

# KROME MEMORIAL INSTITUTE

## NOTES ON SOME GUAVA INSECTS

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A total of 62 insect species was catalogued by Bruner, et al, (1945) as infesting the common guava, *Psidium guajava* L., in Cuba. A total of 12 insect species was recorded by Wolcott (1933) as affecting the guava in Puerto Rico. At least eight species were specifically mentioned by Ruehle (1947) as affecting the guava in Florida. It may be said, therefore, that the guava has its share of insect pests. Some attack only the leaves, others only the fruit, while still others infest the bark of trunk and branches. Owing to the importance of the fruit to Florida agriculture brief discussions of some guava insect pests with suggestions for their control are given in the light of present day knowledge.

### LEAF INFESTING INSECTS

The red-banded thrips, *Selenothrips rubrocinctus* (Giard.), is occasionally serious on guava. Defoliation and fruit russetting result from dense infestations. Spraying the infested plants with a pint of 40% nicotine sulphate in 100 gallons of water or of rotenone and derris-resinate materials, or 1% oil emulsion sprays is the recommended control.

Some of the newer insecticides, DDT, benzene hexachloride, and chlordane, have been found to control the insect. Their use cannot be recommended at this time, however, because serious infestations of scale insects may build up afterward. In one test HETP (hexaethyl tetraphosphate), one of the new phosphate insecticides, did not equal the above insecticides in thrips control.

A species of whitefly, having a tiny black spot near the center of each wing has been

infecting the guava at the Sub-Tropical Station. This is more especially true of the slathouse and greenhouse plants. This insect was identified by Miss Louise M. Russell of the U. S. Bureau of Entomology and Plant Quarantine as *Metaleurodinus cardini* (Back).

Attempts at control of the insect by dust applications of 3% DDT and 1% gamma-benzene hexachloride in the greenhouse were not satisfactory. A test was made of some of the newer insecticides in 1946 and included the following: 25% azobenzene, 3% DDT, 1% gamma-benzene hexachloride, and 3% chlordane as dusts; and of HETP as spray at 1 quart of 50% active ingredient per 100 gallons of water. The HETP showed more promise than any of the other materials. In experiments made in 1947, HETP was also promising as a control. Two other new phosphate insecticides, tetraethyl pyrophosphate and O-O-diethyl O-, p-nitrophenyl thiophosphate, were also tried. These also gave promise of controlling the whitefly. All materials were used as sprays, and were applied by means of a small, continuous pressure-type hand sprayer. The plants in the test were grown in a slathouse in pots, and were between two and three feet high at the time of treatment. All were infested in varying degrees with all stages of the whitefly at the time of treatment. The results, numbers of flies per leaf, based on samples of three leaves from each plant and eight plants per treatment, counted five days after treatment, are summarized in Table 1.

The three phosphate insecticides appear promising, having given excellent to perfect control. The next step is to try these insecticides by machine application on trees under grove conditions.

Broad mite, *Hemitarsonenus latus* (Banks), infestations, common on many

TABLE 1—WHITEFLY, *Metaleurodinus cardini*, INFESTATIONS AFTER SPRAY TREATMENTS.

Treatment material	Amt. active ingredients per 100 gals. water	Whitefly larva, pupae, and adults per 24 leaves	Percentage control
O-, O-diethyl O-, p-nitrophenyl thiophosphate <sup>1</sup>	1 lb.	0	100
O-, O-diethyl O-, p-nitrophenyl thiophosphate <sup>1</sup>	1/2 lb.	6	95
O-, O-diethyl O-, p-nitrophenyl thiophosphate <sup>1</sup>	1/4 lb.	6	95
Tetraethyl pyrophosphate <sup>2</sup>	1 pt.	4	97
HETP 50% Vapotone <sup>3</sup>	1/2 pt.	1	99
DDT plus <sup>4</sup>	1 qt.	7	94
Check		125	—

<sup>1</sup> Obtained from American Cyanamide Company<sup>2</sup> Obtained from Victor Chemical Works<sup>3</sup> Obtained from California Spray-Chemical Company<sup>4</sup> Obtained from Hughes Seed Stores as a proprietary combination of DDT, pyrethrins, rotenone and petroleum oil materials

plants, have also been found on guava nursery stock. They infest the leaves and young stems. Leaf symptoms usually consist of crinkling and distortion. Sometimes one side of a leaf rolls under, sometimes both. A leaf may become C- or sickle-shaped, as viewed from the top or bottom. It may, on the other hand, curve downward from the tip, so that the leaf will describe an arc, or become C-shaped as viewed from the side. Russeted scar tissue is common on the under surfaces of the leaves where these pests fed. In cases of severe injury, leaves fall, growing tips wither, perish, and the plant may die.

Broad mite infestations have been observed on plants other than guava in the Sub-Tropical Station slat-house and greenhouse. They include mango, avocado, papaya, jujube, *Annona* sp., pitomba, and white sapote. The pest has a long list of host plants, including the orange, as reported by Smith (1933).

More discussion is given to this pest because it (1) is small and cannot be studied

with the unaided eye, (2) seems to be so prevalent, and (3) is capable of considerable damage of an insidious character that may be attributed to nutritional disorders, disease, and chemical or other treatments.

The situation in which the plants are grown appears to have some effect on severity of broad mite infestations. Host plants grown in the slathouse and greenhouse are more likely to suffer from mite infestations than those grown out-of-doors. A serious infestation observed in a shaded nursery has also suggested that much shade and damper locations may be factors which favor conditions for broadmite increase.

Control recommendations would ordinarily be for applications of sulfur as dust, or wettable sulfur 10 pounds combined with either 1 1/2 gallons of liquid lime sulfur or 6 pounds of dry lime sulfur per 100 gallons of water. A Miami nurseryman, however, has reported that sulfur was not satisfactory. He reported using a rotenone, derris-resinate material, *Syntone*, as a 1-200 spray, with satisfactory control. More

work needs to be done in order to have definite recommendations.

The cotton or melon aphid, *Aphis gossypii* Glov., infests guava leaves, principally the new ones on the terminals of the branches. Control recommendations include applications of nicotine sulphate, one pint of 40% material per 100 gallons of water, or of rotenone and derris resinates applied according to the manufacturer's instructions. Some of the newer insecticides as DDT and benzene hexachloride may be used for control of the aphid. They are not recommended at this time, however, because scale insects may build up more rapidly afterward.

One or more species of the leaf roller or leaf tier insects is frequent on the guava. The control suggested for these is lead arsenate as the insecticide at three pounds per 100 gallons of spray. It may be added to the important nutritional sprays of copper and zinc recommended by Ruehle (1947).

A tiny lepidopteran moth determined by Mr. Carl Heinrich of the U. S. Bureau of Entomology and Plant Quarantine as a species of *Chilocampyla*, closely related to *psidiella* Busck, a leaf miner, infests and distorts the tender new leaves. It is common but is not considered very injurious. No recommendable insecticide is recognized for this insect. It has several important insect enemies that keep it in control.

#### FRUIT INFESTING INSECTS

Some brief attention is given to a fruit infesting insect, the *Argyresthia eugeniella* Busck., which has been called the guava moth. The larva of this insect burrows into the fruit and may be present at harvest time. The time and ability required for removal of all insects from the fruit has been a serious matter in certain instances.

Recent efforts at the Sub-Tropical Station to study the biology and control of the moth have been hampered by unfavorable weather conditions, particularly by the hurricane of September 1945, which destroyed

or damaged the trees, and by the freeze of February 1947, which destroyed some fruit and blossoms.

Some data have been taken from north of Miami, on the seasonal incidence of fruit infestations. Percentages of the fruit found infested were as follows:

Jan.	Feb.	Mar.	Apr.	May	June
—	100	—	33	10	—
July	Aug.	Sept.	Oct.	Nov.	Dec.
41	—	4	70	20	—

These observations show that infestations of the moth were prevalent in varying amounts throughout the calendar year.

A small weevil, *Anthonomus costulatus* Suffr., has been found infesting guava fruit. The adults puncture the fruit and deposit eggs, and they appear also to feed on the sap oozing at the punctures. Studies are planned on the biology and control of the weevil as well as the guava fruit moth.

Plant bugs may be encountered stinging the fruit. Sabadilla or one of the newer insecticides may be found to control these insects. This cannot be termed a recommendation, however, because no observations have been made on the subject.

#### TRUNK, BRANCH, AND STEM INFESTING INSECTS

Ants may be found running up and down tree trunks and branches. They are likely to be attending aphids or scale insects infesting the leaves. In one grove the little fire ant, *Wasmannia auropunctata* (Roger), was so numerous that it attacked fruit pickers and caused a bit of labor unrest with some loss of fruit. An experiment was conducted to determine control measures. As a result of the experiment and also of some practical grove use a recommendation is given. The trunk and larger branches if sprayed with one pound of the active ingredient of DDT or chlordane appropriately prepared for mixing with 100 gallons of water will control the fire ant. Benzene hexachloride was found satisfactory also in fire ant control as used at one-half to

three-fourths pounds of gamma-isomer per 100 gallons of water.

Latania scale, *Aspidiotus lataniae* Sgn., increases were found on the tree trunks and branches sprayed with chlordane, DDT, and benzene hexachloride in the order given from most to least. An interesting and as yet unexplained observation is that the most scale insects per linear foot of the tree branches were found on trees treated with the lowest dosages of DDT, chlordane (at 1/2 lb. active ingredient per 100 gals. of water, and benzene hexachloride (at near 1/4 lb. gamma-isomer per 100 gals. water). The fewest scales were found on trees treated with the highest dosage concentrations of DDT, chlordane, and benzene hexachloride (1 1/2, 4, and 2 pounds of the active ingredient per 100 gals. of water, respectively). The scale insect counts were made 54 and 84 days after treatment and showed significantly greater increases by most treatments over the check trees. The scale increase in this instance had no serious consequence.

Leaf coverings of black sooty mold commonly discolor the lower leaves on guava

trees. Scale insects and mealybugs on branches and leaves above secrete substances that fall to the leaves below and permit the development of fungus growth. The control recommendation is to apply an oil emulsion spray of 1 1/3% oil content to control or eliminate the insects and thereby reduce or rid the leaves of the sooty mold.

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