SEASONAL CHANGES IN FLORIDA AVOCADOS

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Market Quality Research Division Agricultural Research Service

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PREFACE

This report is one of a group on seasonal changes in fruits; earlier reports dealt chiefly with citrus. It is part of a broad program of research by the Agricultural Research Service to evaluate and maintain the quality of agricultural products in marketing channels.

These studies were undertaken at the request of the Florida avocado industry in order to meet consumers' and shippers' demands for the marketing of mature avocados. Before a Federal Marketing Order and Agreement program was adopted, no official inspection of Florida avocados had been required; thus the grade and maturity of avocados in commerce were determined at the discretion of individual shippers. Since 1954, the Avocado Administrative Committee has administered the provisions of the order and agreement, which include recommendations for approval by the Secretary of Agriculture in establishing regulations on maturity, grade, pack, and containers for avocados grown in Florida.

Trade names of products and equipment that were used in the tests are used for identification only, and their use does not constitute their endorsement by the Department, nor imply discrimination against other similar products and equipment.

The late Dr. Arthur P. Sidwell, Horticultural Crops Branch, Market Quality Research Division, Beltsville, Md., aided in statistical analyses. Former staff members who assisted in conducting the investigations were: Dr. Carl W. Campbell, University of Florida Sub-Tropical Experiment Station, Homestead; Dr. John Popenoe, Fairchild Tropical Garden, Miami; and Dr. Mortimer J. Soule, Jr., Fruit Crops Department, University of Florida, Gainesville.

Acknowledgment is made to members of the various Florida avocado administrative committees, Homestead, for their support and encouragement; and to Dr. Roy W. Harkness and the late Dr. George D. Ruehle, the University of Florida Sub-Tropical Experiment Station, Homestead, for technical assistance. The following growers and shippers provided fruit for the investigations: the late Donald S. Ames, the late Hugo Boe, J. R. Brooks, E. C. Byars, Sr., J. Abney Cox, Ivey E. Futch, Harold E. Kendall, F. M. Kent, R. R. Kinard, William H. Krome, F. Lardon, William E. Rheney, W. H. Rowe, J. B. Tower, G. F. Ward, and W. F. Ward.

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SUMMARY

The results of the research on 7 crop years that are reported in this bulletin may be used by the Florida avocado industry to improve the standards of maturity at harvest. The present standards are based on weight and diameter correlation, together with picking dates.

The three main races of Florida avocados and their hybrids mature as early as June and as late as February, depending on variety. Most of the commercial crop matures in the late summer and fall. Because of the wide variation in date of maturity, a grower needs to know the indications of maturity for the particular variety or varieties that he grows. These indications—seasonal changes, and yearly and grove variations—were studied for more than 40 commercial avocado varieties picked from more than 30 groves. Oil content and fruit weight and diameter were determined and related to palatability tests.

Avocados used in this research were collected and studied during 7 crop years: 1955-56 through 1961-62. Comprehensive studies were made during the three harvest seasons, 1958-59 through 1960-61, with special emphasis on Pollock, Waldin, Booth 8, Lula, Taylor, and Booth 1 varieties.

Picking date, fruit weight and diameter correlation, and oil content gave a good index of maturity. Test results of other physical characteristics and their seasonal changes were inconsistent or variable, or the characteristics had no apparent relationship to maturity.

Seasonal Changes in Florida Avocado

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Market Quality Research Division
Agricultural Research Service

INTRODUCTION

The primary objectives of these investigations were to determine the seasonal changes in certain chemical and physical characteristics of Florida avocados and to evaluate them as indices of maturity.

The first recorded introduction of the avocado into Florida was by Henry Perrine in 1833 (76).[2] The first permanent settlers, who came to the Miami area during the middle of the last century, found seedlings growing wild in the hammocks; and by 1900 several commercial groves of seedlings had been established near Miami *(18).* Since 1900 numerous seedlings have been named and propagated as varieties, and today less than 5 percent of the Florida crop is comprised of unnamed seedlings. No general agreement exists as to the most satisfactory varieties for Florida, so many are grown. This creates difficulties in the standardizations of pack, grade, and maturity for commercial shipments.

For most varieties, maturity standards for the shipment of avocados are based on minimum weights or diameters which fruit must attain by designated shipping dates (25). For some varieties, the specifications permit the larger sizes of fruit to be shipped on initial shipping dates, and as the season progresses the fruit weight and fruit diameter restrictions are gradually lowered and eventually removed. Other varieties of avocados are also subject to fruit weight and fruit diameter restrictions at an initial shipping date, but this restriction is removed only at a final shipping date. Several minor varieties are not subject to size restrictions, but merely to the initial shipping date. As many as 54 varieties have been listed in the official shipping schedule.[3] The commercial shipping season covers a span of approximately 8 months, beginning in June for early varieties and ending in February for late ones. The heaviest volume of shipments is usually from September through January.

Races and Varieties

Three general groups of avocados, *Persea Americana* Miller, are grown commercially in Florida, varieties of the West Indian race, varieties of the Guatemalan race, and hybrid varieties, which are mostly West Indian X Guatemalan. Indications are that some Florida avocados also contain certain characteristics of the Mexican race.

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[1] Dr. Hatton and Mr. Reeder are stationed at Miami, Fla.; Dr. Harding is stationed at Orlando.
[2] Italic numbers in parentheses refer to Literature Cited, page 27.
[3] Commercial shipping schedules have been published annually by the Avocado Administrative Committee, Homestead, Fla., since the 1954-55 season.

Originally, Popenoe (*16*) classified avocados into three races: The West Indian, Guatemalan, and Mexican. Popenoe and Williams *(17),* and Schroeder (79) have recently stated that the classification has become less distinct because of the increasing number of hybrid varieties and the discovery of intermediate types of the Guatemalan and Mexican races growing wild in Mexico.

The West Indian race is represented by the common avocado of the tropical American lowlands and is intolerant to cold ; in the continental United States it is grown commercially only in southern Florida. Avocados of the Guatemalan race, and even more so-those of the Mexican race, are considerably more tolerant to cold than such fruit of the West Indian race. Hybrid varieties in Florida are generally intermediate in cold hardiness; some are almost as intolerant to cold as West Indian varieties while others are about as tolerant to cold as Guatemalan varieties. Nearly 90 percent of Florida avocados are from hybrid varieties of unknown parentage.

TABLE 1.—*Seasonal movement of Florida avocados by parentage, averages 1954–61*

[From the Florida Avocado Administrative Committee annual reports]

Month	Parentage		
	West Indian	Hybrid	Guatemalan
	Bushels	*Bushels*	*Bushels*
January	0	38, 378	4, 613
February	0	14, 621	4, 226
March	0	1, 471	562
April	26	3	5
May	54	0	0
June	118	0	0
July	8, 296	0	0
August	17, 076	0	0
September	26, 604	9, 761	0
October	4, 876	63, 258	0
November	219	76, 388	145
December	1	63, 303	2, 242

Most hybrid varieties are shipped during fall and winter months; West Indian varieties mature earlier than those of hybrid varieties and are shipped mostly during July, August, and September (table 1). Florida shipments of avocados of the relatively unimportant Guatemalan varieties are made during fall and winter months, especially the latter. During the 196263 season, the following eight varieties accounted for more than 90 percent of the avocado shipments:

Variety	Type	Percent
Lula	Hybrid	28
Booth 8	do	24
Waldin	West Indian	12
Booth 7	Hybrid	10
Pollock	West Indian	7
Hickson	Hybrid	5
Booth 3	do	3
Fuchs	West Indian	2

Production Areas

The avocado production area of Florida is divided into two districts. District 1 is the whole of Dade County, located in extreme southeastern Florida. More than 90 percent of the State's avocado crop is harvested in this county; the groves are located exclusively on Rockdale soil. District 2 includes the remainder of the State, with most of the groves located on Lakeland fine sand in south central Florida.

Varietal Characteristics

Fruit of avocado varieties differ according to shape, size, and color of fruit (plates I and II). Fruit of the Pollock variety when mature may exceed 60 ounces in weight, while

mature Booth 8 fruit may weigh less than 6 ounces. Size of seed cavity and looseness of seed in the cavity are among other characteristics. In comparison to the size of the fruit, Waldin and Booth 1 have large seed cavities while Booth 7 and Monroe have small seed cavities. Fruit of Booth 8 and Booth 7 contain seeds tight in the cavity, while the converse is true of such varieties as Fuchs and Pollock. Frequently Booth 1 avocados display the undesirable characteristic of seed sprouting. Mature fruit of most varieties have green skin color with the exception of a few purple-skinned varieties such as Hardee and Linda. A more detailed description of Florida avocado varieties is in *(18, 26).*

Maturity and Ripeness

In this study the findings have been related to the marketing order maturity standards at different times prior to and throughout the normal harvesting period.

To avoid confusion in the meaning of the terms "maturity" and "ripening" as they are used in this publication, their usual horticultural meanings are defined. Maturity refers to a stage of development of a fruit on the tree; ripening refers to the process by which a firm mature fruit when held under suitable conditions becomes soft and edible. A mature avocado is one that has attained such a stage of development that it will ripen with acceptable eating quality after picking. An immature avocado is one that has not attained the proper stage of development, and although it may soften, it does not have acceptable eating quality. An immature avocado when allowed to soften usually shrivels and becomes rubbery and discolored.

MATERIALS AND METHODS

Experimental Procedure

A detailed study was made of Pollock, Waldin, Booth 8, Lula, Taylor, and Booth 1 avocados for the 3 crop years, 1958-59, 1959-60, and 1960-61; these were selected because they are important varieties representing each racial and major hybrid parental group, and together they span most of the marketing season. The first samples were picked about 4 weeks before the earliest date listed for each variety in the avocado shipping schedule of 1958— 59, and approximately the same sampling dates were used for the 3 crop years. Seven biweekly pickings were made each year from three trees in each of three groves. Whenever possible, test fruit was obtained from the same groves and trees throughout the 3-year period. Analyses were made for oil content, and measurements were made for fruit diameter, fruit weight, loss in fruit weight during the softening period, number of days for fruit to soften, and palatability. For softening, the avocados were held at 70° F. and 70-85 percent relative humidity.

In addition, from 1955-56 through 1961-62, many varieties of fruit were studied on an individual crop-year basis. Studies included tests for specific gravity, rate of fruit growth, firmness, flesh and seed-coat color, lenticel corking, soluble solids, phenolic compounds, oil content as well as fruit weight, fruit diameter, and palatability.

For most studies, fruit was from groves in Bade County. Fruit of the Taylor variety was from groves in Bade, Palm Beach, and Highlands Counties. In addition, Lula and Booth 8 avocados were obtained from groves in Bade and Highlands Counties for comparative

fruit weight studies during 1957-58. Groves in Bade, Palm Beach, and Highlands Counties were located on rockland, muckland, and sandy soil, respectively.

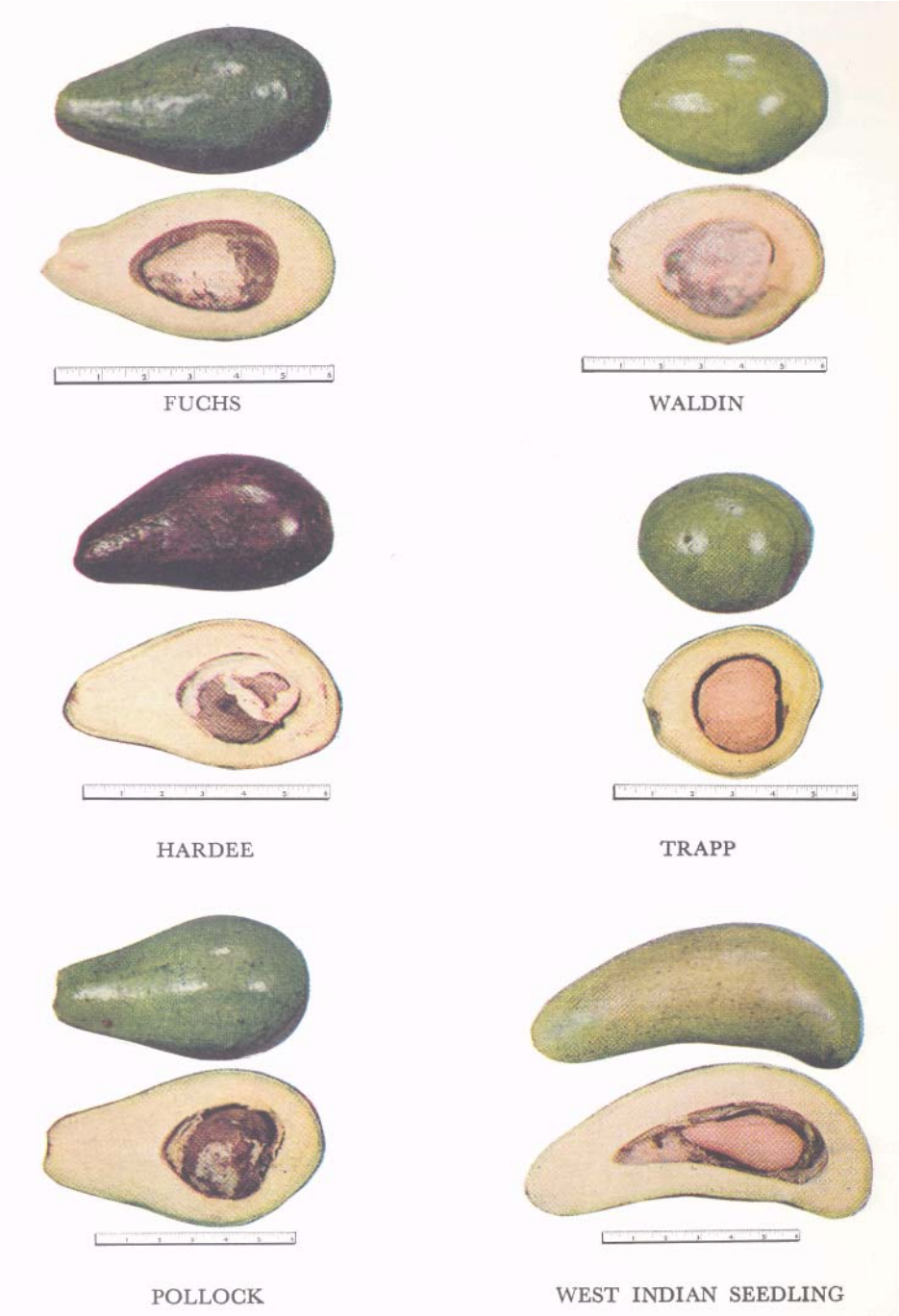

PLATE I—Varietal characteristics of selected West Indian avocados showing differences in size, shape of fruit, color of skin, amount of flesh, size of seed and seed cavity at harvest. All rulers are 6 inches.

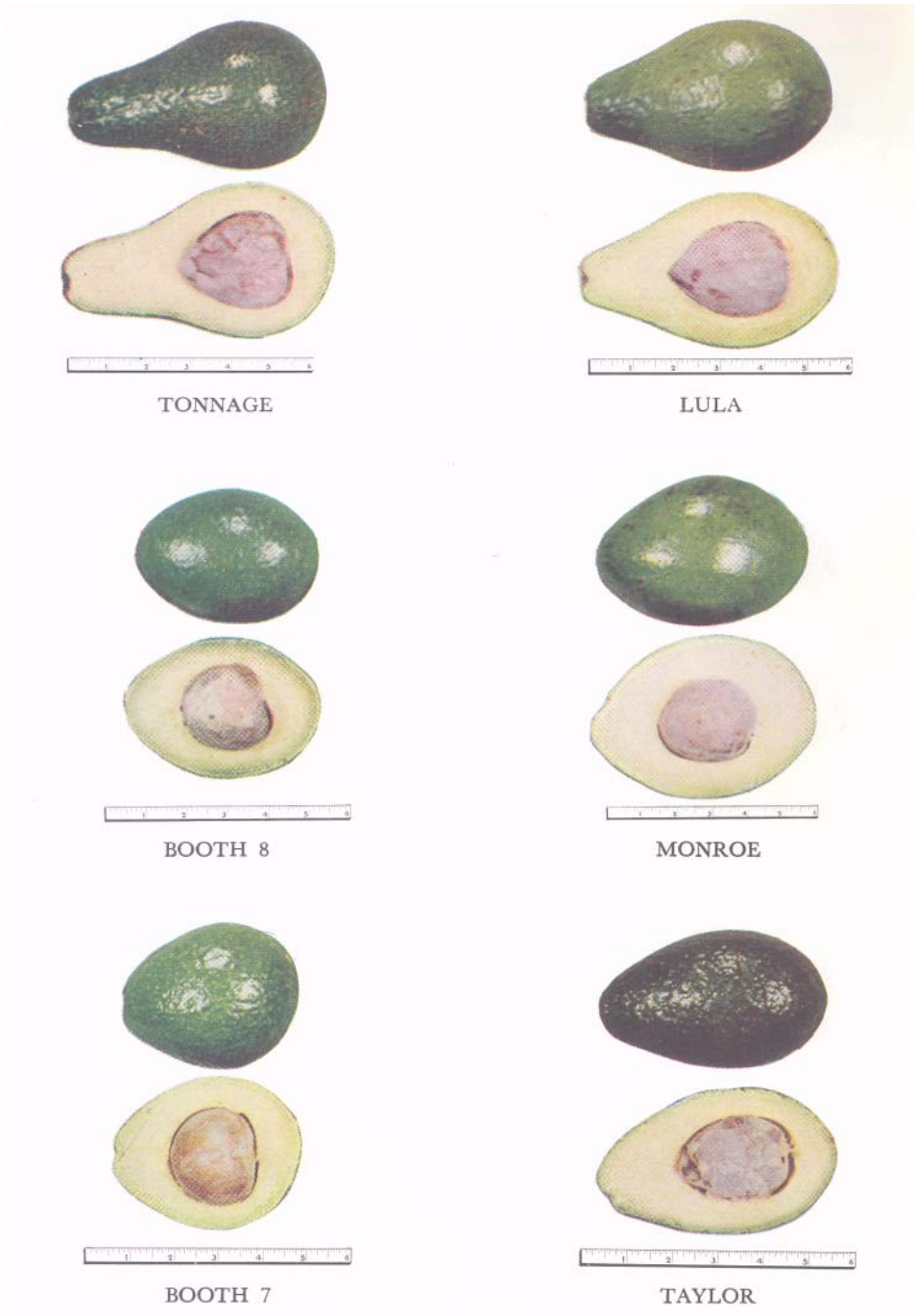

PLATE II—Varietal characteristics of selected Guatemalan and hybrid (probably Guatemalan × West Indian) avocados showing differences in size, shape of fruit, color of skin, amount of flesh, size of seed and seed cavity at harvest. All rulers are 6 inches.

Physical Characteristics

Weight measurements were made to the nearest $^{1}/_{20}$ ounce, and data were expressed to the nearest $^{1}/_{10}$ ounce. Diameter measurements were made with the use of rings graduated in sizes of $^{1}/_{16}$ inch. Specific gravity of whole fruit was determined

gravimetrically on freshly picked, firm avocados. Specific gravity of flesh was determined on a cylinder of flesh obtained from firm fruit with a 1-inch cork-borer. Measurements of fruit growth were made on tagged fruit by measuring periodically the circumference to the nearest $^{1/16}$ inch. Avocado flesh firmness was determined with a Magness-Taylor fruit pressure tester *(4, 13)* at the time of picking with a $^{5}/_{16}$-inch plunger on the pared surface of two opposite sides of the cheek of the avocado. Flesh color was matched with the Nickerson color fan *(14).* Seed-coat color was judged as being brown or white. Lenticel corking was judged by extent of surface affected on individual fruits and by the total number or percent having this condition.

Arbitrary standard	Taste or flavor of fruit	Numerical rating range corresponding to description	Individual numerical rating
Green	Green, grassy bitter, unpleasant aftertaste, unpalatable, and rubbery to soft texture (Does not meet consumer acceptance).	50–59	
Unpalatable	Flat, watery, slightly bitter, slightly unpleasant after taste, and rubbery to soft texture (Does not meet consumer acceptance).	60–69	
Palatable	Smooth, mellow, watery, satisfactory flavor and firm to soft texture.	70–79	
Excellent	Smooth, mellow, tasty, rich, nutty, with quality of distinct excellence and buttery texture.	80–100	

[1] This scorecard was used by the panel of taste testers. A rating of 70 was selected as the arbitrary standard below which the judges would consider the fruit not satisfactory, or not meeting consumer approval.

Chemical Analyses

Tests for oil content were made with an Abbé refractometer by a modified refractive method (6). The method is based on the change in refractive index of avocado oil when mixed with Halowax (chlorinated naphthalenes). Halowax is used as the refractive standard. Only firm, freshly picked avocados were used. Total soluble solids were determined from firm avocado flesh, which was ground and pressed through cheesecloth; the resulting juice was centrifuged. A refractometer was then employed to make total soluble solids readings on the free juice. Analyses for phenolic compounds (2) and reducing sugar *(24)* employed colorimetric procedures. Tannic acid was the standard for the phenolic procedure, and glucose was the standard for the reducingsugars method.

Evaluation of palatability

Evaluations of palability were made on the merits of each variety of avocados. Palatability of individual fruit was rated by a taste panel of about 6 members. Palatability was rated on fruit after softening at 70° F. on the basis of characteristics previously described by Harding (5), according to the scorecard shown opposite.

TABLE 2.—*Linear correlation coefficients between pairs of quality factor measurements of several varieties of Florida avocados*

[Statistical significance: * * = highly significant; * = significant. Average number of degrees of freedom was 160 for each value]

Pairs of quality factors and varieties	Value of "r"		
	1958–59	1959–60	1960–61
Weight and diameter:			
Pollock	**0. 96	**0. 96	**0. 97
Waldin	**. 96	**. 97	**. 97
Booth 8	**. 94	**. 90	**. 92
Lula	**. 88	**. 72	**. 91
Taylor	**. 92	**. 96	**. 92
Booth 1	**. 95	**. 88	**. 96
Weight and oil:			
Pollock	**. 70	**. 73	**. 82
Waldin	**. 21	**. 42	. 12
Booth 8	**. 50	**. 57	**. 25
Lula	**. 47	*. 15	**. 35
Taylor	**. 38	**. 45	**. 43
Booth 1	**. 31	*. 23	—. 09
Diameter and oil:			
Pollock	**. 70	**. 71	**. 82
Waldin	**. 20	**. 45	*. 18
Booth 8	**. 51	**. 53	**. 24
Lula	**. 52	**. 28	**. 32
Taylor	**. 32	**. 46	**. 32
Booth 1	**. 32	**. 27	—. 01

Statistical Calculations

Statistical procedure was designed to show relationship of the more important quality measurements to the harvest season and to each other. This was done by calculating the linear correlation coefficient, "r", between pairs of quality measurements, fruit weight and diameter, fruit weight and oil content, and fruit diameter and oil content (table 2). Correlation coefficients were also determined between oil content and specific gravity, fruit weight and specific gravity, and fruit diameter and specific gravity. The closer the value, "r", approached 1.00, either plus or minus, the closer the relationship.

It was found later that a curvilinear relationship actually existed between fruit weight and diameter. This curvilinear relationship was calculated and is reported in (7).

Analyses of variance calculations were also made of other data, especially to determine the significance of fruit weight among different groves. Use of the term "significantly different" means that such differences were found to be statistically significant by odds of at least 19 to 1.

RESULTS AND DISCUSSION

Interrelationship of Fruit Weight, Diameter, Oil Content, and Palatability to Picking Date

Correlation coefficients between weight and diameter of individual fruit were highly significant, indicating a very close relationship between diameter and weight of avocado fruit (table 2). Either fruit weight or diameter can be used interchangeably for purposes of harvesting or for sizing at the packinghouse (7).

Correlations between fruit weight and oil content and between fruit diameter and oil content were much less than between fruit weight and diameter (table 2). The oil content of 11-ounce Taylor avocados, sampled during 1958-61, averaged 6 percent during October. In mid-November, 11-ounce Taylor fruit averaged 7.4 percent oil, while fruit of the same weight sampled in late November and December had attained an average oil content of 9.1 percent.

Data for Pollock, Waldin, Booth 8, and Lula avocados, obtained by averaging original data for individual fruit from all groves studied during 1958-61, are presented in figure 1. Data for individual groves are in appendix tables 8 and 9.

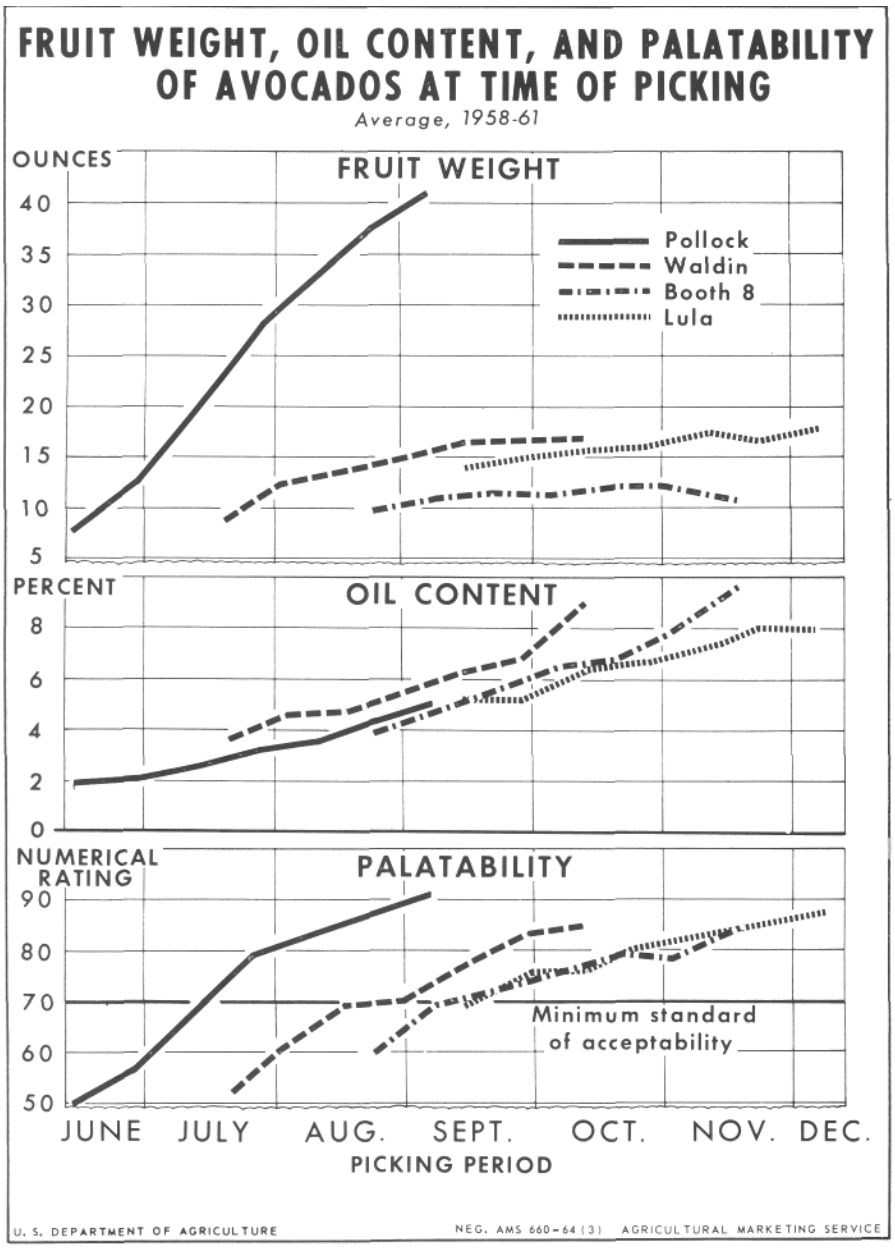

FIGURE 1.

Palatability, as measured by taste panels, generally increased rapidly as fruit matured, and was found to be closely related to increases in fruit weight and oil content (fig. 1). The average weight of Waldin, Booth 8, and Lula avocados increased only slightly after these varieties reached minimum acceptability. After minimum acceptable flavor was reached, the average weight of Pollock avocados steadily increased. During the testing period, Pollock avocados reached a higher level of palatability and had lower oil content than Waldin, Booth 8, and Lula. Booth 8 generally rated lower in palatability and reached a higher level of oil content than the other varieties. Wolfe, Toy, and Stahl (26) found no relationship between oil content and good quality as far as comparison of varieties was concerned. Their results showed that two of the finest varieties for eating were the Trapp and Pollock, both low in oil, while Collinson and Linda, almost equally

esteemed, and had twice the oil content of Trapp and Pollock. They further stated that some varieties low and some high in oil content were rated mediocre in palatability.

Soule and Harding *(21)* reported a higher statistical correlation between picking date and palatability than between either fruit weight or fruit diameter and palatability. When picking date was associated with fruit weight or fruit diameter, as multiple variables, the correlation to palatability was higher than picking date, as a single variable.

TABLE 3.—*Increase in palatability of individual Pollock avocados with maturity, 1958–60*

Picking period	Weight range	Palatability rating [1]		
		Unpalatable	Palatable	Excellent
	Ounces	*Number of fruit*	*Number of fruit*	*Number of fruit*
6/13–6/16	2–16	45	0	0
6/27–6/30	5–23	44	1	0
7/11–7/14	13–31	11	16	0
7/25–7/28	15–42	0	31	14
8/8–8/11	23–49	0	7	20
8/22–8/25	12–61	0	0	22
9/6–9/8	19–55	0	0	11

[1] Average of ratings given by 6 tasters using the score card shown on page 11.

Large fruit usually had higher flavor ratings than small fruit when tested early in the season at the time minimum acceptability had been reached; this is exemplified by the Pollock avocado (table 3). As the season advanced, and fruit became more mature, the difference in flavor between larger and smaller fruit became less pronounced, and in some comparisons smaller fruit had flavor ratings equal to larger fruit. Prior to minimum acceptability, a few Pollock avocados had reached a weight of 18 to 22 ounces, but most of them were unacceptable. When they reached minimum acceptability, fruit of 18 ounces and above were mostly acceptable; this indicates that fruit weight should be considered in relation to picking date, especially in the evaluation of borderline acceptability. Generally, these results are in agreement with results published by Harding (5) and Soule and Harding *(21)* in which they reported that large fruit had higher flavor ratings than small fruit. Repeated tests with mature avocados picked on the same day, ripened, and evaluated for palatability by taste panels showed no marked differences in flavor, although the oil content had a considerable range from one avocado to the next. For example, tests on 40 Waldin avocados picked October 2, 1956, showed no difference in flavor although the oil content ranged from 5.3 to 11.4 percent. Palatability and oil tests were conducted on 46 Lula avocados and a similar number of Booth avocados picked biweekly from October to December 1956. During October, Booth 8 avocados ranged from 11.3 to 14.8 ounces in weight and from 5.1 to 7.3 percent in oil content, while Lula avocados ranged from 14.8 to 16.5 ounces in weight and from 5.4 to 9.1 percent in oil content. During December, Booth 8 fruit ranged from 9 to 18.5 ounces in weight and from 11.6 to 13.4 percent in oil content, while Lula fruit ranged from 13.8 to 18.8 ounces in weight and from 7.7 to 14 percent in oil content. At any given picking, there was no preference in flavor for fruit of higher oil content; in some cases fruit of lower oil content were preferred. These results are not in agreement with results obtained with California avocados by Hodgkin *(12),* who reported a direct relationship between high oil content and high flavor ratings. Increases in oil content as the crop year advances have long been recognized by various workers *(1,3, 22, 23),* and, of course, concurrent with the advance of the crop year, oil content as well as flavor increases (fig. 1).

Generally, the oil content of varieties of West Indian avocados was appreciably lower than that of varieties of hybrid and Guatemalan avocados (tables 4, 5, and 6). Likewise, the oil content of many varieties of hybrid avocados was lower than that of varieties of

Guatemalan avocados. The average oil content, however, varied considerably, depending on variety. Extensive ranges in oil content were found at early and late picking in avocados representing all varieties. For example, the range in oil content of Pollock avocados (West Indian) was from 2.1 to 4.7 percent at the early picking and from 3.7 to 8.6 percent at the late picking.

Selection of avocados for a specific percentage of oil does not seem feasible because of the wide range in oil content in individual fruit at any given time. Because oil content, like fruit weight and diameter, is related to maturity, its merits cannot be overlooked. In California, the oil content of avocado fruit is used to measure maturity, and a State regulation specifies a minimum of 8-percent oil for all varieties.[4] Should the Florida avocado industry adopt a standard based on percentage of oil content, many oil standards would be required because of the many varieties of avocados grown in Florida. Consideration would also need to be given to those individual fruits failing to meet the minimum standards because of the wide range in oil content found at any given picking.

TABLE 4.—*Oil content of some West Indian varieties of Florida avocados picked early and late, 1959–60 crop year*

Variety [1]	Early picking [2]			Late picking [2]		
	Date	Oil content		Date	Oil content	
		Average	Range		Average	Range
		Percent	Percent		Percent	Percent
Fuchs	June 15	3.2	2.5 to 3.5	July 20	4.6	4.0 to 5.3
Hardee	July 6	4.1	3.5 to 4.8	July 20	5.0	4.2 to 6.0
Pollock [3]	July 13	2.9	2.1 to 4.7	Aug. 24	6.3	3.7 to 8.6
Simmonds	July 27	3.3	2.2 to 4.3	Aug. 28	4.2	3.3 to 5.0
Nadir	July 27	4.5	2.5 to 6.2	Aug. 24	7.0	6.7 to 7.3
Trapp	Aug. 17	3.2	1.9 to 3.9	Sep. 14	5.8	4.7 to 6.6
Waldin [3]	Aug. 17–18	5.1	3.5 to 6.3	Sep. 28	8.2	5.9 to 12.2
Peterson	Aug. 24	4.7	4.4 to 5.1	Sep. 21	6.1	5.0 to 6.9

[1] Varieties are listed in chronological order according to picking date.
[2] Early and late picking coincided closely with minimum acceptability and final release date, respectively, for the 1959–60 crop year.
[3] Averages based on 27 fruits; other averages based on 10 fruits.

The present method of determining avocado maturity by using beginning shipping dates in conjunction with minimum fruit weights and diameters for each of the many varieties and types appears satisfactory under present marketing conditions. It is a nondestructive method and does not require tedious laboratory procedure.

The Florida avocado industry should strive to ship fruit of optimum maturity and discourage the shipment of fruit of minimum acceptability in order to better assure the consumer of high quality fruit. Should the industry desire to upgrade the maturity requirements of avocados, this could be accomplished by: (1) Assigning later initial shipping dates; (2) increasing the minimum fruit weights and diameters for the initial

[4] California Bureau of Fruit and Vegetable Standardization, Department of Agriculture. Extracts from the Agricultural Code of California, p. 272. 1947.

shipping dates; or (3) both raising the minimum fruit weights and diameters and delaying the initial shipping dates.

TABLE 5.—*Oil content of some hybrid varieties of Florida avocados picked early and late, 1959–60 crop year*

Variety [1]	Early picking [2]			Late picking [2]		
	Date	Oil content		Date	Oil content	
		Average	Range		Average	Range
		Percent	*Percent*		*Percent*	*Percent*
Arue	May 25	4.7	4.0 to 6.1	.....	.....	.....
Tonnage	Aug. 31	4.9	4.2 to 5.6	Sep. 21	6.8	.....
Booth 8 [3]	Sep. 8	5.6	3.7 to 8.6	Nov. 3	9.4	7.0 to 13.1
Black Prince	Oct. 3	1.9	1.7 to 2.3	Oct. 24	5.8	4.3 to 8.5
Blair	Oct. 5	8.9	8.3 to 9.9	Oct. 26	11.7	.....
Booth 7	Oct. 5	7.1	5.5 to 7.9	Oct. 26	8.6	7.8 to 11.1
Booth 10	Oct. 12	7.6	6.8 to 8.9	Oct. 26	8.4	7.5 to 9.4
Collinson	Oct. 5	8.4	8.0 to 8.8	Nov. 4	11.0	9.8 to 12.5
Lula [3]	Sep. 28	6.5	3.5 to 9.9	Nov. 9	8.5	6.0 to 11.9
Booth 5	Oct. 12	6.0	5.4 to 6.4	Nov. 3	10.7	10.4 to 11.0
Hickson	Oct. 12	7.2	6.5 to 8.4	Nov. 3	11.1	10.9 to 11.5
Simpson	Oct. 12	11.3	9.0 to 13.6	Nov. 3	14.1	13.7 to 14.4
Vaca	Oct. 12	12.0	9.0 to 15.0	Nov. 3	13.0	12.2 to 13.6
Avon	Oct. 19	10.7	10.2 to 11.5	Nov. 9	10.5	9.8 to 11.1
Hall	Oct. 26	8.5	7.1 to 9.3	Nov. 23	13.5	11.4 to 15.5
Winslowson	Oct. 19	11.3	10.2 to 12.4	Nov. 9	11.0	8.6 to 12.4
Monroe	Oct. 22	5.6	5.1 to 6.3	Nov. 19	7.9	6.1 to 9.8
Choquette	Oct. 22	4.1	3.8 to 4.6	Nov. 19	6.6	6.1 to 7.2
Herman	Nov. 3	8.2	7.0 to 9.7	Nov. 23	8.1	.....
Ajax	Oct. 5	6.7	5.5 to 7.6	Nov. 23	12.1	11.5 to 12.7
Booth 1 [3]	Nov. 3	10.5	7.2 to 13.3	Nov. 16	12.4	8.0 to 13.6
Booth 3	Nov. 3	10.0	9.6 to 10.2	Nov. 24	11.5	10.0 to 12.3
Byars	Nov. 23	8.1	6.6 to 9.1	Dec. 13	10.5	.....

[1] Varieties are listed in chronological order according to picking date.
[2] Early and late picking coincide closely with minimum acceptability and final release date, respectively, for the 1959–60 crop year.
[3] Averages based on 27 fruits; other averages based on 10 fruits.

TABLE 6.—*Oil content of some Guatemalan varieties of Florida avocados picked early and late, 1959–60 crop year*

Variety [1]	Early picking [2]			Late picking [2]		
	Date	Oil content		Date	Oil content	
		Average	Range		Average	Range
		Percent	*Percent*		*Percent*	*Percent*
Taylor [3]	Nov. 3	8.0	6.4 to 9.2	Nov. 30	9.1	6.9 to 14.4
Linda	Nov. 24	7.2	5.5 to 8.8	Dec. 14	11.3	9.0 to 13.1
Nabal	Nov. 24	8.3	7.2 to 9.9	Dec. 14	11.1	8.8 to 13.6
Wagner	Dec. 14	14.7	14.3 to 14.9	Jan. 4	17.3	16.2 to 18.7
Schmidt	Jan. 25	10.1	8.4 to 12.8	.....	.....	.....
Itzamna	Feb. 23	13.0	11.9 to 13.7	.....	.....	.....

[1] Varieties are listed in chronological order according to picking date.
[2] Early and late picking coincided closely with minimum acceptability and final release date, respectively, for the 1959–60 crop year.
[3] Averages based on 27 fruits; other averages based on 10 fruits.

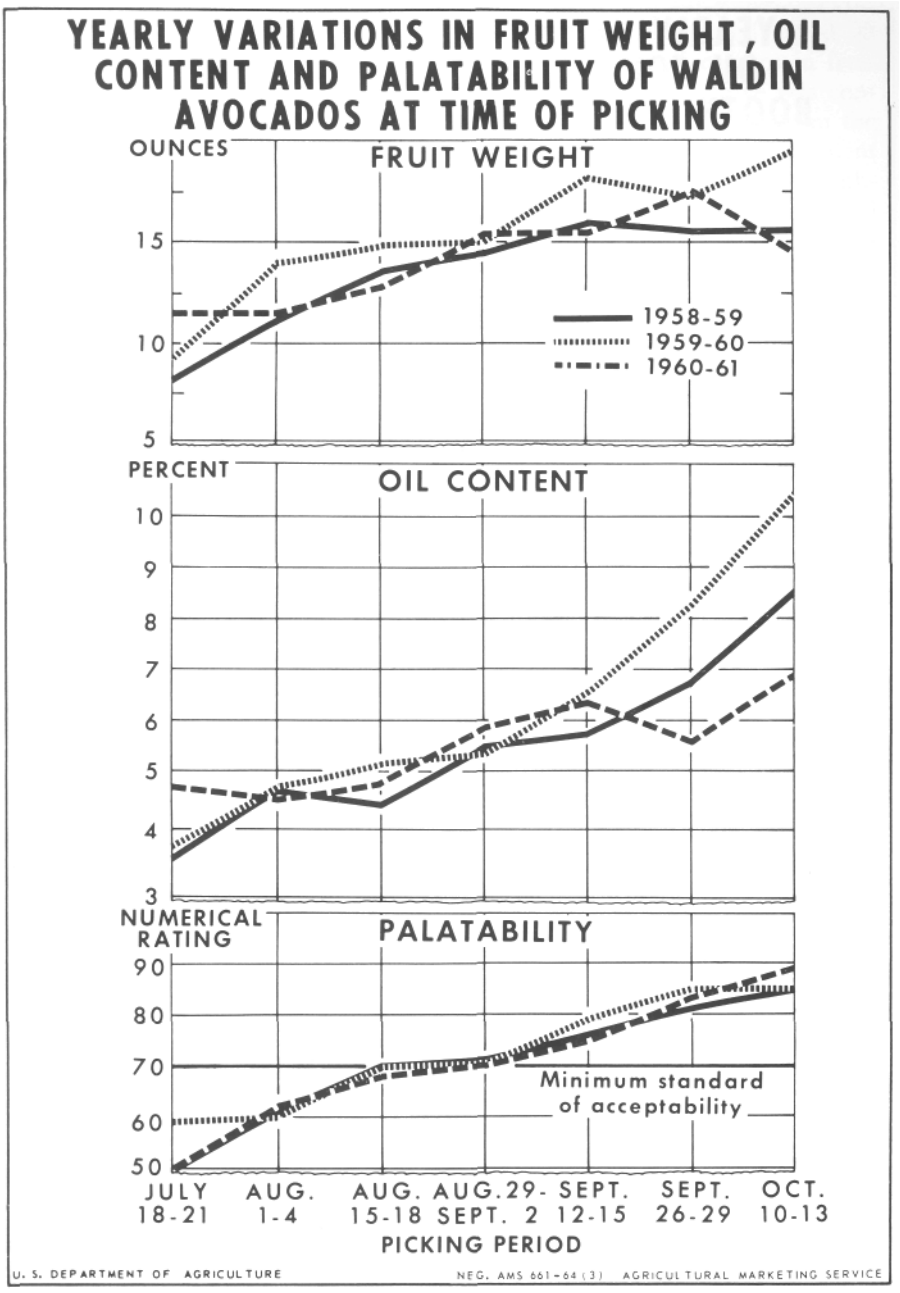

FIGURE 2.—Averages, 1958–59 to 1960–61.

Yearly Variations in Fruit Weight, Oil Content, and Palatability

Yearly variations in fruit weight, oil content, and palatability are illustrated for Waldin and Booth 8 avocados (figs. 2 and 3). Yearly variations in fruit weight, oil content, and palatability are given in detail in appendix tables 8 and 9.

Average fruit weight of Waldin avocados sampled biweekly was inconsistent during each of the 3 crop years, although fruit appeared somewhat heavier during 1959-60. Booth 8 avocados sampled in crop year 1959-60 were the heaviest, and those sampled in 1958-59 were the lightest.

For the 3-year period, 1958-59 through 1960-61, palatability of Waldin avocados varied only slightly from 1 crop year to the next, and the average palatability ratings did not rise appreciably above the minimum acceptable standard until about September 1. At this time the fruit averaged about 15 ounces, and the average oil content varied from 5.3 percent in 1959-60 to 5.8 percent in 1960-61. Considerable variation existed in the average oil content of Waldin fruit at the final sampling in October, ranging from 6.9 percent in 1960-61 to 10.4 percent in 1959-60.

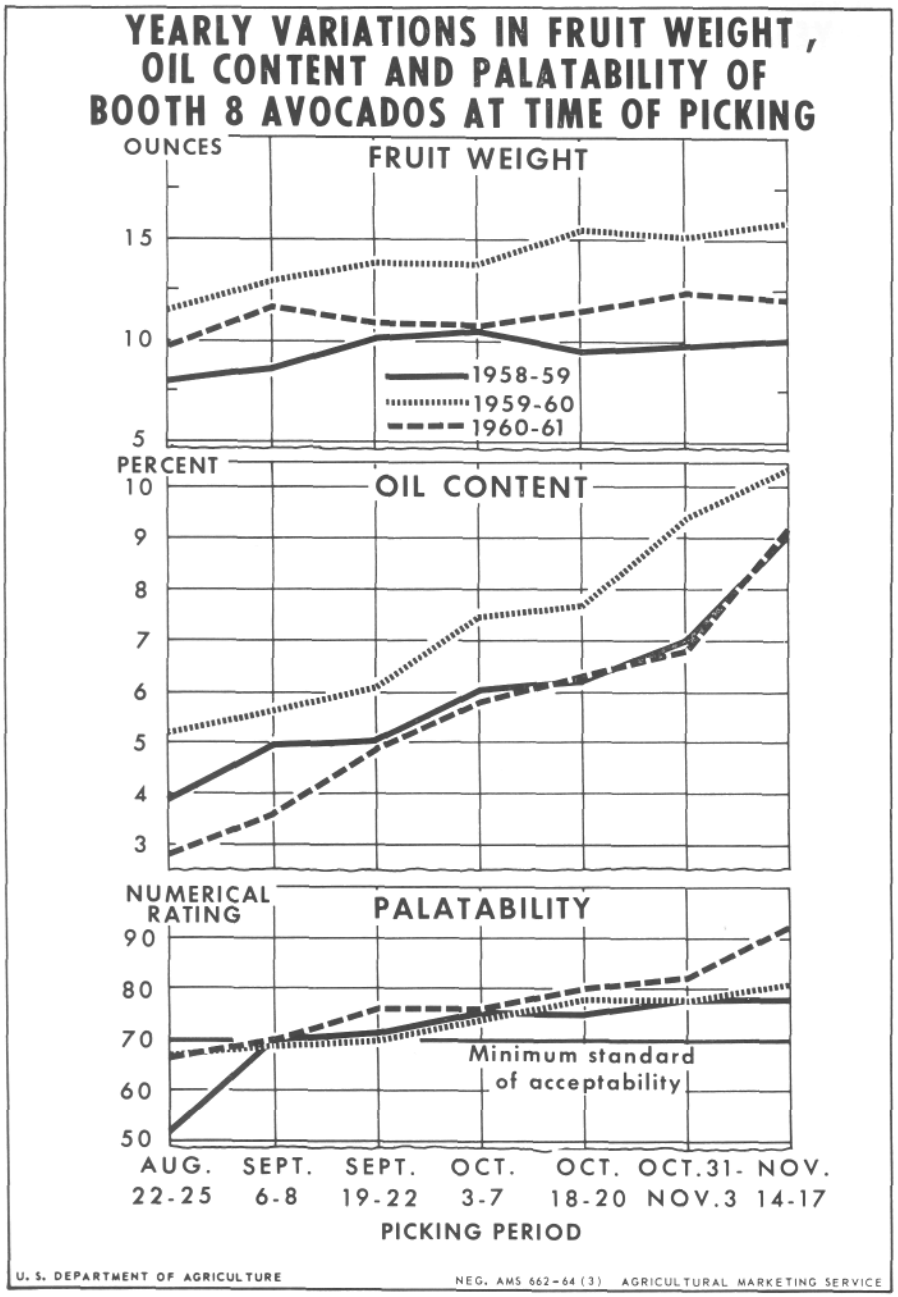

FIGURE 3.—Averages, 1958–59 to 1960–61.

Palatability of Booth 8 avocados varied slightly more than Waldin avocados during the 3 crop years. In 1960—61 palatability was generally higher, and ratings above minimum standard acceptability occurred earlier than during 1958-59 and 1959-60. During 1958-59 and 1959-60 palatability ratings did not rise appreciably above minimum standard acceptability until late September and early October, and ratings increased slowly for a month thereafter. From October 3—7, fruit weights ranged from 10.4 ounces in 1958-59 to 13.7 ounces in 1959-60. Average oil content from October 3-7 varied from 5.8 percent in 1960-61 to 7.5 percent in 1959-60. The trend in oil content was similar between crop years 1958-59 and 1960-61 but was consistently higher during 1959-60.

Generally, Waldin and Booth 8 avocados during the 1959-60 crop year were heavier and contained more oil than during the other 2 crop years. Variations in date of bloom, precipitation, temperatures, fertilization, cultivation, spraying, and dusting are some of the conditions that may have affected these factors. Individual avocado trees of any one variety may bloom over a period of several weeks. Hatton and Reeder (9) showed that avocado fruit, originating from known bloom dates, progressively decrease in fruit weight, diameter, and oil content from the earliest to the latest bloom date. So any environmental factor affecting bloom date and fruit set would affect fruit size and oil content.

Grove Variations in Fruit Weight, Oil Content, and Palatability

For the 3-year period, 1958-59 through 1960-61, Taylor avocados from the three groves showed extensive variation in fruit weight and oil content but little variation in palatability (fig. 4) ; this variation was also apparent among most groves, regardless of variety of avocado (appendix tables 8 and 9).

Palatability ratings above the minimum standard of acceptability occurred during the latter part of October, when oil content ranged from 4.7 percent in fruit from the Palm Beach County grove to 6.8 percent in fruit from the Bade County grove (fig. 4). During the 3-year period, 1958-59 through 1960-61, oil content in fruit from the Palm Beach grove was consistently lower than in fruit from the other two groves. Average oil content of fruit from groves in Dade and Highlands Counties was similar for the 3 harvest years. Variations in oil content of Lula avocados from different trees, as well as among fruit from the same tree, have previously been reported *(10);* it was found that variation was extensive and fruit from the top halves of the trees contained higher percentages of oil than those from the bottom halves.

Fruit from the grove in Dade County was consistently heavier than fruit from the groves in Palm Beach and Highlands Counties, while average weights for fruit from Palm Beach and Highlands Counties were about the same average fruit weight (fig. 4). The abrupt decline in the average weight of Taylor avocados from Highlands County was due to the commercial picking of large fruit from the test trees, leaving only small fruit available for experimental samples. Fruit weight during the latter part of October ranged from an average of 10 ounces for fruit from the groves in Palm Beach and Highlands Counties to about 12 ounces for fruit from the grove in Dade County.

During the crop year, 1957—58, in comparing weight of fruit from groves in district 1 (Dade County) and from groves in district 2 (Highlands County), no statistically significant difference was found in the weight of either Booth 8 or Lula avocados from

the six groves, although five separate samplings were made from September 18 to November 14 (table 7). Considering the many avocado groves located in district 1, a greater difference may exist in weight of fruit from groves in district 1 than between groves in district 1 and 2. From this evidence, crop-year variation in fruit weight between groves in the two districts would need to be considered and evaluated on a year-to-year basis.

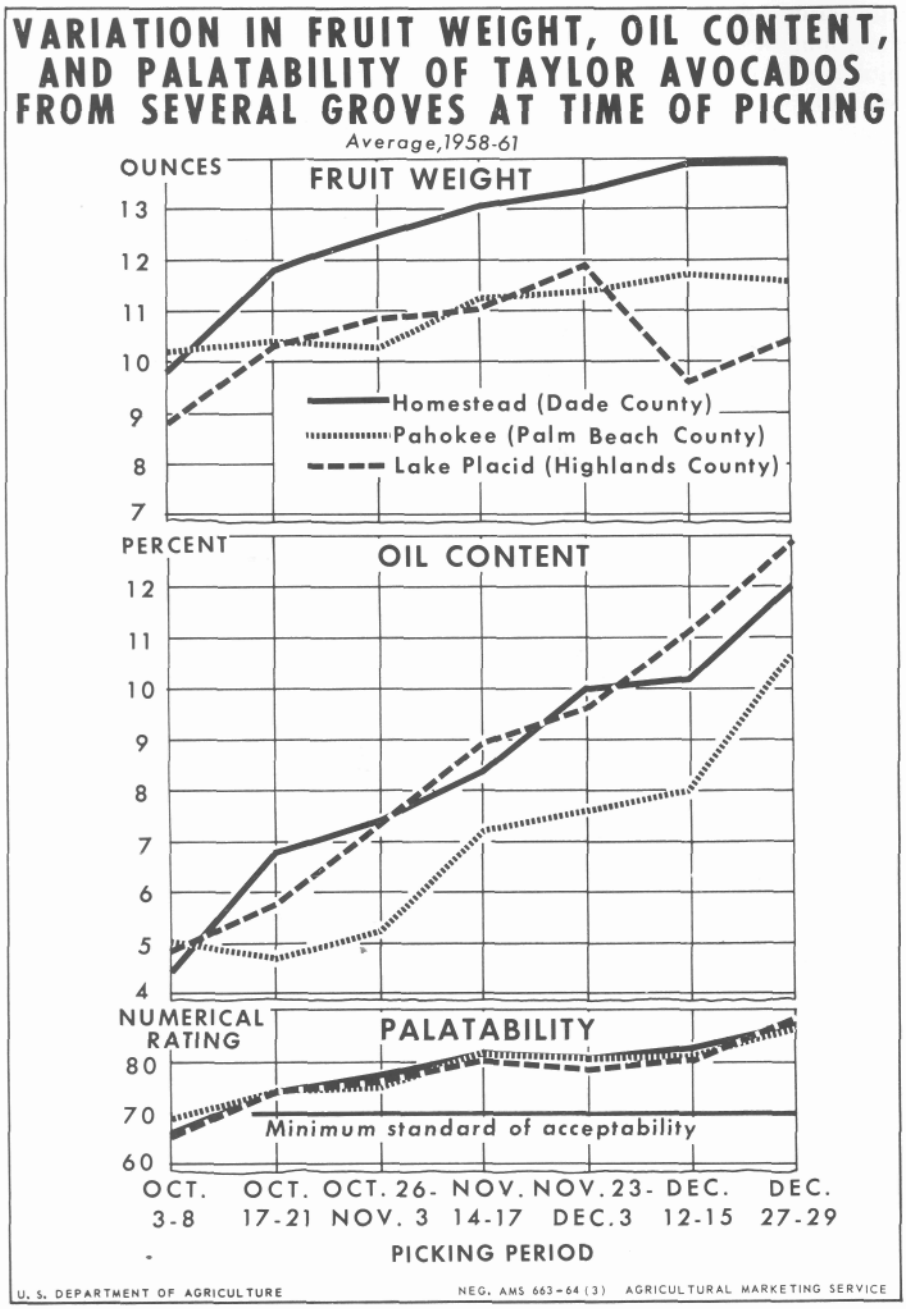

FIGURE 4

TABLE 7.—*Average fruit weights of Booth 8 and Lula avocados from different groves in districts 1 and 2, 1957* [1]

Variety and picking date	District 1 [2]				District 2 [2]	
	Groves					
	A	B	C	D	E	F
Booth 8:	*Ounces*	*Ounces*	*Ounces*	*Ounces*	*Ounces*	*Ounces*
Sept. 18–19	11.7	11.2	11.5	11.4	11.5	11.8
Oct. 2–3	13.1	12.8	12.7	13.1	12.9	12.2
Oct. 16–18	12.6	12.5	12.3	12.5	12.5	12.7
Oct. 30–31	12.6	12.6	12.6	12.6	12.5	12.5
Nov. 13–14	12.6	12.6	12.7	13.1	12.6	12.5
Lula:						
Sept. 18–19	11.7	11.6	11.7	12.0	11.6	12.0
Oct. 2–3	14.7	14.9	14.9	15.3	14.5	14.7
Oct. 16–18	14.5	14.4	13.8	14.5	14.6	14.4
Oct. 30–31	14.3	14.7	14.6	15.0	14.6	14.4
Nov. 13–14	14.5	14.9	14.8	14.9	14.3	14.8

[1] Each value represents the average weight measurement of 20 fruits.
[2] District 1: Dade County (Rockdale soil).
District 2: Highlands County (Lakeland fine sand).

Other Physical Measurements

Number Of Days Required For Fruit To Soften. The average number of days required for avocados to soften at 70° F. usually decreased with successive picking dates (fig. 5, appendix tables 9 and 10). Early in the season, immature Waldin avocados required more days to soften than did immature Booth 8 and Lula avocados. An average of 6 to 7 days was required for Waldin, Booth 8, and Lula avocados to soften when picked on the approximate date that minimum acceptability was reached. Later in the season, on the final sampling date, the same varieties required an average of only 5 to 6 days to soften.

For the 3-year period, 1958-59 through 1960-61, the trend in the average number of days required for fruit to soften was generally similar for Waldin, Booth 8, and Lula avocados. As the season progressed, fruit became more mature, and required fewer days to soften. Days required for fruit to soften may be used as a general guide to avocado maturity; however, the variation in number of days for fruit to soften from a given picking precludes its use as an accurate index (appendix tables 9 and 10).

Loss In Fruit Weight During Softening. the average percentage weight loss in fruit, during softening at 70° F., usually decreased with successive picking dates (fig. 5, appendix tables 9 and 10). Early in the crop year when percentage weight loss was high, the skin of the fruit frequently shriveled. Generally, the more days required for softening the greater the percentage of weight loss (fig. 5). An average weight loss of approximately 7 to 10 percent occurred with Booth 8, Lula, and Waldin avocados when picked at minimum acceptability; on the final sampling date they lost an average of about 5 to 8 percent during softening. During the 3-year period the trend in percentage weight loss was less consistent than the trend for number of days required softening.

Percentage loss in fruit weight during softening may be used as a general guide to avocado maturity; however, the variation in percentage of weight loss from a given

picking precludes its use as an accurate index (appendix tables 9 and 10).

When fruit size was expressed in terms of volume and surface area, based on a sphere, the weight loss per square inch of area and the ratio of volume to area decreased as the season progressed (appendix table 11).

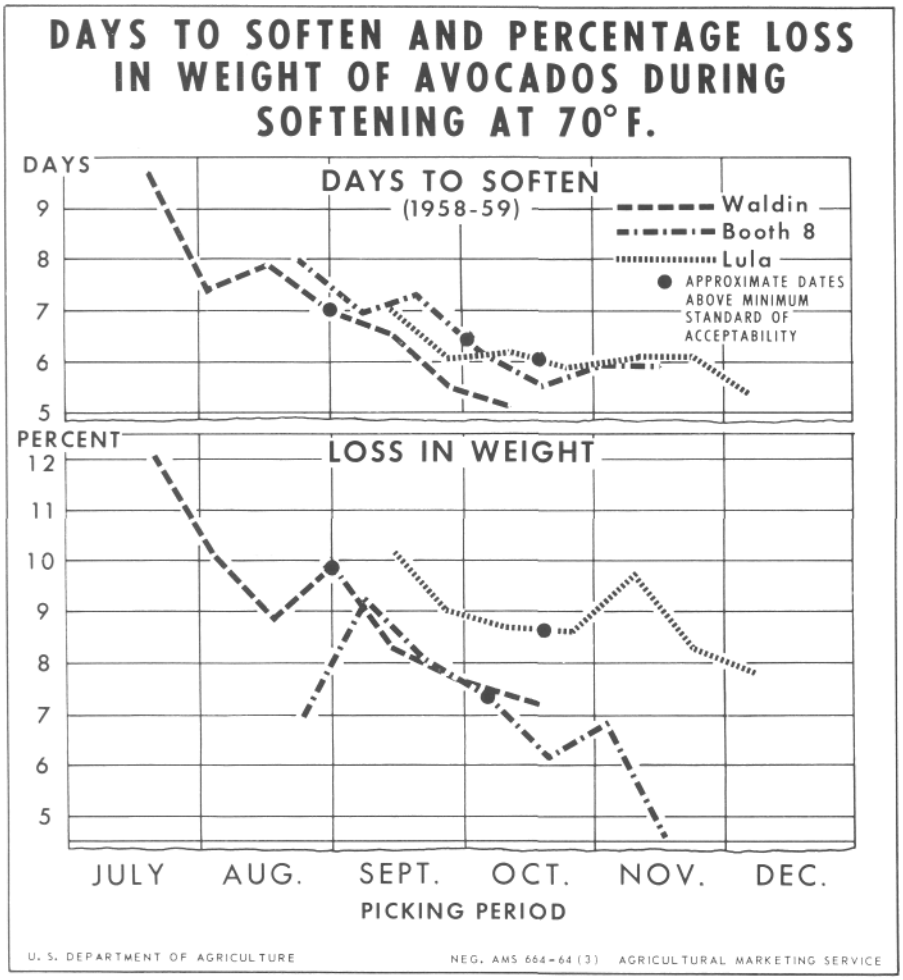

FIGURE 5.—Averages, 1958–59

It is reasonable to assume that the volume-area ratio would more nearly relate to weight loss than fruit weight or fruit diameter alone. For example, with a 2-inch sphere, the relation of volume to surface is approximately 1 to 3, whereas with a 3-inch sphere the ratio of volume to surface is 1 to 2. This means there is about 50 percent more surface in relation to volume in a 2-inch sphere than a 3-inch sphere. Since weight loss in an avocado is assumed to be mostly moisture loss through the epidermis, the more epidermis presents in relation to volume, the greater the weight loss.

Fruit Growth Measurements Florida avocados may bloom from January to May *(18, 26)* and continue to increase in size as long as they remain on the tree *(15, 20).* Average growth-measurement data showed no defined variation in the curves when fruit

reached acceptability, except for Booth 8 which showed a slight flattening of the slope (fig. 6). All varieties displayed increases in fruit circumference, rate of growth being proportional to the inherent ultimate size of the variety. The large Pollock variety, as expected, showed a more accelerated increase in growth than Waldin, Booth 8, and Lula avocados.

Since growth curves showed little or no inflection during the maturation period, the use of growth measurements appeared to have little value as a maturity index.

Fruit Abscission. Abscission of fruit from avocado trees may occur if fruit is allowed to remain on the tree for a long period of time; it may also occur prematurely at any time due to such conditions as overloading of fruit, high winds, drought, cold weather, or poor cultural care.

West Indian avocados, such as Pollock, will normally remain attached to the tree until late summer or early fall while hybrid and Guatemalan avocados will remain until late fall or winter. The length of time after avocados became acceptable until abscission occurred was shorter for West Indian avocados than for most hybrid and Guatemalan avocados; this means that West Indian avocados had a shorter harvest period than the others. Annual observations showed that a few Pollock avocados may adhere to the tree as late as mid-September, but extensive abscission occurred in early September, which indicated that the picking period of Pollock avocados was only about 6 weeks. Waldin avocados (West Indian) did not begin dropping extensively until late October. The Lula avocado (hybrid) became acceptable in October and might remain on the tree until February before abscission became severe.

Fruit abscission has some merit as a maturity index for avocados. The annual recording of abscission dates for trees is an excellent method of estimating the maturity period for seedling avocados.

Changes In Specific Gravity. Average specific gravity of whole fruit showed a decreasing trend as the season progressed, and the trend was more pronounced in Pollock fruit than in Waldin, Booth 8, and Lula fruit (fig. 6, appendix table 8). However, for all varieties, specific gravity of whole fruit varied among individual fruit at any given picking. A possible explanation for the difference in specific gravity of whole fruit for each variety is the dissimilarity in volume of unfilled seed cavity among varieties. Pollock avocados had lower specific gravity values than Waldin, Booth 8, and Lula avocados. Seeds of the Pollock avocado are loose in the seed cavity which probably is the reason for the lower specific gravity. Fruit of varieties with higher specific gravity contained seeds more tightly filling the seed cavity than fruit of the Pollock variety. Previous work by Harkness *(6)* and Stahl *(22, 23}* also showed a decrease in specific gravity of whole avocado fruit as the season progressed, but Church and Chace (7) found that specific gravity did not vary.

The average specific gravity of fruit flesh generally showed fewer consistent trends and more fluctuations than the specific gravity of whole fruit (appendix table 8). Pollock avocados, the only exception, showed a consistent decrease as the maturation period progressed. In all cases, variation in specific gravity of fruit flesh was extensive among individual fruit at any given picking.

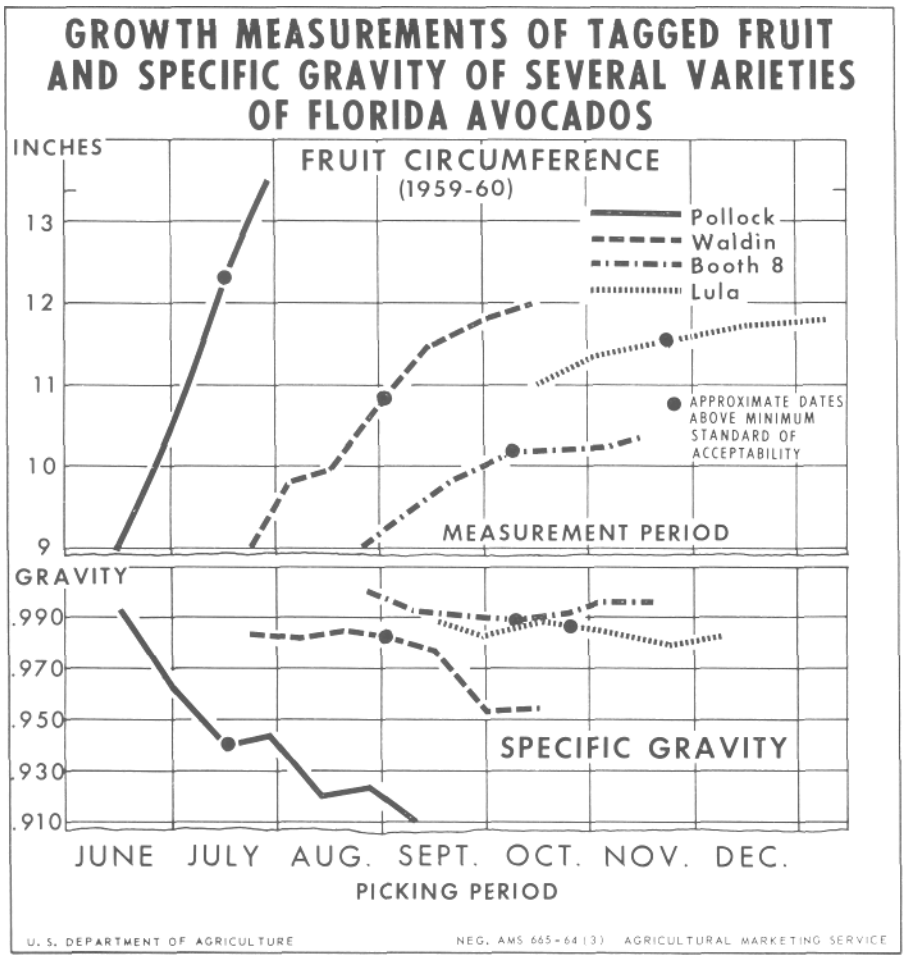

FIGURE 6.—Averages, 1959–60.

The variation in specific gravity of whole fruit and fruit flesh precludes the use of either as accurate measurements of maturity. In most cases significant statistical correlations existed between specific gravity of whole fruit and fruit weight, diameter, and oil content, but the correlation was considerably less than that found between weight and diameter (table 2). For example, typical significant correlations were as follows: specific gravity of whole fruit vs. fruit weight was — 0.206 for Lula avocados; specific gravity of whole fruit vs. fruit diameter was —0.229 for Lula avocados; and specific gravity of whole fruit vs. oil content was —0.247 for Booth 8 avocados (d.f.= 187 for each value). Generally, fewer significant correlations were found in factors correlated to specific gravity of fruit flesh than in factors correlated to specific gravity of whole fruit. Significant correlations usually did not exist between specific gravity of fruit flesh and fruit weight, diameter, and oil content.

Changes In Seed-Coat Color. The use of brown seed-coats in determining maturity of avocados has little value as an accurate measure because brown seed-coats are

frequently found even in immature fruit. At a given picking, the variation in the number of brown seed-coats can be extensive. The time of coloring of the avocado seed-coat varies so greatly with variety and season that this change is of little value in determining when to harvest the fruit.

Brown seed-coats in Booth 8 avocados were not found early in the season (appendix table 12). As the season progressed, but before the fruit became acceptable, brown seed-coats were found. On the other hand, when Booth 8 avocados became acceptable, some fruit still did not contain brown seed-coats.

Changes In Lenticel Corking. The extent of lenticcl corking observed during 1 crop year on Booth 8 avocados is given in appendix table 12. Although as maturation advanced and visible corking of lenticels became more prevalent, variation in the extent of corking, as well as the presence of corking before the fruit became mature, precludes the use of lenticel corking as an accurate measure of maturity. Hatton and Campbell (11*)* published similar results in studies with the Tonnage avocado.

Firmness Tests. The flesh of each variety of avocados was found to have a consistent degree of firmness characteristic for each variety (appendix table 13). As the season progressed, no definite trends or changes in firmness could be detected. Mature fruit had generally the same firmness as immature fruit. There was no appreciable difference in firmness of small and large avocados. For several varieties of pears, the pressure test has been found of primary importance in establishing maturity standards *(4)* ; however, its use appears to have no such value for avocados *(6, 23).*

Flesh Color. Biweekly inspections indicated that in some cases more than one flesh color typified a variety; however, the same color or colors persisted throughout the sampling period, when the fruit was immature, until it had reached maturity. Brilliant greenish-yellow (7.5Y 9/8) *(14)* typified Pollock and Booth 8 avocados. Brilliant greenish-yellow (10Y9/9) as well as brilliant greenish-yellow (7.5Y 9/8) typified Lula and Booth 1 avocados, and vivid yellow (5Y 8/12) and brilliant yellow (5Y 9/9) typified Waldin avocados. Because flesh color did not change throughout the maturation period, it has no value as a maturity index. These results were previously reported by Hatton and Campbell (//).

Other Chemical Analyses

Total Soluble Solids. No relationship existed between total soluble solids and palatability, and no consistent increase or decrease in soluble solids was apparent as the maturation period progressed (appendix table 14) ; these findings have previously been reported by Hatton and others (8). Little or no difference was found in soluble solids content between large and small fruit. The range in total soluble solids extended from a low of 6.9 percent for Fuchs avocados to a high of 12.1 percent for Booth 7 avocados. These results showed that most of the varieties contained approximately 7 to 10 percent soluble solids. The use of total soluble solids as a maturity index appears to have no value.

Reducing Sugars. For all varieties of avocados, the percentage of reducing sugars ranged from about 2 to 5 percent (appendix table 14). The amount of reducing sugars in avocado fruit did not change consistently during the maturation period, and no

difference existed in the amount of reducing sugars between small and large fruit; this was previously reported (8). A slight decrease in sugars as the season progressed was reported from work conducted on Florida avocados *(23)* and on California avocados (7, 3).

Phenolic Compounds. No relationship existed between phenolic compounds and palatability, and no consistent changes in phenolic compounds occurred during the maturation period (appendix table 14) ; these findings have previously been reported by Hatton and others *(8).* No difference in the amount of phenolic compounds was found between large and small fruit. West Indian varieties contained less phenolic compounds than hybrid and Guatemalan varieties. The Taylor variety, a Guatemalan type, ranged from 9.3 to 17 mg. of phenolic compounds per 100 g. of flesh, while the Pollock variety, a West Indian type, ranged from 1.5 to 3.8 mg. per 100 g. of flesh.

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APPENDIX

TABLE 8.—*Seasonal changes in physical characteristics and chemical constituents of Florida avocados by variety, location of test and picking dates, 1958–59 to 1960–61*

[Averages of approximately 9 fruits from each grove on each picking date]

Variety, location, and picking date	Weight per fruit			Diameter per fruit			Oil content			Specific gravity	
	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	Whole fruit, 1958–59	Fruit flesh, 1959–60
	Ounces	*Ounces*	*Ounces*	*Inches*	*Inches*	*Inches*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Booth 1, plot 1, Homestead:											
Oct. 18–20	17.2	19.9	17.5	3 12/16	3 15/16	3 14/16	8.4	9.1	7.4	0.931	0.940
Oct. 31–Nov. 3	18.0	22.8	20.7	3 14/16	4 3/16	4 2/16	10.5	10.4	7.4	.929	.946
Nov. 14–17	18.2	24.7	22.6	3 15/16	4 3/16	4 4/16	10.2	15.1	7.4	.916	.940
Nov. 28–Dec. 3	17.8	25.8	20.3	3 13/16	4 6/16	4 1/16	12.1	8.8	7.0	.910	.950
Dec. 13–15	19.8	25.7	.....	4 0/16	3 6/16	.....	11.5	13.6	.....	.890	.930
Dec. 27–29	20.2	.....	.....	4 1/16	.....	.....	13.1	.....	.....	.917	.....
Booth 1, plot 2, Princeton:											
Oct. 18–20	15.0	14.8	15.9	3 10/16	3 10/16	3 12/16	6.7	8.9	8.7	.952	.947
Oct. 31–Nov. 3	15.6	17.4	19.0	3 12/16	3 13/16	4 2/16	7.1	10.4	8.7	.921	.952
Nov. 14–17	15.1	19.3	20.7	3 10/16	4 1/16	4 2/16	8.2	11.1	12.6	.936	.940
Nov. 28–Dec. 3	15.4	20.6	19.9	3 11/16	3 14/16	4 2/16	10.9	11.1	11.4	.874	.930
Dec. 13–15	16.5	17.6	18.1	3 13/16	3 14/16	4 1/16	10.3	13.9	11.8	.914	.929
Dec. 27–29	17.3	18.9	19.0	3 13/16	4 0/16	4 2/16	10.4	12.6	13.7	.903	.945
Jan. 9–12	16.4	19.6	22.5	3 13/16	4 0/16	4 5/16	11.5	14.2	13.6	.887	.946
Booth 1, plot 3, Perrine:											
Oct. 18–20	11.9	17.4	13.4	3 5/16	3 13/16	3 8/16	5.8	9.4	9.1	.976	.938
Oct. 31–Nov. 3	13.9	20.7	15.3	3 8/16	4 0/16	3 11/16	6.2	10.8	8.5	.964	.950
Nov. 14–17	16.0	20.9	16.7	3 11/16	4 1/16	3 13/16	7.2	9.6	12.0	.937	.941
Nov. 28–Dec. 3	13.2	21.7	21.8	3 7/16	4 3/16	4 3/16	9.8	9.2	8.3	.953	.934
Dec. 13–15	14.3	22.6	15.7	3 9/16	4 3/16	3 12/16	8.9	13.9	9.4	.920	.949
Dec. 27–29	14.4	22.8	18.3	3 9/16	4 4/16	4 0/16	7.6	14.0	12.4	.876	.942
Jan. 9–12	14.3	19.9	17.4	3 9/16	4 8/16	3 15/16	12.5	10.6	12.0	.924	.951

TABLE 8.—*Seasonal changes in physical characteristics and chemical constituents of Florida avocados*—Continued

Variety, location, and picking date	Weight per fruit			Diameter per fruit			Oil content			Specific gravity	
	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	Whole fruit, 1958–59	Fruit flesh, 1959–60
	Ounces	*Ounces*	*Ounces*	*Inches*	*Inches*	*Inches*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Booth 8, plot 4, Homestead:											
Aug. 22–25	9.2	10.7	10.3	2 12/16	3 0/16	3 1/16	4.5	4.9	3.2	1.007	0.981
Sept. 6–8	8.3	12.3	11.7	2 12/16	3 3/16	3 2/16	4.7	4.7	3.7	.985	.952
Sept. 19–22	10.2	11.9	11.9	3 0/16	3 2/16	3 4/16	4.1	5.5	5.3	.988	.977
Oct. 3–7	10.7	11.9	11.8	3 1/16	3 2/16	3 3/16	5.8	7.6	7.8	.985	.976
Oct. 18–20	7.2	15.1	12.6	2 15/16	3 8/16	3 4/16	6.6	8.3	6.6	.989	.971
Oct. 31–Nov. 3	11.1	13.4	12.0	3 2/16	3 4/16	3 3/16	6.9	9.9	7.1	.999	.976
Nov. 14–17	11.1	15.7	13.4	3 0/16	3 7/16	3 6/16	7.8	10.7	9.3	.997	.946
Booth 8, plot 5, Homestead:											
Aug. 22–25	7.4	12.7	8.8	2 11/16	3 3/16	2 14/16	3.4	5.6	3.2	1.001	.958
Sept. 6–8	10.1	14.0	12.6	2 15/16	3 5/16	3 4/16	5.3	5.8	4.1	.993	.946
Sept. 19–22	10.9	16.0	10.6	3 3/16	3 8/16	3 5/16	6.1	6.7	4.8	.990	.974
Oct. 3–7	12.0	16.5	10.7	3 4/16	3 8/16	3 2/16	7.1	8.5	5.4	.989	.967
Oct. 18–20	13.0	18.5	10.9	3 5/16	3 11/16	3 1/16	6.6	8.1	7.4	.990	.963
Oct. 31–Nov. 3	10.5	19.1	12.3	3 1/16	3 12/16	3 4/16	7.9	9.8	7.3	.994	.957
Nov. 14–17	13.7	18.8	10.6	3 6/16	3 11/16	3 1/16	12.3	10.8	9.9	.988	.947
Booth 8, plot 6, Princeton:											
Aug. 22–25	6.1	9.9	10.0	2 8/16	3 0/16	3 0/16	3.5	5.0	2.1	.990	.957
Sept. 6–8	6.6	11.9	9.9	2 10/16	3 2/16	3 0/16	4.8	5.2	3.1	.998	.950
Sept. 19–22	8.4	12.4	10.7	2 13/16	3 3/16	3 1/16	4.9	6.1	4.6	.993	.974
Oct. 3–7	8.2	13.4	9.2	2 12/16	3 3/16	2 14/16	5.2	6.4	4.2	.989	.975
Oct. 18–20	7.7	13.5	10.1	2 12/16	3 4/16	3 0/16	5.5	6.8	4.8	.995	.967
Oct. 31–Nov. 3	8.1	13.0	11.3	2 13/16	3 3/16	3 2/16	6.3	8.5	6.2	.992	.969
Nov. 14–17	8.3	14.9	9.4	2 13/16	3 6/16	3 0/16	7.2	9.1	8.1	1.001	.952

Lula, plot 7, Homestead:											
Sept. 12–16	10.6	16.1	10.3	3 1/16	3 7/16	3 1/16	3.9	6.1	4.1	.991	.962
Sept. 26–29	12.2	16.2	12.7	3 5/16	3 8/16	3 4/16	5.2	6.3	3.7	.989	.953
Oct. 10–13	12.7	16.4	12.5	3 4/16	3 9/16	3 5/16	5.3	7.6	3.6	.986	.968
Oct. 24–27	13.2	17.1	13.4	3 5/16	3 10/16	3 5/16	6.1	8.6	5.6	.993	.941
Nov. 7–14	14.5	17.9	15.6	3 7/16	3 11/16	3 8/16	6.3	8.1	5.8	.993	.948
Nov. 21–24	15.2	18.6	17.5	3 8/16	3 13/16	3 8/16	8.0	9.6	7.2	.998	.996
Dec. 5–8	14.7	19.8	17.0	3 8/16	3 12/16	3 9/16	7.7	7.6	6.5	1.000	.955
Lula, plot 8, Florida City:											
Sept. 12–16	12.5	14.5	13.5	3 1/16	3 6/16	3 4/16	3.6	6.3	5.1	.990	.959
Sept. 26–29	13.2	14.6	13.9	3 4/16	3 6/16	3 5/16	4.2	6.0	4.2	.986	.948
Oct. 10–13	13.2	15.6	14.0	3 4/16	3 7/16	3 8/16	4.5	9.6	5.1	.989	.955
Oct. 24–27	13.5	15.3	16.7	3 5/16	3 7/16	3 10/16	4.9	6.8	5.2	.987	.943
Nov. 7–14	14.7	17.3	17.6	3 6/16	3 10/16	3 10/16	6.1	8.9	6.1	.976	.941
Nov. 21-24	15.6	17.6	15.8	3 7/16	3 10/16	3 7/16	7.3	7.6	7.9	.980	.976
Dec. 5–8	16.7	18.2	17.0	3 9/16	3 10/16	3 9/16	5.8	9.6	5.3	.983	.960
Lula, plot 9, Homestead:											
Sept. 12–16	15.0	15.3	11.6	3 7/16	3 6/16	3 3/16	4.8	6.6	6.2	.985	.951
Sept. 26–29	15.3	18.4	16.1	3 7/16	3 11/16	3 8/16	5.7	7.2	4.4	.975	.947
Oct. 10–13	17.0	17.9	15.6	3 10/16	3 10/16	3 8/16	6.4	8.0	6.8	.988	.953
Oct. 24–27	16.0	18.8	16.8	3 7/16	3 11/16	3 10/16	7.0	9.8	4.9	.977	.943
Nov. 7–14	19.8	21.9	18.3	3 13/16	3 14/16	3 10/16	7.0	8.6	6.8	.978	.947
Nov. 21–24	16.0	19.1	16.9	3 8/16	3 11/16	3 10/16	6.1	10.3	11.0	.957	.974
Dec. 5–8	16.9	22.2	18.7	3 11/16	3 14/16	3 7/16	7.3	10.1	8.2	.962	.955
Pollock, plot 10, Homestead:											
June 13–16	4.9	9.3	4.8	2 3/16	2 14/16	2 4/16	1.5	2.0	1.1	.995	.981
June 27–30	11.1	14.1	8.6	3 0/16	3 5/16	2 12/16	1.8	2.2	1.9	.956	.982
July 11–14	16.2	22.9	17.1	3 5/16	3 15/16	3 8/16	2.2	3.2	2.6	.943	.966
July 25–28	24.0	32.1	20.7	3 13/16	4 7/16	3 13/16	2.0	4.3	3.9	.946	.966
Aug. 8–11	29.2	35.8	30.7	4 3/16	4 8/16	4 5/16	2.8	5.2	3.9	.913	.962
Aug. 22–25	35.9	42.1	39.4	4 9/16	4 13/16	4 11/16	3.4	6.5	4.5	.914	.958
Sept. 6–8	42.9	46.9	41.1	4 14/16	5 4/16	4 11/16	4.3	8.1	6.2	.897	.954
Pollock, plot 11, Princeton:											
June 13–16	4.1	8.4	6.3	2 0/16	2 12/16	2 7/16	2.0	2.4	1.3	.988	.976
June 27–30	9.1	12.6	12.3	2 12/16	3 2/16	3 1/16	1.7	2.3	1.7	.966	.962
July 11–14	15.7	22.8	15.3	3 5/16	3 13/16	3 6/16	2.1	2.5	2.7	.941	.805
July 25–28	24.2	26.2	28.7	3 15/16	4 1/16	4 2/16	2.0	3.0	3.7	.944	.965
Aug. 8–11	25.3	33.9	33.7	4 0/16	4 7/16	4 7/16	3.0	5.2	3.9	.937	.962
Aug. 22–25	31.3	39.0	35.6	4 9/16	4 13/16	4 9/16	3.5	5.8	3.9	.943	.959
Sept. 6–8	34.0	50.4	43.6	4 9/16	5 0/16	4 15/16	4.2	5.4	4.9	.918	.957

TABLE 8.—*Seasonal changes in physical characteristics and chemical constituents of Florida avocados*—Continued

Variety, location, and picking date	Weight per fruit			Diameter per fruit			Oil content			Specific gravity	
	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	Whole fruit, 1958–59	Fruit flesh, 1959–60
Pollock, plot 12, Goulds:	*Ounces*	*Ounces*	*Ounces*	*Inches*	*Inches*	*Inches*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
June 13–16	4. 4	12. 2	9. 6	2 2/16	3 2/16	2 13/16	1. 5	2. 6	1. 6	0. 992	0. 969
June 27–30	13. 5	17. 9	11. 7	3 3/16	3 9/16	3 1/16	2. 0	2. 0	2. 0	. 959	. 969
July 11–14	18. 3	24. 3	16 5	3 8/16	3 15/16	3 7/16	2. 8	3. 0	2. 2	. 931	. 973
July 25–28	28. 8	32. 2	29. 1	4 3/16	4 5/16	4 2/16	2. 1	3. 1	4. 3	. 936	. 967
Aug. 8–11	32. 7	32. 7	32. 5	4 6/16	4 6/16	4 6/16	3. 9	3. 4	3. 6	. 911	. 965
Aug. 22–25	37. 7	.....	39. 6	4 7/16	.....	4 12/16	4. 7	.....	4. 3	. 888	.....
Taylor, plot 13, Homestead:											
Oct. 3–5	.....	9. 8	9. 8	.....	2 14/16	2 14/16	.....	5. 2	1. 8	.....	. 962
Oct. 17–21	11. 4	12. 7	10. 6	3 0/16	3 2/16	2 15/16	6. 2	8. 5	3. 1	. 975	. 949
Oct. 26–Nov. 3	12. 4	13. 3	10. 4	3 2/16	3 3/16	3 0/16	7. 7	8. 0	4. 7	. 986	. 958
Nov. 14–17	13. 4	13. 0	12. 5	3 3/16	3 3/16	3 2/16	8. 4	9. 6	4. 6	. 977	. 968
Nov. 23–Dec. 3	13. 4	12. 9	.....	3 3/16	3 3/16	.....	9. 1	10. 8	.....	. 968	. 976
Dec. 12–15	14. 3	14. 3	11. 7	3 4/16	3 4/16	3 0/16	8. 9	12. 4	7. 3	. 965	. 940
Dec. 27–29	14. 1	14. 3	11. 8	3 3/16	3 5/16	3 2/16	12. 2	12. 3	10. 7	. 967	. 959
Taylor, plot 14, Pahokee:											
Oct. 3–5	.....	11. 4	9. 0	.....	3 1/16	2 13/16	.....	6. 5	3. 4	.....	. 963
Oct. 17–21	9. 7	11. 2	10. 1	2 15/16	3 1/16	2 15/16	4. 0	5. 6	4. 4	. 968	. 953
Oct. 26–Nov. 3	11. 2	.....	9. 4	3 1/16	.....	2 13/16	5. 7	.....	4. 8	. 973	.....
Nov. 14–17	11. 3	11. 6	11. 0	3 1/16	3 1/16	3 1/16	6. 5	7. 7	7. 4	. 966	. 973
Nov. 23–Dec. 3	11. 3	12. 9	10. 0	3 1/16	3 3/16	2 15/16	7. 7	7. 8	7. 1	. 966	. 951
Dec. 12–15	11. 4	12. 2	11. 6	3 2/16	3 2/16	3 1/16	7. 1	8. 6	8. 1	. 968	. 961
Dec. 27–29	12. 1	12. 3	10. 3	3 3/16	3 2/16	3 1/16	10. 8	11. 7	9. 6	. 957	. 971

Taylor, plot 15, Lake Placid:											
Oct. 3–5	.....	8.8	8.8	.....	2 13/16	2 12/16	.....	4.9	4.7	.....	.944
Oct. 17–21	10.9	10.2	8.8	3 0/16	2 15/16	2 13/16	5.7	6.0	5.5	.964	.951
Oct. 26–Nov. 3	11.7	.....	8.6	3 1/16	.....	2 12/16	7.0	.....	7.5	.941	.....
Nov. 14–17	12.2	10.2	8.9	3 2/16	2 15/16	2 13/16	8.5	8.2	12.3	.932	.947
Nov. 23–Dec. 3	12.8	11.8	9.7	3 2/16	3 1/16	2 14/16	10.9	8.6	8.9	.922	.940
Dec. 12–15	7.2	10.9	9.7	2 10/16	3 0/16	2 15/16	11.3	11.2	10.5	.966	.959
Dec. 27–29	.....	11.1	8.9	.....	3 0/16	2 13/16	.....	12.4	13.7	.....	.964
Waldin, plot 16, Homestead:											
July 18–21	8.4	9.0	7.8	2 13/16	2 14/16	2 12/16	3.5	3.8	4.3	.987	.971
Aug. 1–4	10.9	12.2	8.8	3 2/16	3 4/16	2 14/16	4.5	5.0	4.5	.989	.977
Aug. 15–18	13.7	13.7	11.6	3 5/16	3 6/16	3 3/16	4.5	5.1	5.3	.984	.966
Aug. 29–Sept. 2	15.0	16.3	13.9	3 8/16	3 9/16	3 7/16	5.3	6.3	7.1	.982	.973
Sept. 12–15	18.7	17.4	13.8	3 14/16	3 10/16	3 7/16	5.5	6.9	7.3	.981	.952
Sept. 26–29	15.4	12.5	15.5	3 8/16	3 3/16	3 10/16	7.8	9.6	6.5	.936	.949
Oct. 10–13	18.4	16.5	10.1	3 13/16	3 10/16	3 1/16	8.1	12.2	7.4	.951	.979
Waldin, plot 17, Princeton:											
July 18–21	7.1	9.8	8.8	2 10/16	3 0/16	2 14/16	3.6	3.7	4.2	.980	.957
Aug. 1–4	11.7	15.4	12.2	3 0/16	3 8/16	3 3/16	5.2	4.8	4.3	.985	.970
Aug. 15–18	12.2	16.5	13.4	3 4/16	3 9/16	3 3/16	4.8	5.2	4.9	.987	.966
Aug. 29–Sept. 2	14.4	13.3	14.3	3 8/16	3 6/16	3 8/16	5.7	4.9	5.7	.984	.974
Sept. 12–15	14.8	15.8	15.9	3 8/16	3 9/16	3 10/16	5.9	6.5	6.5	.984	.955
Sept. 26–29	16.3	19.3	16.6	3 6/16	3 13/16	3 12/16	6.5	7.4	5.6	.956	.939
Oct. 10–13	14.6	22.7	11.6	3 8/16	4 1/16	3 5/16	9.1	11.2	7.4	.957	.965
Waldin, plot 18, Goulds:											
July 18–21	9.2	7.8	10.3	2 15/16	2 12/16	3 0/16	2.6	3.1	3.4	.982	.973
Aug. 1–4	11.9	13.0	12.4	3 2/16	3 5/16	3 3/16	3.9	3.9	4.5	.973	.971
Aug. 15–18	13.4	13.5	13.1	3 6/16	3 4/16	3 5/16	3.5	5.0	3.8	.981	.973
Aug. 29–Sept. 2	14.1	15.7	17.6	3 8/16	3 8/16	3 11/16	5.1	4.7	4.5	.980	.972
Sept. 12–15	12.4	19.7	17.0	3 5/16	3 14/16	3 10/16	3.5	6.1	5.0	.960	.953
Sept. 26–29	13.4	20.2	19.4	3 6/16	3 14/16	3 13/16	6.2	7.5	4.4	.958	.937
Oct. 10–13	15.6	22.7	23.5	3 8/16	4 1/16	4 1/16	8.2	8.1	4.9	.952	.969

TABLE 9.—*Seasonal changes in physical characteristics of Florida avocados softened at 70° F., by variety, location of test and picking dates, 1958–59 to 1960–61*

[Averages of approximately 3 fruits from each grove on each picking date]

Variety, location, and picking date	Weight per fruit			Diameter per fruit			Days to soften			Loss in weight			Palatability		
	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61
Booth 1, plot 1, Homestead:	*Ounces*	*Ounces*	*Ounces*	*Inches*	*Inches*	*Inches*	*Days*	*Days*	*Days*	*Percent*	*Percent*	*Percent*			
Oct. 18–20	18.2	21.3	17.9	3 13/16	4 1/16	3 12/16	8	5	8	6.9	8.1	11.4	60	74	61
Oct. 31–Nov. 3	18.2	22.5	20.7	3 14/16	4 1/16	4 3/16	8	9	6	7.7	9.4	10.2	67	72	78
Nov. 14–17	18.8	23.2	20.8	3 14/16	4 3/16	4 0/16	6	6	6	4.5	7.7	5.8	65	80	78
Nov. 28–Dec. 3	20.5	22.1	21.4	4 1/16	4 2/16	4 4/16	4	4	5	3.5	7.6	10.1	72	83	80
Dec. 13–15	16.7	.....	.....	3 13/16	.....	.....	5	.....	.....	4.0	.....	.....	73	.....	.....
Dec. 27–29	21.2	.....	.....	4 1/16	.....	.....	4	.....	.....	4.2	.....	.....	77	.....	.....
Jan. 9–12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Booth 1, plot 2, Princeton:															
Oct. 18–20	15.5	18.5	14.1	3 11/16	3 14/16	3 9/16	8	7	11	6.4	10.1	14.9	57	67	65
Oct. 31–Nov. 3	17.4	18.0	18.2	3 13/16	3 13/16	4 0/16	9	7	6	7.7	8.2	10.7	68	74	75
Nov. 14–17	19.5	19.8	22.5	3 15/16	3 15/16	4 6/16	6	8	6	5.7	7.4	4.5	67	76	80
Nov. 28–Dec. 3	18.4	19.6	18.2	3 15/16	3 15/16	3 15/16	5	9	6	3.9	11.9	9.3	77	73	85
Dec. 13–15	12.8	18.7	18.8	3 7/16	3 13/16	4 1/16	6	5	4	5.9	5.3	8.3	75	78	90
Dec. 27–29	14.9	21.8	25.5	3 11/16	4 2/16	4 8/16	4	7	3	4.4	8.4	5.3	78	82	95
Jan. 9–12	14.0	18.9	.....	3 9/16	4 0/16	.....	4	7	.....	3.2	8.0	.....	83	88	.....
Booth 1, plot 3, Perrine:															
Oct. 18–20	14.6	16.8	13.4	3 10/16	3 12/16	3 9/16	9	6	7	6.0	7.8	11.1	53	74	63
Oct. 31–Nov. 3	15.4	16.6	17.6	3 9/16	3 12/16	3 14/16	9	6	8	6.9	7.8	11.1	67	70	77
Nov. 14–17	17.7	20.0	17.7	3 13/16	3 14/16	3 11/16	6	6	8	4.5	6.6	6.7	65	72	80
Nov. 28–Dec. 3	17.1	22.1	20.9	3 11/16	4 3/16	4 0/16	5	7	7	4.1	10.0	9.1	72	77	85
Dec. 13–15	12.4	.....	11.7	3 6/16	.....	3 7/16	5	.....	5	5.1	.....	8.8	76	.....	90
Dec. 27–29	14.3	20.8	18.1	3 9/16	3 15/16	4 1/16	4	5	4	3.3	10.6	10.6	80	83	90
Jan. 9–12	15.4	.....	19.2	3 10/16	.....	4 2/16	6	.....	3	5.7	.....	6.8	84	.....	95

Booth 8, plot 4, Homestead:																
Aug. 22–25	12.1	13.3	10.1	3 2/16	3 3/16	3 0/16	8	8	7	7.4	6.8	5.6	52	73	67	
Sept. 6–8	9.4	9.8	12.7	2 15/16	3 14/16	3 5/16	6	7	7	6.2	10.5	9.7	70	70	69	
Sept. 19–22	12.5	12.6	10.3	3 3/16	3 3/16	3 1/16	7	6	8	7.1	5.4	8.9	72	68	75	
Oct. 3–7	10.1	12.4	12.7	3 0/16	3 1/16	3 5/16	7	4	5	4.8	4.3	9.0	73	70	76	
Oct. 18–20	11.8	14.5	14.3	3 3/16	3 5/16	3 7/16	7	4	5	3.9	5.4	8.4	73	79	80	
Oct. 31–Nov. 3	10.6	10.7	16.3	3 2/16	2 15/16	3 10/16	7	6	5	6.2	5.5	7.0	78	74	83	
Nov. 14–17	5.2	13.7	14.4	2 7/16	3 5/16	3 5/16	6	7	6	3.5	6.7	4.4	77	82	95	
Booth 8, plot 5, Homestead:																
Aug. 22–25	7.3	13.7	9.5	2 10/16	3 4/16	2 15/16	7	8	9	5.9	6.7	10.5	55	72	63	
Sept. 6–8	11.1	17.1	13.3	3 1/16	3 8/16	3 4/16	7	7	11	6.8	11.4	12.5	71	65	69	
Sept. 19–22	11.7	18.8	9.1	2 12/16	3 10/16	2 15/16	8	7	7	8.3	9.7	9.0	71	72	75	
Oct. 3–7	13.0	14.9	11.2	3 5/16	3 5/16	3 2/16	6	6	8	4.4	7.8	12.8	73	73	77	
Oct. 18–20	8.5	16.1	9.6	2 15/16	3 8/16	3 4/16	7	4	6	5.1	6.1	7.8	69	79	80	
Oct. 31–Nov. 3	10.0	21.0	13.6	2 15/16	3 13/16	3 6/16	5	6	6	7.4	7.2	6.8	80	71	83	
Nov. 14–17	14.2	17.7	12.1	3 6/16	3 9/16	3 3/16	6	5	6	3.1	4.5	4.7	78	70	92	
Booth 8, plot 6, Princeton:																
Aug. 22–25	8.4	10.8	10.6	2 12/16	3 0/16	3 0/16	9	8	8	6.3	5.4	7.3	50	77	67	
Sept. 6–8	7.0	13.4	11.4	2 11/16	3 4/16	3 2/16	7	7	7	6.0	10.4	8.6	68	66	71	
Sept. 19–22	8.2	13.1	12.1	3 4/16	3 3/16	3 3/16	7	7	9	5.9	8.4	9.3	69	70	77	
Oct. 3–7	9.6	11.8	9.5	2 15/16	3 1/16	2 15/16	7	6	8	2.3	8.5	12.1	78	75	75	
Oct. 18–20	9.8	13.0	13.8	3 1/16	3 2/16	3 5/16	7	4	7	4.2	5.4	9.2	68	78	80	
Oct. 31–Nov. 3	7.0	13.0	11.9	2 11/16	3 2/16	3 0/16	7	6	6	7.4	6.4	8.1	77	73	81	
Nov. 14–17	8.3	9.8	9.2	2 12/16	2 14/16	2 14/16	5	6	6	4.4	7.8	4.4	80	80	90	
Lula, plot 7, Homestead:																
Sept. 12–16	11.3	19.4	13.2	3 3/16	3 12/16	3 4/16	8	7	6	7.8	11.4	13.0	65	77	66	
Sept. 26–29	12.5	15.9	13.3	3 3/16	3 9/16	3 4/16	7	6	5	8.5	10.3	13.8	72	80	77	
Oct. 10–13	14.2	15.6	13.7	3 5/16	3 7/16	3 7/16	6	6	6	6.0	10.0	10.7	70	82	78	
Oct. 24–27	16.8	16.0	.....	3 9/16	3 9/16	.....	6	6	.....	5.5	9.2	.....	78	85	.....	
Nov. 7–14	14.2	17.4	15.0	3 7/16	3 10/16	3 7/16	5	6	6	5.8	9.9	10.0	80	85	85	
Nov. 21–24	12.8	16.9	13.6	3 5/16	3 10/16	3 5/16	6	5	7	5.1	7.5	15.5	80	88	85	
Dec. 5–8	15.8	18.5	14.7	3 8/16	3 10/16	3 6/16	6	6	4	5.6	8.7	10.2	85	88	90	
Lula, plot 8, Florida City:																
Sept. 12–16	11.9	16.5	15.1	3 1/16	3 7/16	3 6/16	8	7	7	6.3	11.2	9.9	63	75	66	
Sept. 26–29	15.2	17.4	13.0	3 7/16	3 10/16	3 3/16	7	5	6	7.7	7.7	10.6	65	77	78	
Oct. 10–13	14.4	17.0	17.1	3 6/16	3 8/16	3 11/16	6	6	7	5.1	7.7	11.4	67	80	78	
Oct. 24–27	15.3	16.1	15.4	3 7/16	3 8/16	3 7/16	6	6	6	3.6	10.2	13.6	78	85	79	
Nov. 7–14	16.3	17.5	18.2	3 10/16	3 10/16	3 11/16	5	8	6	6.1	12.8	11.2	79	83	86	
Nov. 21–24	13.7	17.2	19.9	3 4/16	3 9/16	3 9/16	7	6	5	4.1	9.8	10.9	83	85	90	
Dec. 5–8	16.4	17.1	17.6	3 8/16	3 9/16	3 9/16	6	6	5	4.1	9.3	7.4	83	87	92	

Pollock, plot 12, Goulds:																
June 13–16	4.4	13.7	12.4	2 2/16	3 4/16	3 1/16	.....	6	9	.....	7.2	13.2	50	50	50	
June 27–30	13.5	17.6	17.8	3 3/16	3 8/16	3 7/16	6	6	8	8.0	7.2	11.1	56	65	50	
July 11–14	19.8	29.0	20.0	3 10/16	4 3/16	3 11/16	6	5	7	.....	5.2	10.3	70	75	67	
July 25–28	27.8	37.8	33.2	4 1/16	4 8/16	4 5/16	5	4	5	8.2	4.3	7.4	75	83	77	
Aug. 8–11	35.8	35.5	38.3	4 9/16	4 11/16	4 11/16	3	4	5	3.9	5.5	7.4	75	82	86	
Aug. 22–25	12.0	.....	42.1	2 15/16	.....	4 14/16	4	. .	5	3.3	.....	4.8	90	.....	90	
Sept. 6–8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Taylor, plot 13, Homestead:																
Oct. 3–5	.....	11.3	11.5	.....	3 0/16	3 0/16	.....	5	4	.....	8.4	10.9	.....	65	70	
Oct. 17–21	11.7	12.8	8.0	3 1/16	3 3/16	2 12/16	7	5	6	4.6	9.2	10.0	73	72	73	
Oct. 26–Nov. 3	13.4	12.0	11.6	3 3/16	3 1/16	3 1/16	7	6	6	8.1	8.2	11.2	79	79	73	
Nov. 14–17	12.7	12.9	14.5	3 2/16	3 3/16	3 2/16	5	6	3	5.2	7.8	6.2	82	80	80	
Nov. 23–Dec. 3	13.1	13.1	.....	3 3/16	3 3/16	.....	5	6	.....	7.6	11.3	.....	80	80	.....	
Dec. 12–15	11.9	13.7	10.2	3 1/16	3 4/16	2 14/16	5	4	4	8.1	3.9	9.4	80	85	90	
Dec. 27–29	14.2	15.3	12.6	3 3/16	3 6/16	3 2/16	4	7	3	3.4	9.7	7.5	85	88	90	
Taylor, plot 14, Pahokee:																
Oct. 3–5	.....	12.9	9.2	.....	3 3/16	2 13/16	.....	6	5	.....	8.0	13.0	.....	67	70	
Oct. 17–21	9.7	12.6	11.6	2 14/16	3 3/16	3 1/16	7	6	7	4.7	9.7	11.8	70	73	77	
Oct. 26–Nov. 3	10.9	.....	11.3	3 1/16	.....	3 1/16	6	.....	6	7.6	.....	8.7	72	.....	82	
Nov. 14–17	11.1	12.4	11.0	3 1/16	3 2/16	2 15/16	5	7	6	5.7	6.9	7.1	78	78	87	
Nov. 23–Dec. 3	11.3	12.7	10.1	3 2/16	3 2/16	2 14/16	4	5	5	5.0	7.1	6.0	79	80	88	
Dec. 12–15	11.3	11.8	12.5	3 2/16	3 2/16	3 3/16	5	6	4	4.3	5.9	10.1	82	81	90	
Dec. 27–29	12.3	11.9	10.5	3 2/16	3 1/16	3 0/16	6	6	4	5.3	10.6	7.8	84	87	92	
Taylor, plot 15, Lake Placid:																
Oct. 3–5	.....	10.7	6.9	.....	3 0/16	2 8/16	.....	7	5	.....	9.7	13.1	.....	65	65	
Oct. 17–21	11.7	11.4	10.1	3 1/16	3 1/16	3 0/16	7	7	6	5.4	9.5	11.4	75	73	75	
Oct. 26–Nov. 3	13.2	.....	8.3	3 2/16	.....	2 11/16	6	.....	5	6.1	.....	9.1	77	.....	80	
Nov. 14–17	11.8	11.6	9.5	3 1/16	3 0/16	2 15/16	5	7	5	6.3	10.0	7.4	80	77	90	
Nov. 23–Dec. 3	10.3	11.5	7.8	2 15/16	3 1/16	2 10/16	4	7	4	5.0	6.1	7.7	80	77	90	
Dec. 12–15	.....	11.2	8.4	.....	3 1/16	2 11/16	.....	5	3	.....	5.7	8.4	.....	80	90	
Dec. 27–29	.....	11.7	10.5	.....	3 2/16	2 5/16	.....	8	3	.....	7.9	6.2	.....	83	95	
Waldin, plot 16, Homestead:																
July 18–21	7.3	11.4	8.5	2 11/16	3 2/16	2 13/16	10	10	10	8.1	10.8	16.1	50	59	50	
Aug. 1–4	11.3	13.9	9.6	3 2/16	3 6/16	2 15/16	8	7	9	8.8	8.0	15.1	58	59	59	
Aug. 15–18	15.8	17.3	11.5	3 8/16	3 10/16	3 2/16	6	9	9	5.8	8.0	13.5	70	70	68	
Aug. 29–Sept. 2	16.2	15.6	14.0	3 11/16	3 8/16	3 8/16	7	7	10	6.8	10.7	14.2	70	72	68	
Sept. 12–15	20.4	19.4	14.3	4 0/16	3 13/16	3 7/16	7	6	6	6.7	10.1	7.7	77	77	73	
Sept. 26–29	14.9	14.1	16.3	3 8/16	3 7/16	3 10/16	5	6	6	5.5	8.9	10.4	83	85	88	
Oct. 10–13	17.4	12.0	15.3	3 11/16	3 5/16	3 10/16	4	6	6	2.6	9.2	9.9	85	82	92	

TABLE 9.—*Seasonal changes in pyhsical characteristics of Florida avocados*—Continued

Variety, location, and picking date	Weight per fruit			Diameter per fruit			Days to soften			Loss in weight			Palatability		
	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61	1958–59	1959–60	1960–61
Waldin, plot 17, Princeton:	*Ounces*	*Ounces*	*Ounces*	*Inches*	*Inches*	*Inches*	*Days*	*Days*	*Days*	*Percent*	*Percent*	*Percent*			
July 18–21	5.3	11.6	9.3	2 6/16	3 3/16	3 0/16	10	10	9	14.0	9.5	15.9	50	62	50
Aug. 1–4	10.5	16.7	13.0	3 0/16	3 10/16	3 5/16	8	6	8	10.7	7.6	13.6	62	59	63
Aug. 15–18	14.0	16.4	13.3	3 5/16	3 9/16	3 5/16	8	8	9	8.0	7.2	12.6	70	70	68
Aug. 29–Sept. 2	11.6	17.6	14.9	3 3/16	3 10/16	3 8/16	7	8	9	7.6	9.7	14.5	73	70	69
Sept. 12–15	18.7	18.7	13.2	3 14/16	3 12/16	3 10/16	7	6	7	5.6	9.5	10.3	77	81	78
Sept. 26–29	20.5	14.6	19.2	4 0/16	3 7/16	3 14/16	7	5	5	8.5	7.2	8.0	80	83	80
Oct. 10–13	11.5	17.8	9.5	3 3/16	3 10/16	3 7/16	4	5	6	5.7	7.8	11.8	85	84	81
Waldin, plot 18, Goulds:															
July 18–21	7.5	9.6	10.2	2 13/16	2 15/16	3 0/16	10	10	8	10.0	11.6	14.9	50	57	50
Aug. 1–4	12.7	14.5	14.2	3 3/16	3 6/16	3 6/16	6	6	9	5.3	8.5	13.0	65	60	63
Aug. 15–18	15.1	13.2	14.8	3 8/16	3 4/16	3 8/16	7	9	7	6.1	9.4	10.0	67	71	68
Aug. 29–Sept. 2	16.0	12.5	18.1	3 11/16	3 3/16	3 10/16	6	6	7	6.0	9.3	11.3	68	72	72
Sept. 12–15	14.0	21.3	17.5	3 6/16	3 15/16	3 11/16	7	7	6	6.2	10.7	7.8	75	79	75
Sept. 26–29	14.1	23.4	19.4	3 6/16	4 2/16	3 14/16	5	5	4	7.2	6.0	7.7	80	87	82
Oct. 10–13	16.6	21.2	22.5	3 10/16	3 14/16	4 2/16	4	4	7	.....	6.4	9.6	85	84	95

TABLE 10.—*Average fruit weight, number of days required to soften at 70° F., and percentage loss in weight during softening, 1959–60* [1]

Variety	Picking [2] period	Fruit weight	Days to soften	Loss in weight
		Ounces		*Percent*
Arue	May 25	18	5	13
Fuchs	June 15	14	3	6
	July 20	19	4	6
Simmonds	July 27	23	7	7
	Aug. 28	27	4	6
Hardee	July 20	18	6	9
Nadir	July 27	22	4	4
	Aug. 24	19	4	4
Trapp	Aug. 17	18	6	12
	Sept. 14	19	4	12
Petersen	Aug. 24	15	5	6
	Sept. 21	14	5	7
Pinelli [3]	Sept. 1	26	5	12
Tonnage	Aug. 31	16	6	14
	Sept. 21	15	6	9
Black Prince [3]	Oct. 3	28	6	9
	Oct. 24	25	6	6
Blair	Oct. 5	12	6	6
	Oct. 26	26	4	4
Booth 10	Oct. 12	18	5	9
	Oct. 26	17	7	10
Collinson	Oct. 5	17	6	11
	Nov. 4	20	7	9
Booth 5	Oct. 12	15	7	8
	Nov. 3	16	6	8
Hickson	Oct. 12	11	6	5
	Nov. 3	16	5	4
Simpson	Oct. 12	20	6	12
	Nov. 3	23	6	10
Vaca	Oct. 12	21	6	9
	Nov. 3	27	5	9
Booth 7	Oct. 5	19	6	8
	Oct. 26	24	6	8
Avon	Oct. 19	14	4	6
	Nov. 9	17	6	7
Hall	Oct. 26	44	7	10
	Nov. 23	38	5	5
Winslowson	Oct. 19	26	4	9
	Nov. 9	28	7	11
Choquette	Oct. 26	36	6	7
	Nov. 23	47	5	4
Herman	Nov. 3	26	9	9
	Nov. 23	21	5	8
Monroe [3]	Oct. 22	30	11	11
	Nov. 19	35	9	13
Ajax (Booth 7B)	Oct. 5	22	5	8
	Nov. 23	24	6	6
Booth 3	Nov. 3	18	7	12
	Nov. 24	23	4	7
Byars [3]	Nov. 23	29	9	16
Linda	Nov. 23	29	6	6
	Dec. 14	35	7	11
Nabal	Nov. 24	13	7	9
	Dec. 14	15	6	6
Wagner	Dec. 14	13	5	6
	Jan. 4	13	6	7
Schmidt	Jan. 25	23	9	13
Itzamna	Feb. 23	17	10	18

[1] Each average represented a minimum of 10 fruits.

[2] First picking dates coincided approximately with minimum acceptability dates during the crop year.

[3] Samples picked during the 1960–61 season.

TABLE 11.—*Surface area, volume and weight loss per square inch of epidermal area for avocados softened at 70° F., during the maturation period, 1960–61* [1]

Variety	Picking date	Average diameter	Average volume	Average surface area	Volume-area	Average softening time	Weight loss		
		Inches	*Cubic inch*	*Square inch*	*Ratio*	*Days*	*Percent*	*Ounce*	*Ounce/square inch area*
Pollock	June 13	2 10/16	9.5	21.7	1:2.3	9	18.4	1.4	0.065
	27	3 3/16	17.0	31.9	1:1.9	9	14.6	1.9	.060
	July 11	3 10/16	25.0	41.3	1:1.7	8	13.0	2.4	.058
	25	4 2/16	36.8	53.5	1:1.5	6	9.0	2.5	.047
	Aug. 8	4 9/16	49.7	65.4	1:1.3	6	7.6	2.7	.041
Waldin	July 18	2 15/16	13.3	27.1	1:2.0	9	15.8	1.5	.055
	Aug. 1	3 4/16	18.0	33.2	1:1.8	9	14.1	1.6	.048
	15	3 3/16	17.0	31.9	1:1.9	8	12.1	1.6	.050
	29	3 9/16	23.7	39.9	1:1.7	8	13.4	2.1	.053
	Sep. 12	3 9/16	23.7	39.9	1:1.7	6	8.5	1.3	.033
	13								
	26	3 11/16	26.3	42.7	1:1.6	5	8.7	1.6	.037
	Oct. 10	3 10/16	25.0	41.3	1:1.7	6	10.8	1.7	.041
Pooth 8	Aug. 22	2 15/16	13.3	27.1	1:2.0	8	7.7	.8	.030
	Sep. 6	3 4/16	18.0	33.2	1:1.8	8	10.2	1.3	.039
	19	3 1/16	15.0	29.5	1:2.0	8	9.1	1.1	.037
	Oct. 3	3 2/16	16.0	30.1	1:1.9	7	11.4	1.2	.040
	18	3 4/16	18.0	33.2	1:1.8	6	8.4	1.1	.033
	31	3 5/16	19.0	34.5	1:1.8	6	7.4	1.1	.032
	Nov. 14	3 3/16	17.0	31.9	1:1.9	6	4.7	.6	.019
Lula	Sep. 12	3 5/16	19.0	34.5	1:1.8	6	11.4	1.6	.046
	26	3 6/16	20.2	35.8	1:1.8	6	10.7	1.5	.042
	Oct. 10	3 9/16	23.7	39.9	1:1.7	6	11.4	1.8	.045
	24	3 9/16	23.7	39.9	1:1.7	6	12.7	2.0	.050
	Nov. 7	3 9/16	23.7	39.9	1:1.7	6	10.6	1.7	.043

[1] Data is based on a minimum of 9 fruits; volume and area data were computed on the basis of a sphere.

TABLE 12.—*Changes in seedcoat color and lenticel corking in Booth 8 and cados during the maturation period, 1961* [1]

Grove [2]	Picking date	Average weight	Fruit with brown seed-coat	Fruit with lenticel corking				
				Trace	Slight	Mod-erate	Heavy	Total
		Ounces	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*
A	July 10	7.0	0	0	0	0	0	0
A	17	6.1	0	0	0	0	0	0
A	24	6.8	0	0	0	0	0	0
A	31	7.8	1	0	0	0	0	0
A	Aug. 7	7.0	0	0	2	0	0	2
A	14	8.7	1	3	3	0	0	6
B	14	10.8	2	6	5	0	0	11
A	21	11.2	0	7	0	0	0	7
B	21	13.1	0	4	1	0	0	5
A	28	15.8	1	4	4	6	0	14
B	28	16.8	0	5	2	4	3	14
A	Sept. 5	15.5	0	5	4	2	0	11
B	5	19.0	0	5	4	2	0	11
A	[3] 11	16.8	4	6	7	0	0	13
B	11	17.5	1	7	7	1	0	15
A	18	15.4	0	2	8	3	0	13
B	18	14.0	0	6	3	2	3	14
A	25	14.7	3	8	3	0	0	11
B	25	15.0	1	6	8	0	0	14
A	Oct. 2	17.6	3	1	9	4	0	14
B	2	16.1	1	5	4	1	1	11
A	9	10.5	8	6	0	0	0	6
B	9	14.4	0	6	5	4	0	15
A	16	16.0	1	5	7	1	0	13
B	16	17.9	0	1	8	3	3	15
A	23	13.2	4	6	0	0	0	6
B	23	14.9	1	4	2	5	1	12
A	30	12.0	4	3	2	0	0	5
B	30	14.5	2	5	4	4	1	14
A	Nov. 6	12.4	4	7	3	1	0	11
B	6	15.3	0	4	4	5	2	15
A	13	14.0	5	5	6	0	0	11
B	13	13.5	2	7	4	4	0	15

[1] Observations included 15 avocados per grove at each picking date.
[2] Grove A, Princeton, Fla.; Grove B, Naranja, Fla.

TABLE 13.—*Average firmness and weight of small and large avocados during the maturation period, 1955*

Variety and picking date	Small		Large	
	Weight [1]	Firmness [1]	Weight [1]	Firmness [1]
	Ounces	*Pounds*	*Ounces*	*Pounds*
Fuchs:				
June 27 [2]	10.2	13.1	14.3	13.4
July 5	10.6	13.6	15.2	14.0
11	11.3	13.6	15.4	15.1
18	11.7	14.6	16.8	14.3
Pollock:				
June 27	13.6	13.6	16.7	13.1
July 5	12.0	13.2	17.6	13.3
11	11.8	13.0	22.4	12.6
18 [2]	11.6	13.7	22.7	13.2
Simmonds:				
June 27	14.0	13.4	17.3	12.9
July 5	11.5	13.4	16.6	13.2
11	12.9	12.4	18.1	13.7
18 [2]	12.3	13.9	19.8	14.0
25	13.8	14.1	19.2	13.9
Aug. 1	13.3	14.4	17.8	13.9
Petersen:				
July 25	9.0	15.3	13.8	15.6
Aug. 1	8.5	13.2	13.6	12.9
8	10.0	14.0	12.8	14.8
15 [2]	9.5	13.8	12.4	14.7
Trapp:				
Aug. 1	12.3	12.7	14.1	12.3
8	12.7	13.1	14.3	13.0
15 [2]	12.3	13.7	14.3	13.2
Waldin:				
Aug. 1	14.2	14.9	16.4	16.9
8	14.2	15.7	17.1	15.4
15 [2]	13.4	15.3	17.1	15.5
22	13.6	16.1	16.8	15.3
30	14.3	16.9	17.3	17.0
Sep. 6	13.0	17.8	17.9	17.6
Pinelli:				
Aug. 1	13.9	13.2	18.8	12.8
8	15.3	13.9	19.5	12.8
15 [2]	15.0	13.4	20.2	13.3
Booth 8:				
Aug. 29	11.6	16.0	14.5	16.1
Sept. 6	11.2	17.3	16.7	18.1
12	11.1	17.6	15.4	17.5
19	10.3	19.2	16.9	17.7
26 [2]	11.7	18.9	15.2	19.1
Oct. 3	10.3	19.4	16.1	19.7
Booth 7:				
Sept. 19	11.0	17.6	17.7	19.3
26	12.9	18.9	16.8	20.9
Oct. 3	13.0	19.6	17.3	20.2
10	11.6	19.9	16.9	20.6
17 [2]	13.3	20.3	17.8	20.9
24	13.6	20.4	17.9	20.8
Lula:				
Sept. 26	14.3	17.0	16.4	17.7
Oct. 3	14.0	17.3	16.8	17.9
10	14.2	17.7	16.6	18.0
17	13.2	17.9	18.0	18.1
25 [2]	14.1	18.2	17.2	19.1
Nov. 3	12.7	18.4	17.9	17.9

TABLE 13.—*Average firmness and weight of small and large avocados during the maturation period, 1955*—Continued

Variety and picking date	Small		Large	
	Weight [1]	Firmness [1]	Weight [1]	Firmness [1]
	Ounces	*Pounds*	*Ounces*	*Pounds*
Hickson:				
Sept. 26	11.3	16.4	16.1	16.3
Oct. 3	10.7	17.9	16.9	17.3
10 [2]	10.5	19.3	14.5	18.5
17	8.6	18.8	15.5	18.3
24	11.2	17.9	17.5	18.3
31	11.9	19.3	15.3	19.5
Monroe:				
Oct. 10	21.6	15.8	28.1	15.9
17	21.0	15.5	26.0	15.7
24 [2]	19.9	16.1	27.3	16.0
31	20.4	16.1	25.3	16.3
Nov. 7	20.4	16.8	25.6	16.7
14	20.3	16.6	27.5	16.1
Taylor:				
Nov. 1 [2]	10.0	15.2	11.8	14.9
8	10.4	14.8	12.1	14.4
15	9.8	15.1	12.1	15.1
22	10.2	14.7	12.4	14.0
28	9.9	13.8	12.2	14.0
Dec. 5	9.7	14.9	12.1	15.1
Booth 1:				
Nov. 7 [2]	11.7	16.4	17.9	16.0
14	13.1	16.1	17.4	16.0
21	12.1	16.4	17.4	16.3
29	11.7	16.0	19.4	16.2
Dec. 6	12.3	16.9	18.6	17.0

[1] Average fruit weight was computed from measurements of 15 individual avocados; average firmness was computed from 30 firmness readings, 2 per avocado on 15 firm avocados.
[2] Approximate date of minimum standard consumer acceptability.

TABLE 14.—*Total soluble solids, phenolic compounds, and reducing sugars of some small and large Florida avocados during the maturation period, 1955–56* [1]

Variety and picking date	Total soluble solids		Pherolic compounds		Reducing sugars	
	Small	Large	Small	Large	Small	Large
	Percent	*Percent*	*Mg/100 g*	*Mg/100 g*	*Percent*	*Percent*
Fuchs:						
June 27 [2]	6.9	6.9	5.7	5.7	3.5	3.3
July 5	7.3	7.3	4.8	5.2	3.4	3.5
11	7.1	6.9	5.2	5.0	3.5	3.2
18	7.4	6.9	5.2	5.5	3.3	3.1
Pollock:						
June 27	7.4	7.4	3.3	1.5	4.4	4.8
July 5	7.9	7.9	3.0	3.0	5.0	5.3
11	7.4	7.4	3.8	2.3	4.8	4.4
18 [2]	7.8	7.8	2.5	2.8	4.6	4.6
Simmonds:						
June 27	8.0	8.9	5.9	5.5	4.5	4.8
July 5	8.4	7.8	5.9	5.6	4.8	3.9
11	7.5	8.1	5.9	5.5	4.2	4.4
18 [2]	8.7	8.2	6.2	5.6	4.5	4.4
25	8.2	8.3	5.9	5.6	4.2	4.4
Aug. 1	10.1	9.2	5.9	5.0	4.5	4.2
Petersen:						
July 25	9.4	9.4	5.5	5.3	3.5	3.3
Aug. 1	8.9	9.5	5.3	5.0	3.4	3.7
8	8.9	8.9	4.5	5.3	3.2	3.0
15 [2]	8.3	8.5	5.5	5.3	3.4	3.4
Trapp:						
Aug. 1	8.9	8.9	5.5	4.0	3.8	3.6
8	8.3	8.3	5.2	5.0	3.9	3.9
15 [2]	9.4	9.0	5.5	4.0	4.0	4.0
Waldin:						
Aug. 1	9.3	9.4	4.7	4.5	3.5	3.3
8	9.0	8.9	5.8	5.3	3.5	3.4
15 [2]	9.2	9.2	5.7	5.8	3.7	3.7
22	9.1	9.9	4.5	4.7	3.9	4.0
30	9.7	9.7	5.7	4.5	4.2	3.3
Sept. 6	9.7	9.8	4.5	4.5	3.3	3.8
Pinelli:						
Aug. 1	8.9	8.9	5.8	5.8	3.9	3.4
8	8.2	8.9	6.5	6.7	3.7	3.7
15 [2]	8.3	8.7	7.6	7.3	3.8	4.0
Booth 8:						
Aug. 29	8.3	8.3	8.5	7.7	3.2	3.4
Sept. 6	8.0	8.4	5.0	4.5	2.7	1.5
12	7.9	8.2	6.3	5.8	2.8	3.2
19	7.7	8.4	7.3	6.5	3.0	2.9
26 [2]	8.2	8.4	8.7	8.7	2.8	2.9
Oct. 3	8.1	8.6	8.5	7.0	2.8	3.1
Booth 7:						
Sept. 19	8.9	9.7	8.3	7.3	3.3	2.7
26	9.0	9.5	7.8	7.8	3.1	2.7
Oct. 3	9.6	10.9	7.7	7.0	2.5	2.7
10	10.2	11.2	7.3	7.3	2.3	2.4
17 [2]	.....	.....	7.3	7.3	2.4	2.9
24	11.5	12.1	8.3	7.3	2.5	2.8

TABLE 14.—*Total soluble solids, phenolic compounds, and reducing sugars of some small and large Florida avocados during the maturation period, 1955–56* [1]—Continued

Variety and picking date	Total soluble solids		Phenolic compounds		Reducing sugars	
	Small	Large	Small	Large	Small	Large
	Percent	*Percent*	*Mg/100 g.*	*Mg/100 g.*	*Percent*	*Percent*
Lula:						
Sept. 26	9.5	9.9	6.3	6.5	4.1	4.4
Oct. 3	9.7	9.9	7.7	7.0	4.1	4.4
10	9.9	9.9	7.0	7.0	4.5	4.5
17	10.9	10.9	7.8	7.3	5.0	4.8
25 [2]	9.9	10.2	7.0	7.0	4.8	4.5
Nov. 3	8.2	8.7	7.7	8.5	5.0	4.4
Hickson:						
Sept. 26	8.8	8.8	9.9	9.1	.....	3.6
Oct. 3	8.5	8.5	8.3	8.5	3.1	3.0
10 [2]	9.0	8.9	8.7	9.9	3.2	3.9
17	9.0	8.9	9.3	9.1	2.6	2.9
24	8.8	8.8	10.7	9.6	3.2	3.0
31	7.8	7.8	9.1	7.8	3.3	3.6
Monroe:						
Oct. 10	9.2	9.2	.....	.....	.....	.....
17	9.4	9.4	.....	.....	.....	.....
24 [2]	9.6	9.5	.....	.....	.....	.....
31	8.0	7.9	.....	.....	.....	.....
Nov. 7	8.2	8.9	.....	.....	.....	.....
14	8.9	8.8	.....	.....	.....	.....
Taylor:						
Nov. 1 [2]	8.4	8.3	10.3	9.9	4.8	5.0
8	8.1	7.9	11.6	13.1	4.8	4.8
15	8.3	8.3	16.0	13.3	4.8	5.1
22	8.4	8.4	9.3	17.0	5.3	5.1
28	9.0	8.8	13.1	14.6	5.3	4.5
Dec. 5	8.0	7.9	15.0	13.6	4.8	4.5
Booth 1:						
Oct. 31	7.8	7.6	6.5	.....	3.1	.....
Nov. 7 [2]	8.8	8.2	8.3	7.7	4.1	3.2
14	8.1	8.4	7.3	7.0	3.5	3.3
21	8.1	7.9	8.3	7.0	4.1	3.4
29	8.4	8.7	8.3	7.0	3.8	2.8
Dec. 6	7.8	7.8	7.7	8.3	3.4	2.8

[1] Analyses were made from a blend of 15 firm avocados. Phenolic compounds are expressed as anhydrous tannic acid; reducing sugars are expressed as glucose.

[2] Approximate date of minimum standard consumer acceptability.