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**CONTROL OF THE BANANA RUST THRIPS
(CHAETANAPHOTHRIPS SIGNIPENNIS (BAGN.))
IN NORTH QUEENSLAND**

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SUMMARY

A field trial in north Queensland investigated DDT spray and DDT/BHC dust as banana bunch treatments and dieldrin butt sprays for control of the banana rust thrips, *Chaetanaphothrips signipennis* (Bagn.). Three applications of DDT/BHC dust resulted in unblemished fruit. The commercially used dieldrin 0.05% butt spray for weevil borer, *Cosmopolites sordidus* Germ., also controlled the thrips. The ramifications of *C. signipennis* control by this method in bananas is discussed.

I. INTRODUCTION

The banana rust thrips *Chaetanaphothrips signipennis* (Bagn.) has been a serious pest of bananas in north Queensland (Saunders 1961b) and other eastern Australian banana-growing areas (Caldwell 1938; Braithwaite 1963). It is apparent that during the last 15 years rust thrips populations on bananas have declined markedly in all commercial banana growing areas on the east coast of Australia. Braithwaite (1963, 1967) reported that in northern New South Wales, dieldrin butt sprays applied for control of banana weevil borer, *Cosmopolites sordidus* Germ., also controlled rust thrips populations. It was therefore considered that the low populations coincided with, and were due to, the general change from BHC dust ground applications to dieldrin butt sprays for the control of *C. sordidus*. Until this study was conducted, there was no experimental evidence in Queensland to support this belief.

Since the work of Saunders (1961a), using treatments of uncovered bunches, the use of polythene bunch covers has become standard farm practice in north Queensland. Bunches on which the bracts covering the fruit have fallen are generally treated with insecticide and covered. No further insecticide applications are made.

The trial was designed partly to test the effect of dieldrin butt spraying on rust thrips control in north Queensland and partly to examine the effect of combining the bunch treatment of Saunders (1961a) with the use of polythene bunch covers.

The trial was carried out in the Tully area in 1972.

II. MATERIALS AND METHODS

The following materials were used:

DDT—an emulsifiable concentrate containing 25% w/v active constituent

DDT/BHC—a dust containing 2% DDT and 0.26% gamma BHC

Dieldrin—an emulsifiable concentrate containing 30% w/v active constituent

The following treatments were applied:

DDT 0.1% spray—one bunch application + dieldrin 0.05% butt spray

DDT/BHC dust—one bunch application + dieldrin 0.05% butt spray

DDT 0.1% spray—three bunch applications + dieldrin 0.05% butt spray

DDT/BHC dust—three bunch applications + dieldrin 0.05% butt spray

DDT/BHC dust—three bunch applications

Dieldrin 0.05% butt spray

No treatment.

A 7 x 3 randomized block layout was used. Plots varied slightly in size and consisted of two mature datum plants with at least two guard stools between treated plots in the row and a guard row (butt sprayed) between treated rows.

Dieldrin was applied with a knapsack sprayer, as a butt spray to the base of the plant, the suckers and the soil for 30 cm around the base with 568 ml of 0.05% dieldrin per stool. This spray was applied during March when the first datum bunches were just appearing. Inspections were made weekly and bunch treatments began as bunches appeared in the throats of the plants. Treatments 1 and 2 were applied once, 3 weeks after the bunches emerged. Treatments 3, 4 and 5 were applied weekly for 3 weeks from bunch emergence. All bunches were covered with polythene sleeves 3 weeks after emergence.

At harvest the hands were removed from the bunches, the number of fingers were counted and each finger was rated for rust thrip damage. The following ratings (as percentage of skin surface damaged) were used: 0, clean; 1, 1 to 25%; 2, 26 to 50%; 3, 51 to 75%; 4, 76 to 100%. Bunches were harvested mainly during September.

III. RESULTS

The results are summarised in table 1.

TABLE 1
RUST THRIPS DAMAGE AT HARVEST

Treatment	% Fingers Blemished	Mean Rating
DDT 0.1% spray—one bunch application + dieldrin 0.05% butt spray	1.29	0.013
DDT/BHC dust—one bunch application + dieldrin 0.05% butt spray	0	0
DDT 0.1% spray—three bunch applications + dieldrin 0.05% butt spray	0.22	0.002
DDT/BHC dust—three bunch applications + dieldrin 0.05% butt spray	0	0
DDT/BHC dust—three bunch applications	0	0
Dieldrin 0.05% butt spray	0.50	0.008
No treatment	12.76	0.136

Statistical analysis has not been carried out since the results of all the insecticide treatments are similar and obviously better than no treatment.

The results indicate that three applications of the DDT/BHC dust provided control. The test was not a severe one because of the relatively low thrips activity.

The dieldrin butt spray also effectively controlled the thrips. The duration of protection from rust thrips attack by butt spraying cannot be determined from the results of this trial. Although samples were not taken, observations suggested that thrips attack on untreated bunches was absent or negligible after June.

IV. DISCUSSION

Although Saunders (1961a) applied bunch treatments for the whole bunch life, the use of bunch covers in this trial would obviate the necessity of further treatments after covering. During April, May and June 737 mm of rain fell on the trial area, yet the dust cover, under the bunch cover, appeared undisturbed at harvest. The dust was still active at harvest as larvae of the sugar cane bud moth, *Opogona glycyphaga* Meyrick, were actively damaging untreated bunches though no damage was recorded on dusted bunches. The results of the DDT/BHC dust and the 0.1% DDT spray are therefore consistent with those found by Saunders (1961a).

In Saunders' trials dieldrin applied to the emerging bunch and pseudostem did not give control. However, the dieldrin was not applied to the soil where the thrips pupate. Froggatt (1927) found that rust thrips control was enhanced by "burying half an ounce of calcium cyanide flakes in the soil at a depth of 3 to 4 in., and at a distance of about 6 in. from the base of the plant". Froggatt's finding is consistent with Braithwaite's (1963, 1967) findings, and the present conclusion of the effectiveness of soil applications of dieldrin.

Observations of the very few occurrences of rust in commercial plantations in north Queensland during 1970-1974 revealed that each infestation was associated with an absence of butt spraying for at least 12 months before, or in the case of plant crops, a complete absence of the spray. Rust thrips severely attack backyard banana plants on the wet tropical coast between Ingham and Cairns where soil treatments are not normally applied. It is considered therefore that the general decline in importance of rust thrips in north Queensland over the last 15 years may be attributed to the use of dieldrin for weevil borer control over the whole commercial banana area.

V. CONCLUSIONS

Under the present methods of cultural management of banana crops in north Queensland specific treatment of bunches for rust thrips control is not necessary. The fact that two insect pests of major importance in banana production can be controlled by insecticide application to the ground only is a significant factor in considering the development of control programmes for banana pests in north Queensland.

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