THE MANGO SHIELD SCALE, ITS FUNGUS PARASITE AND CONTROL

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During the past summer the writer’s attention became directed to what appeared to be an unusually severe infestation of the Mango Shield Scale (Coccus mangiferae (Green)) in certain mango plantings on Pine Island, Lee County, Florida.

Fig. 1.—Enlarged illustration of Mango Shield Scale showing how the Cephalosporium Fungus generally proliferates from the edge of the scale it has killed to form a delicate halo. This is best shown at top (center), the black oval being due to a small flake of sooty-mold. This same scale is shown in almost the exact center of Fig. 2. X7. Photo by Geo. B. Merrill.
Fig. 2.—Mango Shield Scale on Mango leaves heavily infected with Cephalosporium Fungus. Uniform black areas illustrate how completely the sooty-mold fungus may cover the tops (lower left) and even parts of the bottoms of leaves (right). X3/4. Photo by Geo. B. Merrill.
The first specimens received (early June) showed the presence of the Cephalosporium Fungus \( \text{(Cephalosporium lecanii)} \), a parasite of not infrequent occurrence in Florida on such scales as Pyriform Scale, Mango Shield Scale, Soft Brown Scale, Hemi-spherical Scale, and others of the soft scale group. It also occurs in the Virgin Islands, Barbados, Cuba, Ceylon, and presumably other tropical and sub-tropical regions.

The question at once arose how effectively will this fungus control this scale by the end of the period of summer rains (mid-September or thereabouts)?

Specimens received in early September verified the surmise that the fungus would spread and become epidemic on this scale. Many leaves heavily infested showed hardly a live specimen, so effectively had the fungus spread. The seemingly excessive presence of Sooty-Mold, which develops in the honeydew excreted by these and similar scales, however, indicated that the insects had, nevertheless, severely sapped many, if not all, trees in the plantings. So much so that the writer decided to visit Pine Island and make a personal inspection of some of the plantings. This was done on October 30 and 31, 1937.

Personal inspection revealed the fact that the fungus had spread like wildfire, effecting what one could call a fair commercial control, but heavily infested trees were black with sooty-mold. Some trees, furthermore, showed that they were suffering injury, as indicated by a shortage of foliage and general appearance.

An interesting observation, made by one of the owners, was that live immature scales were migrating to new growth as evidenced by the presence of bees collecting honeydew. This was verified by an examination of some new growth, which, however, was not plentiful at the time and high up in the trees.

Since oil sprays or soap solutions loosen the sooty-mold, it was indicated to the owners that they give a cleanup spray of oil emulsion or soap, especially to those trees heavily covered with the mold, in order to facilitate its removal by winds and rains. Such a spray might be applied only to the tops of the leaves where the mold is thickest, thus hurrying its weathering-off and allowing sunlight to reach the leaf surfaces previously shaded. This should help the trees to function more normally preparatory to next season’s bloom and setting of fruit.

It was further explained, however, that thoroughly spraying both leaf tops and bottoms would be preferable since this would
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kill many scale-insects not killed by the fungus as well as loosen the sooty-mold. Directing the spray against the leaf-tops only, was indicated mainly for the benefit of those who might not feel able to bear the extra expense of a more thorough spraying.

It was learned that some growers employ two or more applications of Bordeaux in the bloom to prevent anthracnose on the fruit. At first it was feared that this practice was interfering with the friendly fungus, but since the Bordeaux is directed particularly at the bloom, it is believed that not enough Bordeaux reaches the bottom of the foliage to interfere with the fungus.

It should finally be stated that this scale probably occurs wherever mangos are grown in Florida.

ENTOMOLOGICAL RECOMMENDATIONS

By Ralph L. Miller

The value of the citrus of Florida reaches as much as 35 to 40 million dollars annually. Recently the combined values of the vegetable crops of the State have reached as much or more, being 35 to 40 million dollars also.

Since the combined values of these crops reach 75 million dollars, and insect damages are conservatively estimated at ten percent of the value of the crop, and disease damage is estimated at a similar amount, the total loss to the main commercial crops of Florida is seven or eight million dollars.

If we add to this the money spent for labor, materials, and equipment used for insect and disease control, we will have a similar amount involved in the control of insects and disease annually.

This does not include any of the crops grown by small gardeners for home use nor does it include the use of insecticides and fungicides on flowers, lawns, or any ornamental plants. Any of you who have tried to grow flowers or keep a lawn in good shape know how troublesome this can be. None of the household pests, termites, moths, mosquitoes, etc., were included in the above estimates. Omitted also were all the animal and livestock pests such as ticks, screw worms, fleas, etc.

All these above points are mentioned to show the importance of entomological recommendations. We in this assembled group,

1Address of the President of the Florida Entomological Society at Gainesville, November 20, 1937.