

I N T R O D U C T I O N.

The Froghopper - Aeneolamia varia saccharina, Distant (Homoptera : Cercopidae), formerly known as Tomaspis saccharina, Distant, is by far the worst pest of sugar cane (Saccharum officinarum L.) in Trinidad. Damage is principally caused by the adult Froghoppers sucking the leaves of the plants, which then develop large necrotic areas, a condition known as "blight". This blight may be so severe that it reduces yields of plant cane but generally the effect of froghopper attacks is most marked on ratoon cane. The frequent replanting of cane is costly and since it has hitherto proved impossible to eliminate the pest, which has alternative host plants in the form of many grass species, profitable sugar crops can only be grown if control measures are regularly carried out. While permitting ratooning these control measures, which mainly comprise the direct application of insecticides, are still very expensive and not fully effective, the latter point being exemplified by the fact that Caroni Ltd., who produced 75,686 tons of sugar in 1958/59 or 41.1% of the crop in Trinidad, spent £250,000 on the control of froghopper during the same period. Pickles (1937), reckons that froghopper may be regarded as the second worst insect pest in the world, he states ... "the froghopper is responsible in certain years for the loss of a greater proportion of a single country's production of a particular commodity than any other insect, with the exception of the Cotton Boll Weevil, Anthonomus grandis." Consequently it is important that research aimed at finding cheaper and more effective control measures should continue.

The damage done by this pest at the college farms during the past few years has also been considerable and hence it was felt appropriate that further research work should be carried out on its control and incidence, in view of the fact

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that sugar cane has been and will ⁱⁿ future be the main cash crop on the commercial New Farm. ~~part of Trinidad.~~

These studies included in this report have been divided into three parts :

Part I. An up-to-date critical review of the literature on Aeneclamia varia saccharina, Dist. with particular reference to its chemical control.

Part II. An analysis and discussion of a number of field experiments carried out during the 1960 froghopper season. These included :

(a) A stool dusting insecticidal trial using the most effective and up-to-date insecticides. This experiment was replicated on a field scale.

(b) An assessment of the incidence of froghopper in pasture grasses close to sugar cane.

Part III. An analysis and discussion of a number of field experiments carried out during the 1961 froghopper season and including :

(a) A follow-on of the insecticidal trial of the previous year with particular attention being paid to size of sample and cultural operations before the application of the insecticides.

(b) Further studies on the assessment of froghopper in pasture grasses.

It should be noted that the insecticides used in these studies have already been used on an extensive scale on estates; however the college farms have not got a long history of intensive insecticidal control and therefore froghopper susceptibilities might be different.

Briefly, it might be said that the primary object of this work is to find better means of controlling the pest on the college farms, and results will naturally apply strictly to the

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conditions of these farms, but it is hoped that they will be found applicable to other parts of Trinidad.

THE HISTORY OF FROGHOPPER IN TRINIDAD.

The first records of damage caused by the spined leafhopper were made in the year 1860-61, and since that date it has not ceased and was the first to cause a violent silk production. The first year of serious outbreak of the pest was reported to be 1867-68, about 1868-69 during 1907-10, due to flight were quoted to be so bad as 100 of the crop, which at that time meant a loss of £30,000 per acre on the total island area (1907-10). In 1908-9 a year after the flight, the export of sugar from Trinidad was approximately 12,000 tons, and in the following year it had fallen to 40,000 tons, nearly 90% of this drop was considered due to the incidence of pests and diseases of which froghopper was the most important. This drop in production cost the island about £300,000.

In 1888, the Board of Agriculture appointed a Committee to study the froghopper flight, and in 1889, following a grant of £1000, the "Froghopper Investigation Committee" was appointed to study the problem. Their witness claimed the incidence of froghopper, but even up to 1908 no complete method of control had been devised, though modern insecticides have solved losses. The Froghopper Investigation Committee however, their studies on biochemical work and the investigation of food characteristics in relation to froghopper problems, but the more recent work of the past twenty years has been concentrated on the control of froghopper by artificial means, mainly of the visual nature.

From the sequence of investigations made against the spined leafhopper, it is evident that a systematic and concerted effort must be made on the control of froghopper, and the biological methods proved to be effective against nymphal and adult stages.