York and Chicago with consignments, and this is liable to result in lower prices than should obtain in these large markets, and a lack of supply in the smaller markets, which buy F. O. B.

So many small shippers also cause an unfortunate variation in grade and pack.

The industry is in good healthy condition today, and I believe is going to show a rapid comeback. The competition with California is going to be intense, but we have the natural advantages to more than hold our own. From this viewpoint co-operation is going to be important, as with it not only can a proper distribution be made and packing standardized, but the necessary advertising can be done to spread the knowledge of this remarkable fruit.

We have considered the avocado purely as a luxury. It is well to remember, as Mr. Popenoe says, that in Central America, where it is grown and has been known for years, the avocado is not a luxury but a staple, and it is as a staple combining in nature's own package a high and well balanced percentage of natural food that the avocado is destined to become commonly known in this country and win an immense market.