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CITRUS CONDITIONS IN THE RIO GRANDE VALLEY AND THE SATSUMA SECTIONS OF ALABAMA TOGETHER WITH ADDITIONAL NOTES ON SAN JOSE SCALE SITUATION IN NORTHWESTERN ARKANSAS

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INTRODUCTION

The visit to the Rio Grande Valley was made under the auspices and on the invitation of the Extension Division of the Texas A. & M. College. A year ago they conducted a citrus school and it met with such success that it was decided to hold another one this year and it was held from June 25th to 30th inclusive. The object of the school was to give the citrus growers information regarding the diseases and insects and methods for their control. During the week somewhere around a thousand people attended the lectures at the various places.

General Conditions. The soil of the Rio Grande Valley is very fertile and citrus trees make a marvelous growth. Nursery trees one year old are much larger than are trees of the same age in Florida. The average 4-year old grove was as large as a 7 or 8-year old grove grown under the average Florida conditions. In fact some of the trees planted 20x20 feet, 4 years ago, have branches which now meet.

Owing to the uneven distribution of rainfall throughout the year it is necessary to irrigate the trees in order to insure proper growth. The water for this purpose is pumped from the Rio Grande. As yet the gravity system is not in operation but

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a strong movement is on foot to bring about such a system of irrigation and no doubt in a few years not only will the present groves be irrigated by the gravity system but also great acreages in addition. So far as I could learn the cost of irrigating a grove varies from \$10.00 to \$12.00 per acre per year. No doubt the cost is different in different districts. Since the valley is near Mexico an abundant supply of labor is always available and the prevailing wage is one dollar per day for common labor.

Extent of Industry. According to the best information obtainable, 1,700,000 citrus trees have been planted during the past few years. This would be about 25,000 acres figuring on the basis that the trees were planted 20x20 feet. As yet the production of fruit has not been great but prospects are good for ten or twelve thousand cars within the period of 4 years. In fact this is the estimate given by the president of the Valley Citrus Exchange.

Varieties and Root Stocks. The Parson Brown, Pineapple and Valencias seem to be the varieties of oranges usually planted, while Duncan and Marsh Seedless were the leading varieties of grapefruit, 80% of the plantings consisting of grapefruit and only 20% of oranges. With one exception all of the citrus growers with whom I talked in the Valley are of the opinion that neither trifoliata nor lemon stock have any value for the growing of citrus trees in the Valley. Practically all the plantings are now on sour orange stock.

Injury from Winds. The injury caused by the winds is very great. A large part of the foliage on young trees is blown away and most of these trees are very much lop-sided. The foliage on the outside rows on the south and east sides of most groves is usually very sparse, due to the injury from winds. The fruit also is very badly blemished by being blown around so violently as to cause mechanical injury. In fact I rather thought that 99% of the blemishes seen in the Valley were caused by winds.

Diseases. Although an extensive search was made for melanose not a single spot was found in the entire Valley. Citrus scab was very serious on some sour seedlings in a nursery but the grapefruit trees did not seem to be seriously effected with this fungus disease. In one grove I saw what I presumed to be foot-rot and one case of a disease simliar to frenching was observed.

Insects and Mites. Since citrus trees have been shipped into the Valley from both Florida and California is is only natural

to expect that the same insect pests which are present in both of these localities should also be present in the Valley. Such is largely the case and we find about the same scale insects and mites present as in both Florida and California. The Florida red scale is supposed to be the most injurious scale present. It seems to thrive in the hot dry climate. Next in importance is the California red (this may be *dictyospermum*). This scale was observed in a grove, the trees of which were purchased in California, in great abundance. In fact this scale had nearly killed this entire grove which was only saved from total destruction by the use of oil emulsion two or three times last winter. The chaff scale, *P. pergandii*, does great damage to the twigs and trunk and no doubt is the third most injurious scale insect. The long scale, *L. gloverii*, is the fourth in importance and does much more damage than the purple scale. The purple scale is also present but I presume the sun is too hot for its proper development in great numbers. I understand the citrus white fly is present at Brownsville but I did not see it myself.

The citrus rust mite is present in the greatest abundance in the Valley. It often becomes so abundant that the limbs turn blue and the leaves take on a brown color and, in many cases, do not reach normal size. The fruit on several groves was badly rusted and in many cases the living mites and eggs were present on the fruit in countless numbers.

Even though rust mites are extremely abundant they can be very easily controlled by means of dusting with sulphur. Owing to the infrequency of rains the sulphur would remain on the foliage for long periods of time and sufficient to kill rust mites would no doubt be present until a rain came and washed it from the trees.

Entomogenous fungi. None of the entomogenous fungi attacking scale insects were observed. Neither the county agents nor Mr. E. W. Halstead had ever seen them in the Valley excepting on nursery stock when received. No doubt these fungi have been introduced many thousands of times and owing to the adverse climatic conditions have never established themselves. I did not find out if our Florida fungus on rust mites was present. Neither the citrus red spider nor the six-spotted mite, *T. sexmaculatus*, were observed. Another red spider, however, of a greenish tinge with dark spots on its back was observed at McAllen. I am of the opinion that this is the same red spider

as the one taken by me on some temple oranges at Homestead, Florida, in W. J. Krome's grove.

A local man was making the Government formula oil emulsion for controlling scale insects. The grade of oil being used was too light for best results and specifications of a better oil were given to him. They have already established a citrus experiment station in the Valley for the purpose of taking up the problems relating to the industry. No doubt this will solve many of the problems and difficulties which now seem almost insurmountable to the citrus growers.

Even though trees make a much more vigorous growth and labor is less than half what it is in Florida and no fertilizer has been required up to this time, the hazard from cold may outweigh the advantages above enumerated. Due to this cold hazard most of the growers will arrange for firing in case of necessity.

SATSUMA CONDITIONS IN ALABAMA

The satsuma industry in Alabama is in a flourishing condition with prospects this coming year for an increased yield over that of the past season. The Gulf Coast Citrus Exchange has employed Dr. H. L. Dozier to handle its insect and spray problems. Dr. Dozier has approached the situation with enthusiasm and vigor and no doubt his work will be exceedingly profitable to the members of the Exchange. One of his main objects is to teach the citrus growers the recognition and biology of the citrus pests. This is being done by lectures, personal interviews and writing for the Gulf Coast Citrus Grower. It is also his intention to carry on as much research work relating to sprays and insect biologies as time will permit.

SAN JOSE SCALE CONDITIONS IN NORTHWESTERN ARKANSAS

In Northwestern Arkansas I visited Messrs. Ackerman and Pierce, who showed me large acreages of apples which had been completely killed by the San Jose Scale and thousands of other trees which had been most severely damaged. The entire apple industry would have been wiped out in the Ozark district if these scientists had not introduced the oil emulsions. The apple-growers and business men are highly pleased with the results of these emulsions in the control of this scale. They use a heavy oil for making the emulsion and it retails for \$12.00 a barrel which is less than half what Florida growers pay for emulsions made out of lighter oils.