

These varieties are not suitable for commercial fruit production because of the poor shape and quality of their fruits. However, in the absence of better varieties, they can fill an important need for peaches in the home garden.

SUMMARY

In the vicinity of Homestead, Florida, air temperatures below 45° F. usually occur only from 50 to 150 hours during the winter. Under these conditions, most peach varieties do not receive sufficient chilling to break the dormancy of their leaf and flower buds so that they may grow normally and produce flowers and fruit.

Of the many selections which have been tested, only the Okinawa and Red Ceylon varieties and a group of seedlings from India have bloomed and fruited satisfactorily every year. Although the Okinawa is grown in home gardens, it has fruit

of poor quality. The Red Ceylon is a *better fruit* for the home garden and has been grown in South Florida for a long time. The Indian seedlings, called Saharanpur because of their place of origin, bear fruit which is in some ways superior to the Red Ceylon.

Although the shape and keeping quality of these three types make them unsuitable for commercial production, they have a definite place in the home gardens of South Florida.

LITERATURE CITED

1. Sharpe, R. H., et al. 1954. Peach variety tests. Proc. Fla. State Soc. 67:245-247.
2. 1961. Developing new peach varieties for Florida. Proc. Fla. State Hort. Soc. 74:348-352.
3. and R. Parker. 1963. Peach production in Florida. Fla. Agr. Ext. Serv. Circ. 264.
4. Weinberger, J. H. 1950. Chilling requirements of peach varieties. Proc. Amer. Soc. Hort. Science 56:122-128.
5. Wolfe, H. S. 1937. Fifty years of tropical fruit culture. Proc. Fla. State Hort. Soc. 50:72-78.
6. 1941. Plant breeding possibilities for southern Florida. Proc. Fla. State Hort. Soc. 54:144-146.

MATURITY OF MINOR VARIETIES OF FLORIDA AVOCADOS, 1964-65

T. T. HATTON, JR., AND W. F. REEDER¹

INTRODUCTION

Members of the Florida Avocado Administrative Committee, anticipating increased production of 14 minor avocado varieties, requested that this investigation be undertaken to determine maturity standards for these varieties.

Maturity standards for the shipment of Florida avocados are based on minimum weights or diameters which fruit must attain by designated shipping dates (9). For some varieties, the specifications permit the larger sizes of fruit to be shipped on initial shipping dates; as the season progresses the fruit weight and diameter restrictions are gradually lowered and eventually removed. Other varieties of avocados are also subject to fruit weight and diameter restrictions at an initial shipping date; but these restrictions are removed only at a final shipping date. Several minor varieties are not subject to size restric-

tions, but only to the initial shipping date. A recent 7-year study showed considerable seasonal variation in maturity indices (4), consequently the maturity standards are subject to change from season to season.

The objectives of this investigation were to obtain data on the relation of palatability of some of the promising minor varieties of avocados to picking date, fruit weight, diameter and other factors associated with maturity, such as number of days to soften, and presence of decay and shrivel. Fruit weight and diameter data were collected to supplement similar data tabulated for other varieties (3). Currently, over 40 varieties of avocados are listed in the official shipping schedules.²

MATERIALS AND METHODS

The avocados were collected in Dade County, Florida, during the 1964-65 crop year. The varieties studied are listed in Table 1. Disagreement exists regarding the present and original identifications of Booth 6 avocados; Booth 6 avocados used in these tests were grown and labelled at the Sub-Tropical Experiment Station, Homestead, Florida.

¹The authors acknowledge the assistance of a number of avocado growers and the University of Florida Sub-Tropical Experiment Station in supplying test fruit. Market Quality Research Division, U.S. Department of Agriculture, Miami, Florida.

²Commercial shipping schedules have been published annually by the Avocado Administrative Committee, Homestead, Fla. since the 1954-55 season.

Samples were collected weekly or in a few instances, biweekly. Usually each sample was composed of 20 fruits, although depending on availability, some were as few as 10 fruits. Because of the limited number of bearing trees sampling was usually restricted to one grove per variety. Usually fruits were picked from several trees and ranged in size from the smallest

TABLE 1. Earliest picking date, minimum weight, and number of days at 70° F. required to soften for fourteen minor varieties of Florida avocados meeting consumer approval

Variety ^a	Picking period :	Earliest picking : date for minimum	Minimum : fruit	Average time
		maturity	weight	to soften at 70° F.
	1964-65	1964-65	Ounces	Days
Dr. DuPuis No. 2-----	Jul 28	<u>b/</u>	<u>b/</u>	6
K-5-----	Jul 27	<u>b/</u>	<u>b/</u>	5
Ruehle-----	Jul 27-Aug 24	Aug 2	16	6
Dawn-----	Jul 15-Aug 24	Aug 10	12	7
Marcus-----	Sep 8 -Oct 5	Sep 14	26	7
Booth 6-----	Sep 8 -Oct 5	Sep 21	15	8
Leona-----	Aug 31-Oct 12	Sep 21	18	9
Buccaneer-----	Sep 28-Oct 12	Sep 28	10	8
Tappen-----	Sep 28-Oct 12	Sep 28	14	7
Chica-----	Sep 28-Nov 9	Oct 5	10	7
Sartini-----	Oct 12-Nov 9	Oct 12	16	8
Schaff-----	Oct 27-Jan 4	Nov 16	18	10
Gossman-----	Nov 30-Jan 4	Dec 21	16	8
Brook's Late-----	Dec 14-Feb 1	Jan 4	14	10

a/ Varieties are listed chronologically according to the earliest picking date for minimum maturity.

b/ All available sizes of Dr. DuPuis No. 2 and K-5 avocados (14 to 25 oz. and 10 to 31 oz., respectively) met consumer approval when this study was initiated in late July; earliest picking date for minimum maturity is assumed to have occurred prior to the above picking dates.

to the largest available. The occurrence of fruit abscission in the groves was also noted as an additional index of post-maturity.

The testing period was from July to February; usually various stages of fruit development from immaturity to post-maturity were included. Each fruit was weighed, calipered, and held at 70° F. to soften. Daily inspection was made and when the avocados attained the desired degree of softness, the number of days required to soften was recorded; any presence of decay and shrivelling was noted. The soft fruit was then cut and placed on coded plates for palatability tests. Fruit was rated by a panel of at least ten members of the staff of the University of Florida Sub-Tropical Experiment Station. Individual fruits were evaluated for palatability on the basis of whether or not they met minimum consumer acceptance. Flavor characters considered by members of the panel were similar to those found on a score card commonly used by the Florida avocado industry in evaluating taste and maturity (2). Each sample was rated on its own merit, and no attempt was made to compare palatability ratings of different varieties.

RESULTS AND DISCUSSION

Earliest picking dates, minimum weights, and number of days at 70° F. required to soften, in

order to meet consumer approval, are shown for fruit of 14 minor varieties of avocados in this study (Table 1). The findings are for a single season and should be regarded as tentative. Avocado maturity, based on fruit weight and diameter, varies with individual trees according to the span of the bloom period on the tree (5). A higher statistical correlation exists between picking date and flavor than between either fruit weight or fruit diameter and flavor. However, when picking date is associated with either fruit weight or fruit diameter, the correlation with flavor is higher than for picking date alone (8). Picking dates, fruit weights and fruit diameters are the basis for the present Florida avocado maturity specifications.

The average time required for fruit to soften ranged from 5 to 10 days; the early varieties generally required less time than the late varieties.

Fruit weights and corresponding diameters are tabulated in Table 2; they are a ready reference for members of the Florida avocado industry to use for future adjustments.

Peculiarities of some varieties: The Ruehle avocado, a seedling of the Waldin variety which closely resembles the Waldin, became acceptable in early August; this confirms previous reports (6, 7).

TABLE 2. Fruit weights and corresponding diameters for 14 minor varieties of Florida avocados^a

Brook's Late		Booth 6		Buccaneer		Chica		Dawn		Dr. DuPuis No. 2		Gossman	
Weight	Mean diameter	Weight	Mean diameter	Weight	Mean diameter	Weight	Mean diameter	Weight	Mean diameter	Weight	Mean diameter	Weight	Mean diameter
Ounces	Inches	Ounces	Inches	Ounces	Inches	Ounces	Inches	Ounces	Inches	Ounces	Inches	Ounces	Inches
10	3 3/16	10	3 6/16	10	3 3/16	8	3 1/16	8	2 14/16	14	3 7/16	12	3 3/16
12	3 6/16	12	3 8/16	12	3 6/16	10	3 4/16	10	3 0/16	16	3 9/16	14	3 7/16
14	3 8/16	14	3 10/16	14	3 8/16	12	3 7/16	12	3 4/16	18	3 11/16	16	3 10/16
16	3 11/16	16	3 12/16	16	3 11/16	14	3 9/16	14	3 6/16				

K-5		Leona		Marcus		Ruehle		Sartini		Schaff		Tappen	
Weight	Mean diameter	Weight	Mean diameter	Weight	Mean diameter	Weight	Mean diameter	Weight	Mean diameter	Weight	Mean diameter	Weight	Mean diameter
Ounces	Inches	Ounces	Inches	Ounces	Inches	Ounces	Inches	Ounces	Inches	Ounces	Inches	Ounces	Inches
10	2 14/16	12	3 8/16	20	4 2/16	10	3 1/16	14	3 7/16	12	3 5/16	10	3 0/16
12	3 1/16	14	3 10/16	22	4 4/16	12	3 4/16	16	3 11/16	14	3 7/16	12	3 4/16
14	3 3/16	16	3 12/16	24	4 6/16	14	3 7/16	18	3 12/16	16	3 9/16	14	3 7/16
16	3 5/16	18	3 14/16	26	4 8/16	16	3 9/16			18	3 11/16	16	3 9/16

a. Diameters for intermediate weights can be obtained by interpolation. An average standard deviation of $\pm 1/16$ inch in diameter exists at any given fruit weight (3).

The recently described Dawn avocado (6) was slow in attaining consumer acceptance, although shrivelling and decay were not present throughout the picking period. Even after general consumer acceptance was met, a few members of the taste panel continued to reject fruit of this variety.

The Marcus avocado (frequently called Pumpkin) is the largest sized commercial avocado grown in Florida. Considerable fruit abscission was observed during late September, especially on trees with a heavy crop.

Buccaneer and Tappen avocados of large sizes met consumer acceptance on the beginning picking date, September 28, and some abscission of Buccaneer fruit was observed on that date.

Large Sartini avocados also met consumer acceptance on the beginning date, October 12, and some fruit abscission was noted on that date.

Although the Gossman avocado has previously been reported to mature in January, February, and March (1) it met consumer acceptance this season on December 21.

The Brook's Late avocado is considered a February and March avocado, but during these tests it met consumer acceptance in early January.

LITERATURE CITED

1. Campbell, Carl W. 1958. Report of the subtropical fruit variety committee, 1958. Proc. Fla. State Hort. Soc. 71: 365-366.
2. Harding, Paul L. 1954. The relation of maturity to quality in Florida avocados. Proc. Fla. State Hort. Soc. 67: 276-280.
3. Hatton, T. T., Jr., Paul L. Harding, W. F. Reeder, J. N. Yeatman and W. H. Krome. 1963. Fruit weights and corresponding diameters for Florida avocados. U.S.D.A. AMS 515, 11 p.
4. _____, Paul L. Harding, and W. F. Reeder. 1964. Seasonal changes in Florida avocados. U.S.D.A. Tech. Bul. 1310. 47 p.
5. _____ and W. F. Reeder. 1963. Relationship of bloom date to the size and oil content of Booth 8 avocados. Proc. Amer. Soc. Hort. Sci. (Caribbean Region) 7: 106-111.
6. Popenoe, John, 1962. Summer avocado varieties. Proc. Fla. State Hort. Soc. 75: 358-359.
7. _____, 1963. The Ruehle avocado. Fla. Agr. Expt. Sta. Circ. S-144. 4 p.
8. Soule, M. J. and Paul L. Harding. 1955. Relation of maturity of Florida avocados to physical characters. Proc. Fla. State Hort. Soc. 68: 303-308.
9. U. S. Agricultural Marketing Service 1962. Marketing Agreement No. 121 and Order No. 915—Avocados grown in South Florida. (Prior to 1962 this order was identified as Marketing Order No. 69, it was renumbered under a general recodification of marketing orders.)

THE GREEN SAPOTE, A NEW FRUIT FOR SOUTH FLORIDA

WM. F. WHITMAN¹

The green sapote (*Calocarpum viride* Pittier) is indigenous to the highlands of Central America where this handsome large tree, with dark green foliage, reaches a height of about 40 feet. It is considered by many to be one of the best of the Sapotaceae fruits. Appearance-wise it resembles the mamey sapote (*C. mammosum*) to which it is closely related. Features distinguishing the two are the green sapote's smaller leaf size, its satiny brownish pubescence covering the midribs and veins of the undersides of the leaves, its slightly wavy leaf appearance, its rougher textured bark of the trunk and its smaller fruit. Young seedling trees, lacking these differences which develop with age, can be difficult for the uninitiated to identify from its near "look alike twin", the mamey sapote.

A search of records for early introductions reveals that Reasoner Brothers (Royal Palm Nurseries) 1887-88 catalogue offered a number of Sapotaceae fruits including the mamey sapote but no mention is made of the green

sapote. The first U.S.D.A. green sapote introduction was made in 1913 under the botanical name of *Achradelpha viridis* to be followed by five additional introductions of the same fruit in 1914. No record of their trial at the Miami, Florida U.S.D.A. Stations was found. Further seed introductions, which were listed at the Miami U.S.D.A. Stations, were made in 1916, 1929, 1941, and 1944. These reached a total of 157 seeds, none of which lived to become bearing trees. In 1929 the new name of *Calocarpum viride* replaced the former botanical name of *Archadelpha viridis* on the station's records.

Green sapote introductions at the Sub-Tropical Experiment Station in Homestead, Florida started in 1934 with a shipment from Honduras. This was followed by three introductions in 1946 and one each in 1948, 1950, 1956, 1959 and 1962. While all those made prior to 1956 failed to survive, Ruehle (6) reported "Trees 8 to 10 feet tall, growing well at the Sub-Tropical Experiment Station, were killed by flood water in 1948." From an inspection of the available records it appears the most frequent single cause for a lack of success with green sapote introductions was the failure of the seeds to germinate.

¹ 1189 Bal Bay Drive, Bal Harbour, Florida 33154
Affiliation: Rare Fruit Council of South Florida.