

## AVOCADO PERFORMANCE RECORDS

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Mr. Chairman, and members of the California Avocado Association. I am intensely interested in the avocado industry, and I believe there is a future for this fruit, provided its culture and development is restricted to safe and sane channels. In this connection I know of no other one factor which is bound to play as important a part in the development of this industry as the securing of individual tree performance records.

The success of the California citrus industry has been due to the fact that early in its development a few varieties were found suited to conditions here. The standard citrus varieties in this state can be counted on the fingers of one hand, the Washington Navel and Valencia oranges, the Eureka and Lisbon lemons, and the Marsh grapefruit. These varieties have distinct characteristics and are easily recognized by the trade.

However, even within the standard citrus varieties a wide variation has been found. Mr. A. D. Shamel, of the Office of Horticultural and Pomological Investigations of the United States Department of Agriculture, in 1909 began an investigation of the improvement of citrus fruits through bud selection which has shown that even the standard citrus varieties are made up of a number of strains, some worthy of propagation, others not. It is not necessary for me at this time to review the progress of this work, because you are all familiar with the details and many of you in your citrus orchards, are securing commercial records of the output from your individual trees. I have referred to citrus conditions simply to show what has been accomplished with these fruits and that the work already done in stabilizing and standardizing our citrus fruit products may be of assistance to us in working out similar methods for our rapidly developing avocado industry.

In Florida one standard fall avocado of the thin-skinned leathery class, the Trapp, has been secured. It is true, it is claimed by many, that the Trapp is lacking in quality but the fact remains that this variety is known to the northern markets. Because it is already established, this variety is going to represent the large bulk of the Florida plantings for many years to come. During the summer months an entirely different condition prevails. No variety as yet has been developed or planted in sufficient numbers to be known as a standard Florida summer variety. The result is that the northern and eastern markets receive shipments from Florida and the West Indies of seedling avocados and mixed crates of seedlings and budded fruits of exceedingly variable quality. Unfortunately the consumer has no means of determining which of the two avocados lying side by side in a basket is a good quality fruit and which a poor. This accounts in part for the fact that avocados in our northern and eastern markets during the summer months, even at this stage in the development of the industry, sell at the low figure of ten cents a fruit.

Even within the Trapp variety we find a similar variation to that existing in our citrus varieties. I have found at least five distinct strains in this variety, which are characterized by differences in production, differences in foliage, and differences in the flower arrangements. Correlated with these differences are distinct variations in the shape of the fruit, some being pyriform, others oval, and others distinctly oblate.

The accompanying chart (table 1) shows the wide range of variation in production which exists in a young planting of Trapps in which we are securing detailed individual tree records.

TABLE 1.—MEDORA SOUTH, 1913 TRAPP AVOCADOS.  
1915 CROP NOTES (Number of fruit matured).

Counting rows from east side and trees from north ends of rowe.

Rows	1	2	3	4	5	6	7	8	9	10	11	12	13
Tree 1	13	11	13	23	10	19	13	4	2	0	13	8	0
Tree 2	6	5	0	8	11	3	10	5	5	12	8	11	1
Tree 3	1	6	15	vacant	0	0	0	12	0	3	6	2	1
Tree 4	1	2	10	1	1	10	11	6	2	4	6	3	1
Tree 5	8	1	1	1	6	2	11	5	0	5	10	7	4
Tree 6	4	8	4	11	2	4	6	10	5	5	5	4	1
Tree 7	1	7	4	9	3	6	9	0	1	6	0	9	3
Tree 8	0	3	12	8	9	0	8	0	1	6	2	15	13
Tree 9	0	5	1	12	8	4	13	0	7	1	11	1	9
Tree 10	18	7	11	7	7	9	1	4	16	3	1	10	3
Tree 11	5	4	4	0	3	5	0	12	3	10	0	14	8

Fruit was picked from this planting as follows:

- Oct. 1—8 crates No. 1.
- Oct. 2—2 crates No. 2.
- Oct. 29—6 crates No. 1.
- Oct. 29—3 crates No. 2.

A considerable number of fruit, aggregating probably 3 or 4 crates, dropped after maturing. These are included in the list for each tree, but are not included in the quantity picked.

In this same orchard this year we have found that the high producing trees in 1915 are also the high producing ones this year, while many of the zero trees are also repeating.

Turning for a few minutes from avocados to citrus, you are all familiar with the action which has been taken by the California Grapefruit Club, an auxiliary of the California Fruit Growers Exchange. Repeated trials of different grapefruit varieties in this state have shown that only one variety, the Marsh, is suited to conditions here. Even in the Marsh variety a number of inferior strains are found. The California Grapefruit Club has officially agreed that its members will rebud all varieties other than the Marsh and all inferior strains of the Marsh to the smooth thin-skinned ideal strain of this variety. You can readily see what this action means to the California grapefruit industry. Every grapefruit sold can be guaranteed as a typical standard Marsh.

I believe in this day and age no horticulturist or pomologist will admit that a stable fruit industry can be developed on an eighty-six variety basis. As I have just pointed out the success of the citrus industry in this state has been governed, in large measure, by the small number of varieties. Any unprejudiced person will admit that you have too many avocado varieties. I realize when fruits are selling from 50 cents to \$1.00 apiece, it is hard to sound a note of warning. Still we have to look ahead to the time when avocados

are not marketed by the crate but by the carload. I have had enough experience with avocados to know that a good price will be paid for a standard high grade product, while it will not be paid for an inferior one. The statement has been made that in Guatemala, the high plateaus of Mexico, and the Central American countries, there exist avocado varieties far superior to any we now have in California. This may be true. I believe new varieties ought to be introduced, provided they are superior to existing standard ones, under state and federal supervision. At the present time Mr. Wilson Popenoe, of the Office of Foreign Seed and Plant Introduction, of the United States Department of Agriculture, is in Guatemala searching for superior avocado varieties. However, even if no new varieties are found superior to those which you now have, I believe you already have in this state a sufficient number from which a few good ones can be chosen and developed as typical California products.

It never will be possible for you to develop a strong market for avocados if you continue propagating eighty-six varieties. You have got to look ahead to the time when the eastern housewife will call up her grocer or fruit-dealer and order not simply an avocado but a Taft or some other typical variety. I believe your big problem is not a search for new varieties but an elimination of many of those which you are now growing and the choosing and developing of a few which can be known as strictly California products.

Of your summer varieties, or thin-skinned sorts, an early, a medium, and possibly a late variety are needed and of the thick-skinned winter and spring varieties an early, a medium, a late, and possibly a very late kind. The work which the Citrus Experiment Station has agreed to do in growing trees of the different varieties, at both the Riverside and Whittier stations, will be of great value to the growers but that work ought to be supplemented by definite record work by this Association.

Your trees are just coming into bearing. Now is the time to find out the comparative merits of the different varieties. The only way this can be accurately accomplished will be by securing performance records of every individual avocado tree owned by a member of this Association. By performance records we mean the actual record of the amount and quality of fruit produced by an individual tree for a series of years. Only by securing such records on the individual trees of your different varieties for a series of years can you decide on the six or seven varieties which ought to be developed as standard California avocado varieties and which will be the foundation in building up a strong industry. I would like to see this Association devote a large part of its energies to tree registry work. If every member of this Association would agree to keep records of the amount and quality of fruit produced by each tree which he owns, and the copies of the records of his best trees were forwarded to your central office, in a few years' time definite and accurate information would be secured concerning the behavior of individual trees of the different varieties. This information then could be used by this Association as a basis for deciding on the varieties which should be developed as typical standard California products. Your Association would then be able to take action similar to that of the California Grapefruit Club and officially recommend a short list of standard varieties for the entire season.

A few important factors will have to be considered in securing individual tree records. These are: first, tree numbering; second, individual tree picking; and third, the recording of the data in some record form which would be chosen by this Association. In

numbering trees I know of no method which gives better satisfaction than that now used in citrus performance record work and that is giving the tree an individual number consisting of the block number, row number, and number of the tree in the row. By using such a system of numbering there never will be a single duplication, no matter how large the acreage. Thus tree 8-4-16 written vertically on the tree trunk, thus would instantly locate that tree as being in block 8, row 4, and the 16th tree from the end of the row always numbering from some fixed place. The point might be raised that avocado plantings at the present time are so small that it would not be necessary to include the block number. However, looking to the future, when there probably will be larger solid blocks of avocados planted, and in order to avoid all confusion, I believe it would be better to include the block in the series number. If for any reason it should not be practical to paint the numbers on the tree trunks, they could be stamped on aluminum labels and the labels attached by copper wires to one of the main branches.

In securing individual avocado tree records it will be absolutely essential to pick each tree separately. While occasionally persons are found who believe they can estimate accurately the amount of fruit produced by an individual tree, the only sure way is by actually picking the tree separately and using some fixed unit in measuring the tree's production. When the trees are young the actual number or weight of the fruit produced by the individual trees could be recorded, as they grow older the unit could be the picking box.

The following charts, tables 2 and 3, show respectively the front and back of the forms we are using in securing our detailed avocado individual tree records. These forms are printed in convenient size, 4 by 6 inch notebooks. Each page is devoted to one tree's record. It is possible that this form may be of value to growers in securing records in commercial plantings, especially where it seems desirable to study in detail the behavior of individual trees.

I believe the form shown in table 4, in which space may be provided on a single page for recording the data for 40 or more trees, will prove practical for commercial orchards. As it is necessary to make a number of picks from individual trees during a season, space is provided for recording these different picks. These data could be recorded in number of fruits, weight of fruit, or number of boxes borne by the individual trees.

By securing such records you will be able to find out which varieties ought to be developed as strictly California products. Copies of the records of the best trees ought to be forwarded to the central office of this Association and filed. All members of this Association ought to know the location of these superior trees and ought not to plant trees unless they are propagated from bearing trees whose performance record could be furnished at any time by the secretary of the California Avocado Association.

Find out what your individual trees are doing, reduce the number of your avocado varieties from eighty-six to six or seven, make tree registry work an important activity of this Association, and start your new avocado industry on a performance record basis.

Table 2.

DETAILED AVOCADO PERFORMANCE RECORD BLANK.

Orchard..... Plot..... Row..... Tree.....  
 Year..... Variety..... Strain.....

Date	Size	Grade 1.		Grade 2.		Grade 3.		Total	
		No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
	Large								
	Medium								
	Small								
	Total								
	Large								
	Medium								
	Small								
	Total								
	Large								
	Medium								
	Small								
	Total								
	Large								
	Medium								
	Small								
	Total								
	Large								
	Medium								
	Small								
	Total								
	Total								
	Notes								

Table 3.

DETAILED AVOCADO PERFORMANCE BLANK.

Plot..... Row..... Tree.....  
 Date .....  
 Condition .....  
 Amount of Bloom .....  
 Amount of Fruit Set .....  
 Size of Fruit .....  
 Remarks .....  
 .....  
 .....  
 Thinning Date .....  
 Number of Fruits .....  
 .....  
 Sports .....  
 .....  
 .....  
 Limb Variations .....  
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 Notes .....  
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