

Progress Report on Avocado Insect Pest Investigations

Professor H. J. Quayle

Citrus Experiment Station, Riverside

Talk given at farm Bureau field Meeting, Rancho Leucadia, Encinitas, Oct. 14, 1932.

I want to take a very few minutes, without going into much detail, with reference to insect problems we are working upon.

We started with fumigation for latania scale which had become rather prevalent. Tests were carried on at the Experiment Station to determine the effects of gas on the avocado tree and to determine the tolerance of the tree to hydrocyanic acid gas. These tests were then continued in this general district. In the meantime, Mr. Palmer of Carlsbad carried on fumigation experiments in conjunction with Mr. Kirkpatrick. Fumigation for latania has now been conducted far enough to warrant me in stating pretty definitely just what should be done in reference to fumigation. Since May, 1932, Mr. McKenzie (and I would like at this time to introduce Mr. McKenzie) has been located at this place and through the kindness of Mr. Hoffman, the owner, we are well equipped for our field work. This is our lath-house insectary, and we also have a small laboratory. Mr. Hoffman placed at our disposal most of the trees on the place and I wish to take this occasion to thank Mr. Hoffman for all these courtesies. He has been most helpful in enabling us to carry on our work quite satisfactorily, so far as we have gone.

Now, what are we doing here? We are working on the life history of four of the chief pests of the avocado. It is necessary to know the life history of any insect before attempting control measures. These insects—this one is latania scale, specimens of which we have on this twig—is controlled by fumigation satisfactorily where you can cover the trees with a tent. But on very large trees, or where planted too close together to be tented, it is impossible to carry on fumigation. In this connection, we are working on different sprays and to date we have found that a medium oil spray controls this scale with a fair degree of satisfaction and usually with no important injury to the tree. Heretofore, with heavier oil we had some damage to some of the trees, and some defoliation. We can kill the scale only fairly satisfactorily with oil spray.

The defoliation that you have seen at Dean Palmer's place and other places was due to the work of two caterpillars and we are now studying their life histories. In May of this year, considerable damage had occurred. It would appear, therefore, that we must get after these fellows earlier in the year. By the time we have completed our studies we will know more about the best time to attack these pests. One of these caterpillars is known as the "looper" and the other the amorbia.

The other thing we are working on in this area as an important pest is the avocado

brown mite which causes the browning of the leaves that you have seen on the trees. The browning is caused by these mites working along the mid-rib. The brown mite is very readily controlled by sulphur dusting, but we are hoping to combine our attack on insects and fungus diseases and get as many as possible with one application. The brown mite is similar to, but distinct from, the red spider of citrus.

We are continuing this work. As far as the scale is concerned, where we can cover the trees with a tent, pretty satisfactory results follow fumigation. However, we need to do some further work with oil sprays. Next Spring at the proper time, we plan to experiment with control measures for the caterpillars. We propose to continue these studies indefinitely.

Question: Can you tell us the effect of oil spray on fruit set?

Prof. Quayle: At San Joaquin Ranch, at Tustin, the damage to fruit set turned out not to be quite as serious as anticipated. It will vary in different sections. We are going rather slowly on oil sprays because of the point Mr. McLean mentioned—the effect on the setting of fruit. As far as our knowledge goes at the present time, the spraying should be done in the summer or very early fall. Fumigation should be done through September, October and November or up to time of blooming. For the spray, we are using 2% of medium oil. Fumigation should wait until the fruits are at least partially grown. We are testing the susceptibility of fruit in different stages to damage from gas. The most apparent susceptibility is at blossom time. You can't safely fumigate during the blossoming period. The smaller the fruit, the more susceptible to injury.

Question: Has it been definitely determined that it is the brown mite of Florida?

Answer: It is the avocado brown mite *Paratetranychus Yothersii*—a new species of red spider unknown until just a few years ago. It attacks the avocado particularly and does not attack citrus as far as we know. There are some other hosts, as the camphor, but so far as we have seen here, they are not important. It is chiefly an avocado pest.

Question: Do you think there will be so much damage in future by brown mite?

Answer: They are quite abundant but the application of dry sulphur so far seems to control them successfully. I think they may do considerable damage at times unless controlled by dusting with sulphur.

Question: Under cool coast conditions, how effective is sulphur dusting?

Answer: This mite seems to be quite susceptible to dry sulphur. Under extreme cool, moist conditions we may later find that a spray may be necessary. However, lime sulphur spray, which is used for citrus red spider, should not be used, as it is not good for the avocado tree.

Question: You think brown mite is not native here?

Answer: Undoubtedly it has been brought in.

Question: What is your opinion concerning ants in spreading diseases?

Answer: The ants are not important as far as red spider is concerned. They are

important so far as soft brown scale is concerned, but this particular scale is not so very important on avocados except on an occasional tree. Ants tend to keep the parasites away from the scales and therefore the ants should be kept down, if possible.

Question: What spray do you use for caterpillars?

Answer: Basic lead arsenate is the thing to use. We got a little tree injury with standard arsenate of lead. We tried Cryolite and other things but are holding to basic lead. There will not likely be any more loopers until next spring and the loopers (I may say in passing) are sometimes very effectively checked by a bacterial disease. Mr. McKenzie has had trouble in carrying through the life history in breeding cages and has only had one lot to come through completely because of this bacterial disease which is rather prevalent in this particular area.