

GENERAL DISCUSSION

Lead by Dr. J. Eliot Coit

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Dr. Coit: May I make a suggestion. It seems to me in view of the fact that many of us have been in the hall several hours and have not been able to examine the fruit, that it would be well to dispense with the discussion and examine the exhibits. I would like an expression of opinion as to whether you want to look at the fruit or to continue this discussion.

A member: We have with us people prepared to give short talks. This period for a general discussion was arranged to give every one an opportunity to ask questions.

It was moved and carried that the Association proceed with the discussion.

Mr. Popenoe was asked to speak on "The Work and Value of the Association."

Mr. Popenoe: I feel it to be fundamental, Mr. Chairman, that this Association, composed as it is of good representative men, should have the endorsement of a larger membership. Instead of eighty members, it seems to me that we should have five hundred. I wish that every one here, who is not a member of the Association and who is really thoroughly interested in the avocado, would recognize this responsibility and not wait, but join the Association now. Every one interested in advancing the avocado industry should desire membership and want to throw his influence with us. I do hope that all of our good friends will feel this responsibility and will come to us without solicitation. It is not a pleasant thing to be appointed on a membership committee and go around asking for memberships. It would be a very pleasant thing to have a spontaneous and voluntary offer of a large number of members.

Professor Condit: I desire to enlist your interest in connection with the investigations in the University. I have a volume of 225 pages of notes. I am not going to read them to you this afternoon. I mention this for the reason that the University for the last two or three years has been investigating: first, the different varieties, second, the chemical constitution of the various varieties, and third, by-products. Professor Jaffa and Professor Cruess have told you something of the work they have been doing. We have issued one bulletin, No. 254, on this subject, and this is distributed free upon application. We are also conducting a correspondence course, which is free for the asking. If you care to enroll for this course, write to the Agricultural Experiment Station in Berkeley.

It is my habit to go to San Francisco once in a while and look through the commercial markets. About three months ago, I was in the market in San Francisco and was told they had received a shipment of avocados from Tahiti that were decayed. About two or three weeks later I noticed an advertisement for seeds at five cents apiece. I realized then what had become of the seed from that spoiled Tahiti fruit. Probably this seed was purchased by growers and used for propagation. I was in the San Joaquin Valley a few weeks ago, and a

nurseryman had a number of such seeds in a lath-house. Experience has shown that the seedlings of the Tahiti fruit are very tender. They frost down like tomato vines, and we believe it is not a promising thing to bud our California varieties on that kind of stock. It is for this reason that we are recommending the growing of the Mexican type of seed for rootstocks.

With citrus fruits we know the best rootstocks. We don't know the best stock for the avocado, but so far as present information goes, we believe that seedlings of the Mexican type are the best. The Mexican avocado gives the most healthy and vigorous seedlings and will impart its vigor to the top. A variety budded on the Tahiti will not make as good a tree as the same variety budded on a rootstock of the Mexican type.

Dr. Webber has said that the most important thing is the selection of the variety which will be the best in the end. Now, I believe the second most important thing is to get a tree on the right stock, a tree that is sturdy and vigorous. If a bad beginning is made, the tree will be practically ruined for the future, so it is well to begin right. At the present time the best procedure is to get a tree budded on a good seedling, one that is vigorous and free from diseases and infections.

Mr. Fessler: What do you know about the seeds for planting to grow budding stock?

Prof. Condit: We know that the larger the seed is, the more vigorous the seedling. You get a larger seedling in a short time from a large seed than from a small one. Now as to the value of the stock from seeds of varieties like the Challenge, etc. I have had no experience. So far as I can see such seedlings would be good.

Question: What is necessary in the way of protection from winds?

Answer: I think it has been stated already that young trees should be protected from the wind.

Question: I mean when they begin to bear. Suppose you were planting out an orchard, would it be necessary to provide windbreaks?

Answer: Yes, I think it would be.

Question: What is the best cultivation? Shallow?

Answer: Shallow around the trees.

Mr. Barber (exhibiting two avocado roots, showing root coil): In my paper I referred to the practice of growing young trees in pots. The avocado is a very fast grower, and no matter how small the trees are, the roots will grow around in the pot. The question has come up here as to the cause of the dying back of a lot of trees planted near Del Mar. During the discussion, the point was brought out that it might be due to root coil. I don't think it is. The same sort of trees have been planted out in other sections of the country and are growing thriftily. These trees had started and after showing the first growth or two started to die back from the ends of the limbs, dying into the trunk and in many cases resulting in the death of the entire tree. What is the cause? Is it a local climatic condition? Is it the soil? Is it the water, or is it this root? I freely admit that the nurserymen at first thought it necessary to start everything in pots, and doubtless this tree was started in a pot. I hope the time will come when it will be found that we can plant from the seedbed directly to the open ground. If this can be accomplished, we shall absolutely do away with

this root coil.

Dr. Coit: I think the root coil is the trouble. I looked over a lot of seedlings where a great many of them had failed to grow. On looking into the matter, we found those that failed to grow had the roots twisted around and around. Those that did not seem to be so badly curled managed to live, but not many of them were as healthy as they should have been. In this case it may be said that practically every tree had been grown for a short time in a pot, some of them entirely too long.

Mr. Barber: All of these trees during the first six months after they were planted started a good growth.

Dr. Coit: What variety are they?

Mr. Barber: Harman.

Dr. Coit: How long were they grown in the pots, Mr. Barber?

Mr. Barber: Possibly not more than two or three months.

Question: How soon is it safe to set from pots into the field?

Dr. Coit: I should say about three weeks. All you need to do is to get the dirt settled enough so that you can take the plant out with a ball of dirt. The trouble is to make the seedling stand up.

Question: You won't have coils under six or eight months?

Dr. Coit: You will have coils undoubtedly in three months. I don't think seedlings should be left in pots more than four weeks. The question today is whether we can get away from the use of pots. You may have to use them for three, four, or five weeks.

Question: Will you please explain what happens if you plant a seed in the open ground?

A member: We grow the seed in large seedbeds. When the young plants are from 8 to 12 inches high we move them out into the open field, and they have come along fine. We plant the seeds just at the surface of the ground and cover them with shavings until they start.

Mr. Fessler: I have planted the seed with about one-third above the soil and covered with leaves. Just as soon as the seedlings began to show through, I transplant them into the nursery row and have not lost 1 per cent of them. In the early history of the industry I bought quite a few trees and they didn't grow. I had a neighbor who planted about seventy-five trees and lost every one of them. They grew quite nicely for a short time and then stopped growing and died. I saw the roots of some of them when he took them up, and they were matted together. These trees were absolutely worthless, and I think it is a mistake to plant in pots. When trees are from half an inch to 2 inches tall, transplant them to nursery rows. Protect them and keep them wet and they will grow right along.

A member: I have done the same thing successfully, having transplanted seedlings with bare roots from the seedbed into the nursery row. The water in such cases was put directly into the hole.

Mr. A. N. Cadwell, of Carpintería: I have had very limited experience in the matter of raising avocado trees from seed. I cannot say very well how to plant them. When I started

to plant avocados, I knew that those I had seen planted before were planted in pots with the ends sticking out a little above the ground. I was in a hurry and I could not see well how I could plant them in pots and take care of them, so I laid them down in a bed. I prepared a bed in a flat some 2 by 4 feet. I planted the seed (almost dropping them) in sandy soil that would not pack much with watering, and covered them with soil. Some were covered to a depth of half an inch or more. I kept them well watered and they began to spring up nicely, and they grew right along. My son put out 1500 or more in the same way, but he had them in smaller flats. The roots were so nice that I did not like to put them in pots and so we planted them in nursery rows and they grew nicely and we did not lose any of them. We can show you seedling avocados put out four years ago that have made as nice a growth as you can find anywhere.

Question: I would like to know whether any one has any knowledge of avocados planted near the sea that are doing well.

Mr. Fisher: I have some growing very well. Most of them are seedlings. They are less than a half mile from the coast, and it don't seem to affect them at all.

Question: Do they bear?

Mr. Fisher: No, they are only about five years old. The seedlings have not borne but have blossomed very freely.

A member: Speaking about trees growing close to the sea, I would state that in the Island of Hawaii they may frequently be seen within one block of the ocean and doing well.

Dr. Coit: I know of an old tree, perhaps twenty-five years old, not more than a mile or a mile and a quarter from the sea. It has never had any fruit or even a blossom, but it is a very healthy tree.

Mr. Spinks was called on for some ideas in regard to the Association.

I am sorry to say that I am not a speech maker, as I would be very glad to entertain you. There is one thing, however, that has been overlooked by the various speakers. No one who has discussed this matter has paid much attention to the importance of the tree. They all speak of the fruit, the size of the fruit, thick-skinned or thin-skinned, but have not considered the most important, primary thing,—that is, the tree itself. Some varieties of avocado trees will grow fifty times as fast as others. Some varieties grow very fine large fruit. Every nurseryman who has had experience with the Murrieta and some of the other varieties will admit that it is almost impossible to grow them as nursery trees. I can show you an instance at my place of a Trapp that was budded the same day as a Harman, and the Harman is fully fifty times as big as the Trapp, and both are healthy trees. You must first get a tree to grow strong, straight, and vigorous. The important thing to consider first is the tree.

Dr. Coit: Every variety has a characteristic growth just as much as it has a definite color of fruit. You may buy a tree that is small, crooked, and gnarly, but it may be entirely typical of the variety. There are going to be many hundreds of seedlings grown in people's yards. Every one is going to have a favorite son. Don't forget that before any variety has a chance to become established as a commercial sort, it must be demonstrated that it can be propagated readily and that it produces a good growth.

Question: What insect enemies infest the avocado?

Mr. Chidester: I have found the black scale and the brown scale to a slight extent, and also the green scale, but I don't think any of them are likely to be serious, except the green scale, and this seems to be more abundant on the thin-skinned than on the thick-skinned types. There are also one or two other things, such as a bark liner, but this is not very bad. Nothing along this line that I have seen is very serious. I haven't noticed the red spider on the avocado.

Question: Is it your experience that the black scale will grow on the avocado, but not by choice ?

Mr. Chidester: It will grow on the avocado, but does not thrive on it. The black scale thrives on the citrus tree, but on the avocado it is scattered and not abundant.

Some one in the audience said: In connection with the remarks as to the effect of the black scale on the avocado, I wish to state that three or four days ago I saw a large tree with one limb, which was covered with a mass of black scale. That, particular limb was more completely covered with black scales than I have ever seen in the case of an orange tree. To me it shows that we have this scale to fight in the future.

Mr. Martin Fessler: Is there any one who knows about the avocado weevil that gets into the seed in Mexico? We would like to know about it so we can be prepared.

Dr. Coit: There is very little information available on the avocado weevil, except that it is a bad pest and we don't want to get it here. It has never been introduced into California. So far as I know, this pest is the only reason that the Mexican fruit has been kept out. I have never seen it and I don't know of any publication on it yet. We would have to get this information from the United States Department of Agriculture.

Mr. Knight: There is only one fruit in five thousand affected by the avocado weevil. It does not injure the flesh of the fruit especially.

Mr. Hart: Referring again to the black scale, I was out at Mr. Walker's place in Hollywood, where there are a number of large trees that have been growing for a number of years. There is a lemon orchard adjoining the avocado plantings. This lemon orchard was black with black scale and in a very bad condition, but the avocado trees did not have any scale so far as I could see, showing that the black scale prefers the lemon to the avocado. My seedling oranges accumulate a lot of black scale every year. Avocados alongside have a few, but apparently the scale does not thrive and is scattered. I think it is safe to say that it much prefers the citrus to the avocado. I don't believe this scale will be serious on the avocado at the present time.

Mr. Spinks: I have had avocados among orange trees. The orange trees have more or less black scale and also some other scale pests. I find that if the avocados are crowded up against the citrus covered with scale, they are apt to get some scale but not many. I have seen a brown scale cover the trees pretty well, but I have succeeded in getting rid of it by spraying. Strange to say, it did not communicate itself to any other tree.