

## THE SEARCH FOR NEW AND PROMISING VARIETIES OF AVOCADOS

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*Homestead*

There is a certain type of avocado that will fill satisfactorily nine orders out of every ten at the present time. Fruit which varies considerably from this type is almost sure to meet with objections and even refusal in the majority of our markets.

I shall try to describe this type which is desirable from the marketing standpoint. In size it is medium, ranging from 12 to 18 ounces, or packing twelve to eighteen to the standard avocado lug. The skin is smooth or fairly smooth and green, preferably glossy. Fruit with a small or medium-sized seed, which fits tightly in the cavity and with little or no fibre in the flesh is desirable. Any regular-shaped avocado is satisfactory. Pear-shaped fruit is preferred in some markets, although varieties having long, crooked necks are not so well received. In the matter of flavor, the average consumer in the north has not yet learned to discriminate between varieties as we, who are familiar with avocados, have learned to do. As long as a fruit is not watery, insipid and tasteless and has no objectionable flavor, the general avocado consuming public seldom indicate a preference for one variety over another. This does not mean that we should be content to raise varieties of ordinary flavor. As consumption of the fruit increases and the consumer becomes more and more familiar with the avocado, flavor will take on greater importance.

This fact should be given due consideration in the selection of varieties for new plantings and replacements. Shipping quality must also be considered as well as ability to withstand cold storage. In the cold-storage studies conducted at the Gainesville station by Raymond Lyle, and from experiences elsewhere, it has been shown that varieties differ widely in their tolerance of lowered temperatures. This holds true for both temperature and duration of storage.

Size of seed, tightness of seed in the cavity, amount of fibre in the flesh and shape of the fruit; these points are not at present of vital importance to the grower and shipper of avocados. The time is coming, however, when such considerations will assume added significance.

The two fungus diseases, black spot and scab, are probably the source of greater loss to growers of avocados than any other factor, unless it be the devastating competition from foreign sources in our markets. Resistance of the fruit to disease is a most valuable characteristic of a variety. Elimination of excessive spraying costs means money in the pocket of the grower, and the search for disease-resistant varieties should never let up.

All other factors being equal, a variety that bears the heaviest crops should be given preference in making new plantings or replacements, or in top-working. But all other

factors are never equal. It is for this reason that the more recent plantings consist very largely of the later-maturing hybrids and Guatemalans and for the very early Fuchs. Our West Indians, which comprise most of our production, due to their more extensive acreage, greater age of trees and generally heavier bearing ability, are not as profitable as some of our later-ripening kinds. Average net returns of fruit shipped from June fifteenth to July fifteenth and from November first to the end of the season have for the past several years considerably exceeded returns for the late summer and fall seasons. This has been due, for the most part, to the flood of cheaply-produced avocados from Cuba and to our own heavy production during these months. We have no way of knowing with any degree of assurance what the future holds for us in the way of competition in the markets. We do know that at present Cuba swamps the markets in late summer and fall, our own production is heaviest during this same season, and California's production is greatest in January, February and March, and is increasing rapidly.

In the light of this knowledge, it behooves the grower who plans to make replacements or topwork undesirable seedlings or varieties, to use the kinds that mature in the periods of lightest supply. Disregarding outside competition, we need a higher production during such periods to round out our Florida season.

It is reasonable to say that we could have had several very desirable varieties maturing in the seasons I have named. There are thousands of summer-ripening seedlings in southern Florida. Out of this number there must be some which are ripe in June and which possess desirable marketing qualities. We have the Fuchs in this season. We should have one or two more. If we would make observations next June, I am sure some valuable seedlings would come to light.

In the late fall and winter season we have several fairly satisfactory varieties. There is room for improvement. Many of these we have could be displaced by better ones. Seeds from Guatemalan varieties growing near West Indians will nearly always produce natural hybrids. Most seedlings of this type are an improvement over either parent in many respects. Twelve years ago a grower named Will J. Booth, of Homestead, planted about three hundred Guatemalan seedlings, the parent trees of which were growing in a mixed planting. Many of these were destroyed in the 1926 storm. Others have fruited and proved unsatisfactory. Out of the lot he has propagated about twelve by topworking them on to those which were least desirable. Out of this number there is at least three of unusual promise. These have come to the attention of growers who have worked over some of their shy-bearing varieties to them. If every grower were to raise a few such seedlings we would have a good opportunity to find several of unusual merit to propagate and supplant our existing varieties.

The advantages of standardization are too obvious to call for mention here. The Florida avocado industry needs to adhere to such a practice. It is not a violation of the principle of standardization for us to be constantly on the lookout for better varieties to take the place of those now being grown. So long as the desired type is being maintained or improved by the replacing of one variety for another no harm can be done. In other words, standardization is more a matter of type than of variety. A succession of similar fruited avocados, similar at least in size and color — extending from June to April, should be our aim. Only one variety maturing in each season would be the ideal setup

but with the existence of so many fairly satisfactory varieties no such situation will be practicable until outstanding varieties are developed and proven to fill in each season.

As I have pointed out there is a comparatively light supply of avocados in the markets in June and again through November and December. It is on these two seasons that we should concentrate in order to smooth out the production curve. The transformation from a good and bad mixture of varieties and seedlings as we have today, to a selected and standardized lot is not as complicated as it might seem. There are many reasons why this should be done, the sum total of all arguments in favor of such a change being that the grower would profit more thereby.

Unsatisfactory varieties, regardless of age of trees may be topworked and made over into productive trees within three or sometimes, two seasons. There are several methods of doing this, the most popular being cleft grafting. The expense involved is not great. The loss of crop for a season or two from the trees that are cut back for grafting need hardly be considered, particularly since they are being displaced because of shy bearing or some other undesirable features. A further saving is effected because for the first year after topworking, the trees require little fertilizer and no spraying. The actual expense of cleft-grafting is comparatively small. This work can be done for less than a dollar a tree. It is very costly to carry trees that are nothing more than drones. They should be worked over to something better. Every season's delay means an added burden—an added cost of production. Florida growers should be more active in the matter of standardizing the avocado. A recommended list of varieties should be made, and revised each season as more information regarding their behavior is gained. This list will never be perfect but it can be a great improvement over our present method or lack of method in selecting varieties for planting. We must discard personal likes and prejudices and sentiments, and join in selecting the type of avocado which is and which bids fair to continue as the most profitable to grow.

Avocado nurserymen practically hold the key to the situation. Unless they cooperate in propagating a standard lot of varieties we will be getting nowhere very rapidly. Most of the groves now being planted are those of new comers. They plant the trees the nurserymen have to offer. The nurseryman's responsibility is obvious. Standardization of varieties is one of the most important factors to be considered. Study and observation of our old as well as our new varieties is a prerequisite of a preferred list for growing.

Desirability of varieties will differ for the several avocado producing districts of Florida. Each section will have to solve its own problems. Since there is no recommended list available, I can only give my personal preferences, based mainly on bearing ability and marketability. With these two factors as a measuring rod and in view of our present seasonal production, I would recommend the following varieties for the lower east coast; for the season extending from June fifteenth to July fifteenth, the Fuchs. During the season extending from July fifteenth to September tenth we have the Pollock and Simmons followed by the main crop of seedlings. Production during this season is comparatively high. It would not be wise to add considerably to it. We would be in a better position however, if we could replace this mixture with two selected varieties. From September tenth to November tenth we have some production from minor varieties and seedlings but the main supply comes from Trapp and Waldin. I do not think it advisable to add to our plantings of varieties maturing in this season.

November is the approximate season of the Winslowson. This variety should be discarded. It has too many faults. Poor keeping quality and large size count heavily against it. I would suggest for this season Booth No. 8 which I shall describe later. The Collinson matures from November fifteenth to January first. It has several faults but too many good points to be eliminated. Either the Lula or Booth No. 7 appear more desirable than the Collinson and their season is approximately the same.

Taylor is in the same category as Collinson. Its season is roughly December and January. There is much in its favor but its erratic bearing habit is against it. Like the Collinson, trees of the Taylor should, in my opinion be kept but the variety should not be propagated further. Wagner and Booth No. 3 fill in the season from December fifteenth to February first. Wagner has been grown for some time and is generally satisfactory both as to bearing and marketability, if the crop has been properly sprayed. Although the Booth No. 3 is of more recent culture, I do not hesitate to recommend its planting in a limited way. My observations have been that it grows and fruits well and the fruit looks and tastes as near perfect as any with which I am familiar. Linda matures during January and February. Fairly dependable in bearing and yielding an excellently flavored fruit, the Linda is nevertheless discounted in the markets because of the large size and unattractive appearance of its fruit. I do not believe it advisable to make further plantings of the Linda in view of the other varieties that can be grown to cover this season.

During February and March our crop is light due principally to the shy bearing of varieties ripening at that time. Another of the Booth hybrids which has been named Ajax has fruited for two years in the grove of Mrs. Krome at Homestead. Her two five-year-old Ajax trees produced an average of two and one-half crates this past season. This is a most exceptional yield for a late winter variety. Its season is February and March. Personally I would prefer to plant Ajax for this season even with its limited trial, rather than Eagle Rock, Schmidt, McDonald, Colla or any other variety I know.

Maturing after April first we have Winslow, Collins, Itzamna and others. You can have your choice, if any, and we won't fight over it.

Summing up these recommendations for future plantings, we have the following varieties in the order of their season of maturity: Fuchs, Booth No. 8, Lula, Booth No. 7, Wagner, Booth No. 3 and Ajax. Of this lot, Booth No. 7, Booth No. 3 and Ajax are in a certain degree experimental but are well worth planting to a limited extent.

In the procedure of making over the grove into better varieties, each planting is a different problem. I would suggest that the following points be kept in mind. Insofar as is consistent with efficient handling of the grove, ample opportunity for cross-pollination should be provided. If the topworking cannot for any reason be done in one season, the following classes of varieties should be grafted in the order named. (1). Shy-bearing seedlings maturing in the season of lowest prices. (2). Shy-bearing seedlings and varieties maturing in other seasons. (3). Seedling and varieties producing inferior fruit of poor market value, even though the trees bear fairly well.

Care of the trees for a season after grafting is important. The scions should be kept moist until they have begun to grow. This is best done by filling the paper collar with which they are surrounded with moist sand or peat moss. This must be moistened every few days or the sand will heat and do more harm than good. When growth of the scions

begins they should be staked and supported to prevent breakage from wind. Sprouts arising from the trunk below the graft and from the rootstock should be removed. Cleft-grafted avocado trees usually make strong unions and remarkably good growth.

The following new promising varieties and seedlings have been under observation for varying periods of time. For the most part, they mature in one of the seasons named.

*Fuchs*: First fruited on the place of C. T. Fuchs, Sr., near Homestead. A variety of the West Indian race. Mr. Fuchs usually begins shipping about the fifteenth of June, taking the largest fruit at each picking. The tree is a vigorous grower under favorable conditions and bears heavy crops. The fruit is pyriform, green-skinned, weighing about a pound, very desirable from the standpoint of marketing. The fruit seems to be resistant to the scab and black spot fungi and requires little or no spraying. The fruit is off the tree before there is much danger of loss from high winds. Since the tree is relieved of its crop early in the year, it has the advantage of a long, rainy, warm growing season to recuperate from the effects of a heavy crop and make fruiting wood for the next season. In addition to its other advantages our season is lengthened some two or three weeks by the inclusion of this new member in our list of varieties. Many growers have recently planted or topworked to the Fuchs. It has been tested sufficiently in parts of Florida where the West Indians are successfully grown.

*Nirody*: An interesting variety in view of its known parentage. Mr. B. S. Nirody, who made the first detailed observations of avocado flower behavior, crossed the Pollock and McDonald. The resulting hybrid was named in his honor. The tree is a good grower. It has fruited for four years and bids fair to become a satisfactory bearer. The fruit is roundish-oblate, green, slightly rough and somewhat above medium in size. The quality of the fruit is good. Analysis of the fruit by Dr. Stahl of the Gainesville Station has shown that the oil content is comparatively high for a fruit maturing as it does, from October fifteenth to November fifteenth. An analysis made on October 20th showed the per cent, of oil to be eleven. Shipment of Nirody to California was made last fall. It successfully passed the California oil content requirement and brought a high price because of the light supply of California avocados on the market at that time.

The Booth hybrids which I have mentioned viz. Nos. 8, 7 and 3 may be described as a group because of their similarity of appearance and quality. Their season is respectively November, December and January, as numbered above. All three are green skinned, medium sized and of very good quality. During the several years they have fruited they have borne good crops, number eight being somewhat the most prolific. They are all rapid and vigorous growers.

Another of the same group has been named Ajax. It is likewise vigorous and prolific and is especially promising because of its late season, February and March. The fruit is very attractive. It is so glossy it seems to have been lacquered. The range of size is from a pound to a pound and three-quarters, rather large for general market purposes but satisfactory for local markets which absorb a fairly good volume at good prices during this season.

Another group of much interest to growers is the lot of Sexton seedlings originating in the planting of Mr. W. E. Sexton, near Vero. These are obviously Mexican—West Indian hybrids, a type which is entirely new to the avocado world, so far as I can learn. I have

been over the planting with Mr. Sexton while the trees were in fruit making observations and taking notes on those which seemed to be outstanding. A number of growers have seen and tasted the fruit and have been favorably impressed by it. At least two of the varieties are the ideal market type in appearance. Fortunately, these same two give promise of bearing well. Their season at Vero is approximately November and December. This may vary in other parts of the state. These varieties are most worthy of trial. Three of these have been propagated in the Redlands by topworking them onto large trees. They have been named "Sexton, Vero, and Indian River."

Another promising variety originating in the grove of Mr. Dan M. Roberts at Redland has been named by him the "Tonnage," because of its heavy yielding ability. It is a seedling of the Taylor and judging by the thickness and roughness of the skin the pollen parent must also have been a Guatemalan variety. The fruit is pyriform, green-skinned and weighs about twenty to twenty eight ounces. Its season is from the latter part of October to December first. The Tonnage is being grown to some extent but is too large for general market purposes.

The Collinred, a sister of the Collinson was developed by the late Mr. Edw. Simmons at the Chapman Field Garden. A good bearer, a good fruit in a good season but its dull red color discounts its commercial worth.

A seedling of the Collinred, called Collinred B has been brought into bearing at Chapman Field.

The fruit of this variety can only be described as one of those things that "knocks your eyes out." The skin is a pale yellow-green, heavily overcast with streaks of bright red like some of the apple varieties of the north, a beautiful skin with a pulp that is as richly flavored as the skin is attractive. The size of the fruit is about a pound. The period of ripening is late fall and early winter. Indications are that the variety is prolific. If Collinred B proves, upon further trial at Chapman Field to merit propagation for commercial trial, I am very hopeful that this distinctive variety will find a permanent place in our industry.

The Trappson, a Trapp-Collinson cross is another Chapman Field hybrid of some promise. It is a December fruit of small to medium size, green skinned, and round and of good quality, except for a rather large seed. Further observations and trial will be necessary before it can be determined how desirable it will be for commercial planting.

Stevens Choice, or Choice as it is called in California, a Guatemalan variety is being tried here. From its limited trial it looks like a heavy producer. The tree and fruit resemble the Taft and the ripening season is the same, with a probable heavier bearing habit. It is gaining in favor in California and deserves greater attention here.

There are a few trees of Nabal, another Guatemalan variety in Florida. California growers rank the Nabal as one of the best because of its commercial size and quality, excellent shipping ability and good bearing habit. Whether it will bear satisfactory crops here remains to be seen. If it does we will have an excellent February and March variety for commercial planting.

We have the Dunedin, formerly Skinner, after Mr. L. B. Skinner on whose place it originated. This variety is a seedling of Winslow. It is evidently a West Indian-Guatemalan hybrid. At Dunedin and Chapman Field it is late maturing, hanging on the

tree at the latter place till April. At Homestead the fruit ripens in January. The trees grow and fruit well and the season of maturity is favorable. The fruit is green skinned and has an excellent flavor. It<sup>1</sup> is above medium in size, which is not desirable. At Homestead it is attacked by black spot even though it had received some spraying.

The Nelson, a promising variety originated in the grove of Mr. C. Nelson of Princeton, Fla. The parent tree was grown by Mr. Peter Peterson of Modello. It was one of the Popenoe Guatemalan introductions, the name tag of which was lost in the 1920 storm. The fruit of the Nelson shows unmistakable evidence of being a hybrid. It is very attractive and seems almost ideal in every respect. Its season is December and January. This promising variety is being tried, in a small way, by several growers.

The Nehrling, a Collins seedling was first grown by Mr. Werner Nehrling on his place near Orlando. The tree is vigorous and apparently very hardy. The fruit is green, above medium in size, has a small to medium seed, and possesses a rich flavor which is truly outstanding among avocados.

The ripening season at Orlando is, I believe, December and January. This variety is being tried by Mrs. Krome at Homestead. If there were no other reason than its distinctively rich flavor, the Nehrling should be grown and given a thorough trial.

I have taken quite a lot of your time in the discussion of this subject. It will mean little to you unless growers and all others interested in the avocado industry cooperate in a program of variety standardization. We cannot wisely recommend any new variety until we know that it answers or approaches the exacting qualifications demanded of a commercial product. Such qualifications exist from the standpoint of the grower, the shipper and the buying trade. Let's recognize them and shape our variety policy to fit the situation. Some time will be required to reach such a goal. The sooner a start is made the more profitable will our avocado industry be.

Organized interest and concerted effort are vitally necessary to such an end.

Member: I would like an opinion as to what avocado seems to be in the best favor—the one with the high oil content, or the other, that is here.

Mr. Brooks: You mean home use or Northern markets?

Member: Among ourselves, that know avocados—what we like the best here.

Mr. Toy: I really don't think the oil content has a great deal to do with it. It's a matter of personal taste very largely. I prefer some of the Mexicans. My second choice, I think, would be one of the West Indians, with very low oil content. Personally, I don't think the oil content is or should be a criterion of flavor.

Member: Personally I agree with you, on the ones more dry.

Mr. Brooks: As an illustration nearly everybody likes the Pollock and Trapp when they mature; they are both low oil content. So, the same people like the Taylor; the Taylor is high oil content. Both are awfully good. I think it's not a question of oil content.

Member: Did you mention the Waldin anywhere?

Mr. Toy: The Waldin is as near one of our standard varieties as any we have. It is grown quite extensively, and is fairly satisfactory.

Member: To get these trees out of the nursery, should they be shaded, a month from now, to put them in Pinellas County soil?

Mr. Toy: Yes, I think it's very desirable, with burlap or something. I didn't think it wise to take them out of the hatch and put them in the shade.

Mr. Reasoner: I believe you said that list was for the east coast. Have you something to offer for the ridge section?

Mr. Toy: There are others in the audience far more competent to give you those, Mr. Futch, Mr. Ward and other growers—who can say a good deal more about the behavior of the different varieties in the ridge section than I am able to. I am sure they would be glad to give you their opinion of the different varieties.

Mr. Brooks: Mr. Ward is to give us a paper; perhaps he will be good enough to answer some of those questions.