

Sixth Annual Avocado Growers' Institute

Under Auspices Agricultural Extension Service and Avocado Departments of Orange and Los Angeles County Farm Bureaus. La Habra, March 8, 1935

Chairman, Ray Frantz: The Avocado Department is very glad to see this good turn-out and I hope the program to follow will be interesting and instructive. First on the program will be the official welcome by Mr. A. C. Earley of La Habra.

Judge Earley: Ladies and Gentlemen: I want to say that I am very glad to welcome this line-looking assemblage of people here today. I am glad to see the ladies come out for such a meeting as this because, of course, they like avocados as well as the gentlemen. They are interested in other items, also—production and the financial end. We are glad you can come here to this place because we feel that La Habra is a mighty fine place in which to live. With 20½ inches of rain, we haven't floated away to the ocean yet. We look forward to a great season for avocado growers of this community. After all, La Habra has some fine outstanding growers in the industry.

We hope this is going to be a profitable session for you. Growers of some commodities never learn anything new because they never go anywhere. That can't be said of this industry. There are people here from as far as 150 miles away this morning, and it shows that there is a great deal of interest in avocado growing. I hope you have an interesting and profitable time.

Ray Frantz: Mr. Wahlberg will now present his subject:

H. E. Wahlberg: I don't know just why I was put on the program, unless it is because I have been appearing on this and similar programs for the last four or five years. This is the fifth anniversary of your Cost of Production Studies. You folks, several of you in this county and Los Angeles County, have been cooperating with our office for the past five years in furnishing accurate and authoritative cost data during the season. At the end of the season we have used our facilities in summarizing those cost records, segregating the various costs into the various items of cultural costs, and material costs and have tried to analyze the business of growing avocados from the economic, dollars and cents standpoint. I know that some of you here this morning are particularly interested in this review that I shall present to you because these are your figures. I have come prepared to supply those who are interested with a copy of this Cost Summary.

I have placed some of the data in chart form so that we might together review some of the high-lights of this Cost Study. We have concluded, I believe, in previous institutes

that this business of growing avocados requires a rather handsome amount of financing during the year to pay for the materials and labors involved in producing the crop. I think that you will probably come to the conclusion today, at the end of the five-year period that it might be desirable for individuals to possibly adjust some of the valuations of his investment on the basis of the average returns that he has been enjoying over the period. (For complete address, see page 106.)

I want to take this occasion to express appreciation to those who have made this study possible. It is going to be used as a guide in carrying out some of our orchard operations and I think as the study goes on it will become more valuable to the industry and to the cooperator.

Ray Frantz: Thank you, Mr. Wahlberg.

The avocado growers are fortunate in having some of the members take their vacations in Florida this year. We had on the program Mr. Edwin G. Hart, who made a trip down there recently, to speak on "Observations in Florida" but he was called North on business and is unable to be here today so we have asked Dr. Coit, who was also a vacationist in Florida this year, to pinch-hit. He will take the floor at this time and take the subject given to Mr. Hart.

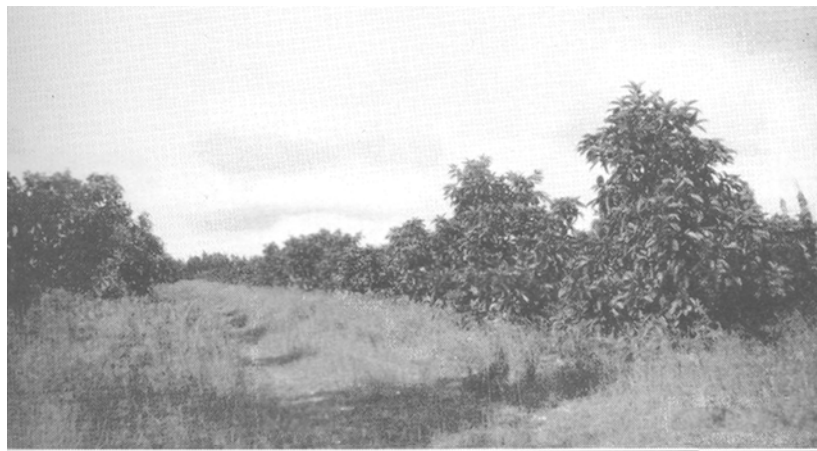
Dr. Coit: Mr. Chairman and Friends: I regret it a great deal more than you do that Mr. Hart isn't here this morning because this is rather sudden. I haven't had an opportunity to arrange my thoughts but have made some notes, scribbled hurriedly—a short outline of impressions gained on my recent trip through Florida.

Florida is a medium-sized state as states go, being about 300 miles long, North and South, from the north line to the tip of the Peninsula or about as far as from San Diego to Porterville. The topography of the country is decidedly flat; no mountains. The highest point of land is approximately 340 feet above sea-level. The country is covered with fresh-water lakes. That is one of the things which impresses the visitor upon entering it—over 3000 beautiful freshwater lakes filled with fish and the land being so flat you don't see many of them until you are close to them. They vary in size from a few acres up to many miles across—scattered pretty well through the central and north-central part of the State. Citrus groves, towns and cities are built around many of these lakes in a very attractive way.

Florida is particularly long on water because their rainfall is high, running from about 40 to 50 inches in the north to as much as 70 inches in the south part. Most of this rainfall comes in the summer—just the opposite season of the year from ours. The climate varies a good deal between the north and south parts of the State, more than I had imagined that it would. The northern counties are very similar to Alabama and Mississippi, piney woods and flat land with occasional planting of citrus. About the only citrus seen are small plantings of Satsuma oranges, which are somewhat like the tangerine oranges of California. This particular variety of orange does not appear to be covered with sooty mold to the extent that the standard oranges are; consequently they are bright, good color and attractive.

As you go south, the cold decreases and you begin to strike the regular commercial orange and grape-fruit culture a little north of the center of the State. When you get into the Southern part, Miami, you get into the true tropical conditions—not only warm and free from frost but the air is exceedingly moist. There is a balmy feeling to the air which is, I think, entirely foreign to our California condition. I remember I was so surprised, one evening sitting out on the front porch of a house in Miami, with no coat or vest on, and a strong ocean breeze was blowing. I continued sitting there quietly most of the evening without any particular discomfort. I couldn't help but think how different it would have been here, where it is dry when hot and always cool or cold when damp. Hurricanes occur occasionally and strike localized areas with force, and as you all know, do considerable damage. The recovery by the trees is rather quick, so in driving through the State we saw very little evidence of the effect of hurricanes. One or two buildings had not been rebuilt—reminders of the terrible hurricane of some years ago. Otherwise you would hardly know.

The soil conditions in Florida impressed me a good deal, although I had read much about it and was not surprised. Soil is very sandy and low in plant food. Northern and central part predominantly sandy, in some places almost pure white sand with thin mantle of humus-bearing soil on top. In the southern part of the State, a condition was found where the main body of the ground is composed of a kind of soft lime-stone or rock. In many places crops are grown, particularly citrus and avocados, with no loose soil at all—just solid rock apparently. Great surprise to us from California to see how trees can grow there, but they do—sending their roots all through that rock. Fertilizer is supplied and they get plenty of moisture from the skies and grow very vigorously. Florida growers fertilize very, very heavily and that is a big item of expense, but they do not have to spend much for water but more for fertilizer.



Four Year Old Avocado Grove at Homestead, Florida.—Photo by Coit.

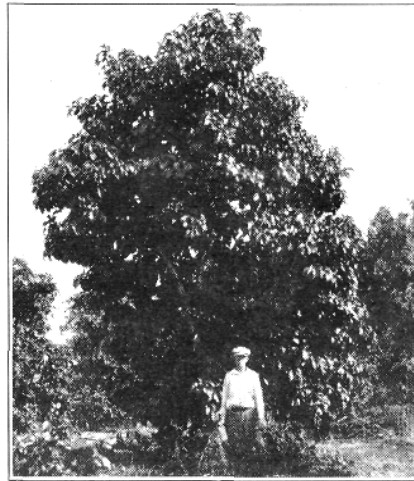
When we were in Florida in late November, they had just experienced a very severe drought—no rainfall for most of the State for some six or seven weeks. With the sandy soil conditions they have, soil moisture is not retained for that long a period and the trees showed distress. The citrus showed so much withering of the foliage and dropping

of the fruit that there was a panic of shipments. The day before Thanksgiving, I picked up a newspaper and read that Florida shipped over 200 carloads of citrus into New York City alone on the previous day. When they put 200 cars in one city in one day, it is pretty panicky shipments. They assured us those conditions were very unusual and I believe they were.

Now I am going to speak briefly of my observations on avocados. We drove down the east coast from Jacksonville to Miami, which is the principal point where avocados are grown. The Association packing house is at Naranja, which is 15 or 18 miles south of Miami—very near the southern limit of present fruit culture in Florida. I was told that 90% of all of the avocados shipped through the Association are grown within ten miles of their packing house—quite different from our situation here. I was told by members of the staff in the United States Department of Agriculture at Orlando that Mexican avocados can be grown in enormous quantities in north central Florida where they produce well except for occasional freezes from which they quickly recover. When asked why they didn't grow more Mexicans, they gave two chief reasons. One was that the Mexican ripened at the time when the main Cuban crop was in and competition too great; and the other reason was that the people of the Atlantic coast were accustomed to eating the mild West Indian type of fruit with no anise flavor and they objected to the strong flavor which the Mexican has. Here on the Pacific Coast, the general public has learned to like the taste of the Mexican fruit. I wanted to see how the people in South Florida would like it. I took some Mexican fruit in the car, from my home place—the Leucadia variety, in which I am interested. I wished to see how it would travel. Those fruits didn't go near a refrigerator and arrived in excellent shape, and I had the pleasure of cutting them for some of the Florida growers who seldom had tasted anything like it. Mrs. W. J. Krome, an old-time friend of Dr. Webber's was particularly interested in this Mexican avocado, and she remarked that it wouldn't take her a long time to learn to like it. Some years ago, I sold Nabal grafts to a grower almost in the center of Florida. These grafts had grown particularly well and had made fine trees and were bearing heavily for the second year. I was naturally interested in seeing those which were near Avon Park. This grower had one of the finest looking orchards, best cared for orchards that I saw in Florida. He had better soil in the first place than the average. It was white sand, heavily fertilized and lots of humus cover crops grown, built up to look pretty good. The trees were large, and well taken care of in every way. These Nabal trees were in fact heavily loaded with fruit. I carried some Nabals from home in the car with me and they carried plenty well and I had an opportunity of cutting and comparing them with the Nabals then being packed for market. Our fruit was richer in oil because it had been on the trees a whole year longer. Theirs run a good deal smaller. I was told that the Nabal would not make a success there because it was so seriously affected with scab that it was necessary to spray three times to control it, and this was too expensive. One of their troubles is this scab, which is a fungus disease which covers the outside of the fruit with a very unsightly, and warty condition and destroys the green color entirely making the fruit look almost like the bark of the tree. They have to spray for that with bordeaux mixture. West Indian varieties had been sprayed three times and still some were very scabby—a large amount of it could hardly be marketed. The Nabal is peculiarly subject to scab down there. I presume all of you are familiar with the fact that the main bulk of their production is based on the West Indian race the same as in Cuba

and matures in summer. Now their season is much earlier—the climate being tropical.

They were marketing a year's later crop than the crop I was cutting from my trees in California. Florida growers feel that this business of competing with the Cuban volume of fruit (West Indians) is getting under their skin. They are just wondering how long they are going to be able to keep it up. Therefore they are making an effort to ship their fruit later and later. While the Trapp matures in mid-summer, some of their other West Indians mature in September and they can hold Guatemalan until fall or when most of West Indians are out. Some varieties can hold even until after Christmas in fairly good condition. They have a feeling that it would be somewhat easier perhaps to compete with California than with Cuba. Therefore we see a great interest there in California. They are using Wagner and Taylor chiefly in top-working—both small, green varieties. They feel that West Indian fruit is too big and speak of them as "pumpkins." They seemed envious of California's ability to produce small avocados, and for that reason I think it behooves us to not be too much interested in new green varieties of very large size. It would be more to our interest to favor the small sizes.



Mr. L. L. Crews standing by Nabal tree top-grafted March, 1932, in grove of F. W. Ward at Avon Park, Florida.—Photographed November, 1934, by Coit.

In regard to insect pests, I found that they have dictyospermum scale severely on some varieties while not so severe on others. They have latania scale the same as we have. It is not particularly bad. They don't often have to spray for dictyospermum scale. In some cases they spray with oil. Those are the chief insects. The mite, brown spider, which we have had in recent years, they have had as long as they can remember.

I was particularly interested in methods of propagation. Nursery work is absolutely different from anything we have in California—completely different. I didn't see a balled tree in Florida, and I didn't see any soil in which I thought a tree could be balled. They are not balled because they can't be. The soil is too sandy and will not stick together. That is why avocado nursery stock in Florida is always grown in boxes—when planting, they set the box in the hole, take off the side—slip them out—and just let the dirt fill in. They have found from experience, as we have, that if avocado trees remain in boxes

too long, that the roots will begin growing around (curl root). When they are planted out, from boxes, it is done at a very small size—sometimes only six or eight inches tall.

I was particularly interested at Orlando in visiting the laboratory of the U. S. Department of Agriculture and meeting Dr. Traub, who has been doing some remarkably interesting work in seed grafting of the avocado. He uses half of a large West Indian seed and cuts a notch with his knife along one half of the seed down to the tiny embryonic plant in the center. Then he takes a soft tip growth and cuts that into the form of the very shape to fit that notch and fits it into the notch, so the base of that is touching the germ in the center. Paraffin, which melts at a low temperature, is poured to cover all up except the place for the root to come out at the bottom and the place for tip on top. He does this work in the house. Buries them in moist peat moss for awhile until he sees active root growth. Then plants them in boxes and they grow. It works very well with their particular system and it has a place in Florida. Later on, I had an opportunity of visiting in a nursery where this method was used on a commercial scale by a man who had been taught by Traub. I don't think there is any reason for us to use this method because we don't need to. We have soil which will ball easily and it is unnecessary for us to grow trees in boxes or to do any of this seed grafting.

Mr. Frantz: I think that you will all agree with me that we made no mistake in asking Dr. Coit to substitute for Edwin G. Hart. Probably we will hear from Mr. Hart some time later.

Some nurserymen use as their slogan, "Say It With Flowers," while some of the auto mechanics say, "Say It With Brakes." Our good friend Carter Barrett, however, says "Say It With Pictures" and I now have the pleasure of presenting Carter Barrett of Pasadena, who will give us some pictures on the training and pruning of avocado trees.

Carter Barrett: This first reel of pictures was taken in an orchard at Sun-land. The trees are twenty years old and some of them are over two feet through at the ground. Some are being grafted over and others are satisfactory to leave as they are. These first shots show something of the insertion of the type of slot graft that I use a great deal in large trees. How many grafts were used on these large trees? On many of them from three to five limbs were grafted with two grafts to the limb. These trees are very large Harmans and seedlings growing in deep, rich, well drained soil. These pictures bring out the great size of these trees and that is a point I wish to emphasize in regard to the placing of the scions. In my opinion, it was advisable to place the grafts on the main laterals even though they were in many cases rather high from the ground as it would have been necessary otherwise to cut the trunk at a point where the wound would have been too large to be safe from infection and would have eliminated the possibility of leaving nurse limbs which I consider essential on trees this size. To illustrate the point just made, I am showing you a picture of a stump as large as the one you just looked at (22 inches at the ground) that was cut off three feet from the ground and no nurse limbs left, the scions being placed in the top of the stump. As you will see the growth that is coming out on the scions is very unnatural in character and probably will take a season or two to gain normalcy, if the tree survives such drastic treatment.

You ask as to the method of picking the fruit from such high tops? That is one of the very serious problems not only in this particular case but in many others in the industry. The boys at the ranch have picking ladders twenty feet high and ten foot pole pickers, but in some cases of very high Harmans where we were grafting and were going to cut the tops later anyhow, we found the only means of getting some of the top fruit was to cut the top off and lower it to the ground.

This picture illustrates something of the method used to brace the growing grafts on these high limbs. The poles are 2x4 Douglas Fir and they average twenty feet in length. The bottom of the pole is set in a hole near the trunk bored with a two-inch soil auger. The top is slanted on an angle away from the trunk of the tree so that the growth of the scion will be directed outwards. These poles are heavily lashed to the limb in more than one place with five-ply jute tubing and thus form a safe support for the scions.

Question: In grafting large limbs such as shown in the picture, what is the best position to place the scions in—side, top or bottom of the limb?

Answer: It usually makes a stronger job if you get the scion started on top of the limb, but as the sap flow is least strong on the top of a lateral limb, we usually place the scions on the sides of the limbs.

Mr. Sharpless: When a tree is grafted so many feet from the ground (ten or twelve) it makes a dangerous job from the standpoint of wind. I have top-worked a number of trees as large as those shown or had the work done by cutting them off close to the ground and they are thriving today with as beautiful tops as one could wish. Some of my trees at this time are three years old from the graft, twenty feet high and branched out over some fifteen to eighteen feet and loaded with fruit. So I think that is very satisfactory.

Carter Barrett: I think that I admitted that it could be done. It is merely a matter of judgment in handling the conditions involved. Personally I am still unconvinced that it is the wisest way to do it. I believe that I tried to make it clear that practically any of these methods would be satisfactory, at least under some conditions, if properly done and followed up. I do not set myself up as infallible in this matter and an open discussion will bring out many points for the satisfaction and benefit of all present.

Question: In your experience in North Whittier in deep soil would you recommend the pruning off of limbs on young trees up to a height of three feet from the ground and then allowing them to grow as they choose?

Answer: I would hesitate very much to prune off the side limbs entirely on young trees until they were well along—say in their third or fourth year. I believe that the young trees

attempting to reestablish themselves need all the foliage that they can produce and that you should beware of the use of the pruning shears during the first two seasons. Most of the control could be satisfactorily done by pinching terminals if consistently followed up.

Mr. Kellogg: I appreciate your remark concerning the need of considering wind as a major factor in pruning practice. There are some places in Southern California where we must protect the tree from the wind. With all its drawbacks, the Fuerte seemingly protects itself from heavy winds even though it does sprawl all over the ground. Nevertheless these low limbs serve as a great protection to the tree from the wind, unless we have a wonderful windbreak. If this gentleman happens to have an artificial windbreak of any kind, then he could trim the lower branches up. If he doesn't have that wind protection those ugly branches have that benefit.

Carter Barrett: I am glad that you have laid stress on this point. There are certain districts where you have to consider the destructive effects of the desert winds very seriously and very often these heavy ground running limbs, while detrimental from other standpoints such as pest control, spoiled fruit, etc., do perform a very helpful function in windstorms by acting as natural braces and not allowing the wind to get under the tree and exert such lifting power upon it.

Question: How about pruning this time of year? (March 8) Would it cause too much bleeding?

Carter Barrett: I do not think that you need worry very much about what time of the year to prune so far as bleeding is concerned. To practically renovate a long neglected tree you might get into trouble at this time of the year by depriving it of too much of its foliage. Very heavy pruning should have been done somewhat earlier, though this again all depends on your location in regard to cold conditions. It is very unwise to prune heavily too early in the season as you are apt to be caught with a late frost and have your directional work undone. Regarding the effect on fruit production of pruning, I do not worry very much, unless the amount of foliage removed is very great. Experience seems to show that it takes very severe pruning to make any appreciable effect on production. However, if you rob the trees of too much foliage the first reaction is to throw out growth to recover the balance lost and restore its food manufacturing plant and this effort naturally is not expended on producing fruit.