

Symposium on Pruning Avocados

Led by

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V. F. Blanchard: Mr. Chairman, Ladies and Gentlemen: We have been allotted a period of forty minutes for this Symposium, and in addition to the introduction which I am to make, we have three growers who are to talk on this subject, and that leaves only a short time for each speaker. We will attempt to hold to that time as nearly as possible.

I was very much interested when I received Harold Wahlberg's letter asking me to lead this discussion on pruning, and am especially interested in it because he told me that several growers were going to participate, and it was not to be a presentation by the University of California representatives or so-called "commercial pruners" but by growers. I think that it is valuable to get the impressions from the growers along pruning lines. I want to offer some comments, however, in relation to pruning—somewhat in the way of an introduction, and as a warning on pruning.

I think it was about twenty years ago that I wrote a thesis on pruning lemons and not very long ago my wife got that little book out and handed it to me. I read it through and was really amazed to see some of the things I wrote twenty years ago on the subject of pruning. I could hardly believe that I had ever had such ideas along that line.

I have been pretty closely associated with pruning methods since that time and have watched the changes that have taken place; not only that, but our ideas of the principles of pruning have changed. So I think the avocado industry, which is probably the baby industry in California horticulture, should familiarize itself with the principles in pruning developed in other kinds of trees. Don't get the idea that because you have a new industry that, after all, those trees are so much different from other kinds of trees.

PRUNING SYSTEMS SIMILAR

So far as I have been able to observe in pruning various kinds of trees, where we have plots, with different systems side by side, one tree compared with another kind of tree, there is very little difference as far as the principles are concerned. The trees have minor differences and characteristics but the principles are the same.

We have to consider first of all the structure, training of the tree and then we have in mind the maintenance and health of the tree. In other words, after your tree becomes mature, keeping that tree healthy, and finally as that tree has arrived at the mature

period of life, it undergoes a lot of the environmental influences resulting in sick trees. We have the problem, then, of taking care of those sick trees.

I think that anyone pruning avocados has to have those three things in mind. One of the most important things, I think, an avocado grower should bear in mind when pruning trees—held true with every tree I have worked with at least—is that pruning itself does not add fruit to your trees; that is, normal trees; that pruning may reduce production and reduce production in proportion to the severity of the pruning. Now if an avocado tree is different from other kinds of trees then that, of course, might not hold, but so far as we have been able to determine with various kinds of trees, that principle holds—that the production decreases with the severity of the pruning. Not only that, but the development of the tree is held in check or is retarded about in proportion to the severity of the pruning. Therefore, in development of our methods of pruning, we want to be sure that we have those principles in mind so we can get maximum development of the trees and at the same time procure production and not throw the trees out of balance with severe pruning. I haven't time to go into this. We are first going to call on Mr. Ray Marsh, and then following him, Mr. C. E. Knowlton, and then Mr. G. R. Calkins. It will take approximately ten minutes of time for each speaker with a period allotted for questions at the end of the morning's program. If you have some questions in mind please reserve them until that time and these gentlemen will attempt to answer them. I presume that was the plan.

At this time I will call on Mr. Raymond Marsh.

RAYMOND MARSH:

Ladies and Gentlemen: I think Mr. Blanchard has very ably introduced the subject of pruning and since there are three of us discussing the subject this morning I don't think it advisable for any one of us to cover the whole field, so I have taken the Fuerte tree up to its fourth year—that is, the pruning that we usually employ up to its fourth year.

There are several main points to consider when pruning. I have asked myself this question. Why do we prune? Because, as Mr. Blanchard has said, total yield on trees generally is (that is normal trees) in proportion to the severity of pruning. The greater the severity of pruning, the less the yield. We prune to assist nature in building a tree with a strong framework. We prune so that the crop may be harvested more efficiently. We prune so that cultural operations may be carried on in a most efficient manner.

Let us assume that we have a normal Fuerte nursery tree planted in orchard form. Usually it is not pruned at all until the early spring of the second year. It has been our practice to go through a young grove and look for trees that have failed to make a satisfactory top growth; that is, the head of the tree has not developed. It has sort of bushed out with numerous short branches and no strong leader. The best thing to do is to cut it back to strong vegetative buds which will be found somewhere down the trunk below the bushy head. These buds will develop several strong growing shoots one of which should be kept to form the head of the tree. It is going to be necessary for me to draw a few pictures on the blackboard to illustrate the cuts that are made. Say that this is the young tree bushed out with drooping limbs. At intervals on the trunk there will be a

few strong buds. It is our practice to cut it off there and develop a new top. If you do not you might not get a tree with a good top. The tree may develop strong side branches which would need cutting back or removing entirely. Cut out all but one of the upright shoots and form the top of the tree from this one.

In my opinion these trees should be examined twice a year during their development period (the first four years). The second year this strong growth—depending on what care the tree has had and the soil in which it is growing— has grown two or three feet. It has put out some very strong side limbs. The small, lower branches on this tree if they show no inclination to grow strong, should be left as shade for the trunk and will never get out of place. If the trees are located on a hillside or terrace, you can head them lower than when grown in regular orchard form on flat land. If they are planted on a terrace, this being the outside of the terrace, the trees should not be allowed to grow strong limbs on the inside lower than five feet from the ground. This will make it easier to work the terrace. Somewhere above five feet select a strong limb growing over the terrace and help it to continue to grow in its proper position. If a limb above it comes down (an overriding limb coming over a permanent side limb), discourage that growth by cutting back or remove entirely if it doesn't make too much of a hole in the tree. On the lower side or outside of the terrace you can select structural limbs lower down on the trunk. We let lots of limbs come down over the terrace here. They are out of the way and will produce fruit which is easy to pick. These low limbs would seem to put the trees out of balance but so far none of the trees have fallen over. It is well worthwhile to leave these low limbs on the outside of the terrace. The less cutting done to make the desired framework the better the chance for early fruiting.

NEED STRONG FRAMEWORKS

The main thing to do is to go through the grove and see that the framework (structural limbs) are being taken care of and growing in their proper places. It will be necessary to do some thinning out and the structural limbs, I believe, should be selected on the main trunk of the tree not closer than three to four feet apart. That gives them space to grow in. If spaced closer some of them will shade out. Even five and six feet apart is all right.

There are some years when Fuerte trees try to carry more fruit than is possible. Some of the main structural limbs as well as the top of the tree will bend over and sunburn severely. I think the best treatment for trees in this condition is to remove the sunburned portions after the crop has been harvested. A new top can be formed by selecting the best of the shoots that will develop. This treatment applies more particularly to the central leader type of tree which I showed here. You will probably get a tree something like this—that being the main trunk, the framework limbs coming out in this fashion. The top is not so important if you are developing the open center type of tree. Some Fuerte trees cannot be developed as a central leader tree.

There is another type of Fuerte tree which we have all seen and which is called "Sunblotch" now. You can usually detect them in a year or two; sometimes you have to wait three or four years for the symptoms to show. Trees afflicted with "Sunblotch" often start out and make a good growth, then in a year or so become stunted. The limbs will hang, drooping. There are some "Sunblotch" trees that will mature several good crops

and later decline into un-productivity. The best way to prune a tree which shows any indication of "Sun-blotch" is to take it out. There are several "Sunblotch" symptoms; yellow, sunken areas on twigs and fruit, roughened bark, and drooping habit of growth.

I think it best for me pause a minute and let you ask questions. I'll do my best in answering them.

DISCUSSION

Question: I would like to ask if the crop will be diminished if I prune while the tree is in bloom—does the shock have any effect on the tree's setting fruit?

Answer: I don't think so. At the time of bloom, fruit bud differentiation has already occurred. All you would do is to eliminate the fruit which you cut off.

Question: (Cont'd.) I was asked to find out here, today, whether it is advisable to prune them while they are in bloom or wait until after the fruit has set.

Answer: I think if there is some corrective work in the construction of the tree you had better do it regardless of the bloom. You will be taking off some of the bloom and of course lose that as fruit.

Question: (Cont'd.) He was afraid the pruning would shock the tree and cause it to drop the bloom before the fruit sets.

Answer: I don't believe anyone has evidence that that would be the case. Any pruning is a sort of a shock to the tree. Within another year or so we might have some data that would tell us just what effect pruning has on Fuerte trees. The trees I have in mind were pruned to eliminate about 50% of the bloom and were pruned just prior to the blossoming period. They seem to be putting out as much bloom on the remaining wood as normally.

Blanchard: I might state that although there isn't a great deal of actual evidence as far as avocados are concerned, we have lots of evidence about other kinds of trees regarding pruning during the blooming season, or just before or after. If the pruning happened to be very severe, whether you prune before, during, or after, you most assuredly reduce production. I have plots on lemons showing that.

Mr. C. E. Knowlton will be the next speaker.

C. E. KNOWLTON:

Mr. Chairman, Mr. Blanchard, Ladies and Gentlemen: I was at a meeting in Whittier which was held about a month ago and it was brought out that there are some 2400 growers but there are only 2399 different methods of pruning, so with that in mind the idea is to have your own method and change it as you become familiar with others. Through inter-change of ideas we find out where we first made mistakes.

Mr. Marsh asked the question in his talk "Why do we prune?" Well let's find out. Is there any advantages in pruning? Can we increase our crop any by pruning? Can we do the health of the tree any good? Can we make the tree stronger? Can we distribute the fruit

better? Can we restore vigor to certain trees by pruning?

Probably pride enters into a good share of the pruning done by some growers. They desire a well balanced, well shaped tree just from the standpoint of the satisfaction it gives them rather than for any more practical reasons.

It is necessary that the trees be pruned to keep the limbs and branches off the ground, to facilitate cultivation and hauling out the fruit—high enough so fertilizer can be distributed and furrows made if we irrigate with furrows.

Probably the main reason pruning is done is for convenience to the grower in his cultural operations. Now, if it is not necessary to make furrows, not necessary to disc and work-in fertilizer, if the cultural operations are such that low limbs do not interfere, then I can see no reason for having the framework high.

Next, can we improve the health and strength of the tree any by pruning? I believe we can. Beginning with the framework, we can prune so the tree will be mechanically stronger. We can keep away from certain crotches that are weak. We can distribute the limbs so they will be able to bear a crop evenly throughout the tree, and so the tree will be free from sunburn. In pruning, we can, by thinning out, distribute the heat and light of that tree. There is no use having five limbs coming out in an area where there is need for only one limb. Take out four and leave one. If there are several branches or limbs where only one is needed some of them will shade out and there will be an increased amount of dead wood in the tree.

That is one thing that the older grove owners are beginning to realize: that they are going to have to do something to let the light into the trees. We can't get away from dead wood altogether and I don't think we can put a great deal of inside fruit on the trees because of the tendency to shade out. The outside shell of the tree, no matter how much you open it up by pruning, is going to close up again soon. It is possible to stimulate some inside fruiting but the bulk of the fruit will be set on the outer part of the tree. That, you can consider the bearing surface.

Some one the other day asked me "why thin out branches when they turn around in the next few months and grow together again?" "Why should we bother to thin out the tree when it covers right back?" But, even at that, it has done some good and is just like all other operations. "Why irrigate?"— you have to irrigate again, perhaps next month—Or any other of the cultural operations. They have to be repeated time after time.

Now there is no evidence that we can increase the fruit-set on the tree by pruning. The evidence is that we will decrease it. However, we might, by pruning or thinning out, better balance the branches over the tree so that the fruit will be more evenly distributed and in that way might be able to carry a little larger crop. If one side or part of the tree was very dense, it would be possible, by pruning or thinning, to open up that tree so that actually there would be an increased bearing surface.

PRUNING TO RESTORE VIGOR

One of the most important functions of pruning, I believe, is pruning to restore vigor. I mean heavy pruning—that is, cutting back some of these trees that have stood still for

years, and every orchard has them. Maybe at some time or another they have been neglected; not enough water, and consequently are badly sunburned. These trees will put on a little new growth on the tips each year and no matter how much fertilizer is put on, it is still impossible to make them snap out of it. The only thing I see to do is to take the pruning saw and cut back of this sunburned wood—Cut back and start over; get a new framework started and if the tree doesn't respond, better put in a new one. There is no use in taking these old, sunburned limbs, trying to make them produce or grow. They will put a little new growth on at the tips and that is all. The only thing to do is to cut them clear back to the frame-work, below the crotch, if necessary, and get a new framework started. Any trees that have been cut back will have to be watched every few months. They will have many new shoots starting and it will be necessary to thin out and save the ones desired. The first year a new head will be started. The second season should show some production.

Question: Would you advise shading the portion exposed?

Answer: I should have mentioned: the only time of year that you should severely cut the trees back is early in the Spring, right now, this time of the year, and chances are you will get no burning. If you do it later, the exposed parts should be shaded, as the limbs might sunburn before the new growth has a chance to come out and shade them. I would not advise anyone to cut back trees except very early in the Spring.

Mr. Blanchard: I am impressed with the fact that our speakers have held to the principles of pruning of oranges, lemons, apricots or walnuts, or some other kind of tree, with the exception of certain minor differences regarding tree growth. Apparently, we are learning from experiences of the past.

Mr. G. R. Calkins of Montebello will be the concluding speaker on this subject.

G. R. CALKINS:

Mr. Chairman, Ladies and Gentlemen: The decadence of the avocado tree is one phase of the business that, as an industry, I believe we have overlooked.

I like to compare trees to human beings. Some of the trees pass on in infancy and others are active and productive for a long span of life. When the period of adolescence takes place in the avocado tree, its reaction is similar to that of a human. In the operations of balling or planting, the trees sometimes die. Others are handicapped by a poor start, but sometimes become more hardy as they grow. Therefore, we have them dropping out all along the way.

There are three types of decadence which I would like to call to your attention. The first of these types to make its appearance is the tree restricted at the bud union. Some of these trees will produce for years; others will be strangled before they reach the bearing age. The second of these types are trees which lacked attention in their formation period; that is the limbs were allowed to grow so they made a natural barrier to the normal flow of sap and caused an early decline. The third example of decadence is when the normal tree eventually reaches a period in its life when the natural decline will

come and something will have to be done about it to keep up its normal production.

PRUNE TO BELOW DEFECTS

My suggestion in pruning all three types is to go below the cause of the decline. If you start the tree growing above the different causes you will get a good growth until it reaches the capacity of flow at which time you will have the same condition.

If the pruning is done below these contributing factors of decline in two or three years the trees should be back in production again and have a good span of life ahead of them.

We use emulsified asphaltum, and try to have from 1/8 to 1/4 inch over the wound after it has hardened. We never leave the asphaltum exposed to the atmosphere. While it is fresh, we cover it with white paper. If it is in the sun it will deflect the heat and prevent sun-burn, and if in the shade it will prevent weathering.

Blanchard: If you can save your questions for the half hour allotted to the subject of questions and answers, these gentlemen will be here and attempt to answer them. I might state that in a forty minute discussion handled by four people it would be, of course, impossible to make a complete picture on the subject of pruning. The discussion of principles of pruning alone would take some time. The wide differences that the avocado especially presents would take some time, so that it would be impossible, as we have had demonstrated, to have a complete picture on the subject of pruning of the avocado. I am impressed with this fact in regard to the subject—in comparison with a number of other kinds of trees, the wide differences in varietal responses of growth tend to affect the picture. We will have to make some pretty close studies on varietal differences in regard to growth responses and fruit responses to determine how to prune satisfactorily.

In order to avoid any more delay in getting on to the balance of the program, I will turn the meeting back to the chairman.