

Questions and Answers

Avocado Institute, March 13, 1936

Someone asked a question and the answer was not fully brought out. The question asked concerned pruning avocados during the bloom. I think it is an important one—as to whether they should prune during the bloom. I am of the opinion that it doesn't make any particular difference whether you prune right at the bloom or just preceding. It will probably check the bloom.

It wouldn't make any difference whether two months previous or right during the bloom—if you were going to affect it, you would affect it anyway, even sixty days prior to the actual blooming out of that tree in full bloom.

Raymond Marsh: You would affect the crop inasmuch as the portion of the tree wouldn't have any fruit on it.

M. B. Rounds: But whether done sixty days prior or during the bloom, would produce no particular effect.

Q. What is the cause of tip-burn?

A. Work has been done by Mr. Thomas which indicates that tip-burn is present on trees located in soil which contains an abnormally high percentage of salt. This may be caused by irrigation waters or soil containing high percentage of salt. I have seen some cases, however, where that was not the case, but where trees were injured by droughts—too long intervals between irrigation, or by winds. I think that is just about all the information we have on the subject.

SUN-BLOTCH IN NATIVE HABITATS?

Q. Judge Halm wants to ask if sun-blotch has ever been observed in the native home of the avocado. If so, by whom?

A. (Parker) We have no information on that and it is a subject of very great importance. We have no hint at all as to how this disease originated in this country. We have no disease, so far as we know, which is an intermediary on other types of plants. Therefore, it becomes of extreme interest to know if it was imported into this country by scion-wood, of some sort. If we could get a start in that direction, it would open up an entire new field of research in the study of that disease.

Q. (Asking Mr. Wahlberg) What kind of trees do you recommend for windbreaks?

Wahlberg: For Orange County conditions or general coastal conditions in this general area, Eucalyptus is by far the outstanding variety. Eucalyptus is best, first, because it grows the fastest and is the quickest protection. Second, it is, as far as we know,

practically immune to disease and to insect pests. It does not harbor pests that might affect the pest situation in the orchard. Third, it has a number of varieties. Two varieties which are desirable for Orange County or coastal conditions—Eucalyptus Globulus—the tall variety, for upper-story protection, and that could be augmented or interplanted with the Eucalyptus Compactus which is a variety of the Blue Gum, to take care of the lower story. By using the combination, you can have both and thereby assure ample protection.

SUN-BLOTCH—SUNBURN

Q. What is the cause of brown tip on the leaves, likewise under-size leaves, and how should this be remedied? What is the matter when the bark splits and dies?

Mr. Marsh (counter-question): Are these trees located where they are subjected to low temperatures or are they up on the hillside?

A. They are on the hillside.

A. I have never observed any tree where the bark split except in an area where the immediate vicinity of the wood is dead. What you are finding is dead bark which, instead of being green, will crack, peel off and leave the wood dead. This is on rather recent growth?

Grower: No, it is on growth around twelve or fourteen years old.

A. I have never observed that. I have observed a case the same as root-rot on orange trees—growing in very wet locations, where the bark split and died; it worked its way down into the roots. I don't know what caused it, but I have only found two trees showing those conditions.

Q. Could that be sun-burn?

. . . Do you mean where the bark scales, same as citrus, scaly bark?

Part of the tree looks vigorous, then the lower part of the tree cracks open, and spreads out and turns out, dies and falls off. That is sometimes an indication of sun-blotch, and the tops of the trees are not bothered.

Q. How can sun-burnt trees be distinguished from sun-blotched trees?

A. The drooping sun-blotched trees will, of course, get sun-burned, but the distinguishing mark is the yellow streak either on the new growth, or on the fruit.

RECOGNIZING DOTHIORELLA

Q. How does one recognize Dothiorella?

A. (K. A. Byerson) (Introduced by A. W. Christie) I happened to be for eight years directly in work having to do with the avocado industry and ten years in Southern California, and while government men are supposed to be "guessers" this year, what little I have seen of Dothiorella Rot, I have learned mostly from fruits I have gotten on the market. It is very difficult to recognize because it shows up after the fruit begins to

soften—but on the tree it is almost impossible to detect it. Small, black spots will first develop on the fruit, somewhat underneath the surface of the outer skin and the spots will develop as the fruit matures. Apparently it is a fungus growth and shows up over the entire fruit as the fruit softens.

M. B. Rounds: In addition, there is a bulletin which can be secured from either Mr. Wahlberg's office or our office on the control of *Dothiorella*, written by Professors Horne and Palmer, from which you can get all the information.

Q. (Addressed to Mr. Calkins) How would you make a producing tree by cutting it off below the bud union?

A. (Carter Barrett) I will answer that by saying that he, of course, referred to putting in new buds or grafts.

Q. But if you put scion in the same as before, you are right back where you started.

LATANIA SCALE-STERILIZING TOOLS

A. (C. B.) Evidently Mr. Calkins doesn't think so.

Q. Does pruning the interior, to let in light and air, have the tendency to reduce the Latania Scale?

A. (Rounds) One purpose in pruning bearing trees is for the control of Latania Scale. It is well known that where light is let in, to the tree, there will be a reduction of Latania Scale and probably that is the only method used at the present time, except where they fumigate for it. So far, in Los Angeles County, and in this area there is very little fumigation; growers try to control it by cutting side branches and letting in the light where trees are very dark.

Q. How can working tools be sterilized against sun-blotch without ruining the tools?

A. (Carter Barrett) I have talked this matter over with Dr. Horne and Dr. Parker and they are not convinced that it is necessary to sterilize the tools. However, they think it reasonably good procedure. I use denatured alcohol. I have little difficulty through injuring the tools but neither do I have any authentic knowledge as to whether this treatment is adequate. We can't say specifically.

Dr. Parker: In some of our own work, we have probably had just as good an effect if we let the new wound stay uncovered before painting, allowing it to dry to the point where any union or infection of tissue, from one field to another, could not take place.

Q. Are Sharpless fruit more subject to tip-burn than Fuerte?

A. (Gardner) I can state from my experience that in many cases tip-burn is inherent in the seedling, and it doesn't matter what you bud on it, you will have tip-burn.

Q. What is the treatment of avocado trees in La Habra Heights where leaves have turned yellow?

A. (Rounds) Chlorosis causes yellowness of leaves. I don't know of any treatment for that except by giving the tree an application of iron in some soluble form.

WINDBREAKS

Q. What variety resists the wind best?

A. (C. Barrett) I think if you are going to use the avocado for a windbreak, in less windier sections, where that is necessary, the Duke Variety under coastal conditions is satisfactory; although not a particularly satisfactory fruit from a consumer standpoint, but it is the most satisfactory in its ability to hold its leaves and make a compact growth. We have several trees in very exposed sections that withstood the conditions this last year with no apparent damage whatsoever.

Q. What do you think of bamboo as a wind-break?

A. (Gardner) It takes half a hundred years to get it big enough; otherwise it is fine. We have a planting at home, about forty years old, and it is now only thirty or forty feet high. It might, under some circumstances, grow taller, but in ordinary orchard conditions it won't.

Q. Will bearing of fruit (Fuerte) on trees, late, have effect on setting next year's crop?

A. You will have to come this afternoon because Professor Hodgson is going to go into that pretty thoroughly. Mr. Marsh has also made some observations— will you tell us?

Raymond Marsh: I haven't made enough yet to be able to state. I think it will be necessary to carry on for a couple of years. You can see things going on and you just want a little more proof before you say anything about them.

Q. If a long, growing limb is cut back, what effect will it have on the bearing qualities of the part left?

A. (Carter Barrett) Of course it depends on how much of the limb you cut off. If you find it necessary to cut off a long, heavy lateral, you will probably have to remove a very large portion of it and consequently it will reduce the bearing surface to a very small point, and when the growth comes out on that it will not, during the succeeding year, be the type of growth that will set any large amount of fruit. You have to plan those things on the basis of two or three years rather than what it is going to do the succeeding season.

Q. What is the cause of such differences in production?

A. I think Prof. Hodgson will answer that this afternoon.

Q. Of what value is cultivation under the avocado tree other than keeping down weed-growth? (Q) If there is no particular value to such cultivation, why prune trees *any higher* off the ground than is necessary to provide air circulation? (Q) How can burns be eliminated when using emulsified asphalt as a pruning compound?

A. (Calkins) If you put on a good application and put a piece of paper over, it will stay and will, in turn, protect the wound.

HANDLING FIRST-YEAR GRAFTS

Q. How should one handle the vigorous first year growth of grafted avocado trees to insure proper framework for future production?

A. (Calkins) I like to select a more vigorous shoot—where heavy limbs come—and when they get up even with the others, hold back and do not remove from the stump. It practically takes care of itself—make all your growth go up into the leader.

(Above unanswered questions held over for the afternoon meeting.)

A. Rideout: I can show a demonstration of relative wind-breaks, where not a single fruit need be lost. May I demonstrate it?—15 minutes will be O. K. (Those interested were asked to remain, following the meeting.)

Q. On mature avocado trees, should one follow a system based upon heading back and stubbing or the practice of opening up the trees by thinning of the longer branches?

(This question does not pertain obviously to undesirable cross-limbs and large side arms.)

Questioner: I brought that up because I don't think it was very well discussed. Two general types. There seems to be some merit to heading back of limbs on potential leaders than in other types. I just thought it would be good to bring it up.

A. (C. B.) Well, I suppose you are referring to the Fuerte. Most pruning questions come back to that because it is the main variety that we are working with. That depends on the individual tree you have to start with. All of you know there are no two Fuertes that grow alike. Perhaps there are two general classifications—one, a more or less upright tree by itself; the other, which is very much more in evidence, is the tree that tends to go to pieces and sprawl all over itself. Frankly, I believe it is very desirable to keep the center up, if possible, to ten or twelve feet. In order to do that, you may have to cut the head out of the tree once or twice, unless you adopted an early pinching system. On these younger trees, I would say that in most cases it is very essential that the main laterals, which you intend to try to hold in the tree, should be shortened in, so they won't bear too much weight. It requires consistent attention through the year to maintain them in the position desired. If you thin the trees out very much and get the ends too long, they will naturally fall out of place and tend to keep the tree from developing. Consequently, unless you have a very particular problem that has to be worked out on the spot, I wouldn't advocate too extensive pruning in the first two, three or four years.

Q. How does a previously vigorous tree act when affected by sun-blotch?

A. It will show up by yellow streaks on the new growth and on the fruit.

EARLY SUN-BLOTCH SYMPTOMS

Q. Would Dr. Parker please say a few words more about earlier symptoms of sun-blotch and differentiation between that and mottle-leaf?

A. (Dr. Parker) The early symptoms are definitely seen on leaves and twigs. I think they understand those pretty well. These beginning symptoms occur on bark and are indicated here on these twigs (specimens at hand) and you can all take a look at them.

Q. Are bad bud-unions due to incompatibility of bud wood with stock or simply mishandling of buds when being placed?

A. (Calkins) I said there is a multiplicity of things that might happen. There may be three good buds on the stick; at the lower end you get some poor buds and they are liable to start out poorly. I have cut hundreds of trees off at bud contact and one side of the point got off to a bad start.

Q. When trees are too large and inter-laced to prevent light and sunshine from getting to the ground, would it be advisable to cut back alternate trees?

A. Yes, let the light down through the trees. (Gardner.)