

## EVALUATION OF GRANULAR INSECTICIDES FOR THE CONTROL OF MAJOR INSECT PESTS OF COTTON

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A field experiment was laid out in randomized block design during 1969, to assess the insecticidal value of temik, thimet and di-syston, each at 1 and 2 lb. a.m. per acre, against major insect pests of cotton. These insecticides gave significant control of cotton jassid, cotton whitefly and thrips but were found to be ineffective against bollworms. On the basis of overall performance, temik proved to be the best, followed by thimet and di-syston in the descending order of merit.

### INTRODUCTION

Cotton crop is attacked by a large number of insect and mite pests, the most destructive of these are cotton jassid, cotton whitefly, bollworms and mites of the genus *Tetranychus*. With the development of soil systemics, the control of some of the important pest insects has become possible without any risk or hazards associated with the conventional spraying and dusting programmes. Soil systemics are easy to apply and give greater protection to the natural enemies of the various pest species. Some of the recent information on the effectiveness of soil systemics against cotton pest complex is available in literature.

Leigh (1963) observed that phorate (1.3 to 3.5 lb. a.m./acre) and dimethoate (1.4 to 1.5 lb. a.m./acre) gave effective control of three species of spider mites in some localities but not in others. Di-syston was however, found to be totally ineffective against them. Tsai and You (1963) reported that the use of granular phorate, at 1 to 2 lb. a.m. per acre, as 'in-furrow' treatment, significantly reduced the population of *Empoasca biguttula* Shir and *Aphis gossypii* Glover for 53 and 72 days, respectively. It gave good control of both the insects for 49 days when applied as 'side-dress' treatment (2 to 4 lb. a.m. per acre). The granules were, however ineffective against *Pectinophora gossypiella* (Saund.) and *Earias fabia* (Stoll). Parker and Dewey (1965) observed that phorate breakdown was greatest during the first week and was almost complete at the end of one month. Pirimmer (1966) obtained outstanding

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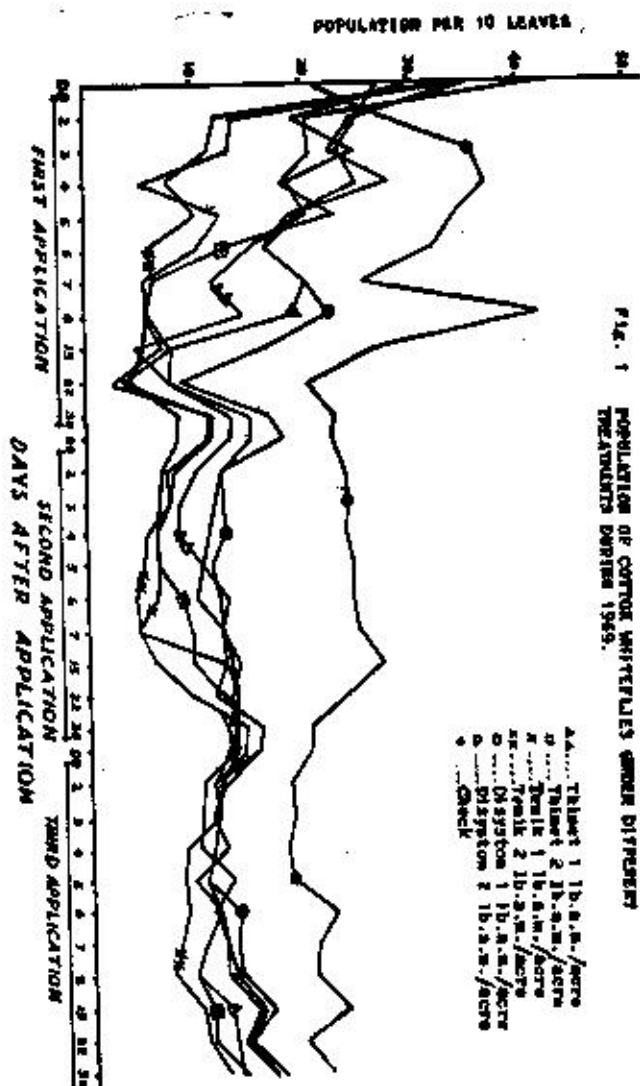
control of tobacco thrips, *Frankliniella fusca* (Hinds.), with 'side-dress' treatments of phorate, and fair control of cotton leaf-hopper and season long control of spider mite. Cowan *et al* (1966) obtained good control of thrips (*Frankliniella* spp.) and cotton aphid, *Aphis gossypii* Glover, for nine weeks after planting, with granular U.C. 21149, niagra 1024 and phorate, applied in furrows at the time of planting and good control of cotton leaf-hopper for at least two weeks with U.C. 21149 used as side-dress. Hopkins and Taft (1968) controlled light infestations of two spotted spider mites and cotton aphid with U.C. 21149, as side-dress treatment, but found it ineffective against bollworms, *Heliothis zea* (Boddie). Ridgway (1969) reported that 'in-furrow' and 'side-dress' treatments of temik had a considerable effect against the sucking insects and mite pests

### RESULTS AND DISCUSSION

The application of these insecticides gave a highly significant control of jassid, whitefly and thrips in all the three applications, but non-significant results in case of bollworms were obtained. The data on the population of jassid, whitefly and thrips per 10 leaves of cotton and on percentage infestation of bolls are shown in Fig. 1—4. Temik comparatively gave the best results, followed by thimet and di-syston. The insecticides gave better results in the first application particularly in case of jassid and thrips, as compared to second and third applications which is probably due to the smaller size of the plants during the first application.

In the present experiment, phorate at the rates of 1 and 2 lb. a.m. per acre gave good control of jassid, and whitefly for about 4 weeks and thrips for about 3 weeks when applied as 'sidedressing' in the month of July but proved to be ineffective against bollworms when applied in August and September. These findings are in conformity with those of Tsai and You (1963) who controlled *Empoasca biguttula* Shir and *Aphis gossypii* Glover, with 'in-furrow' treatments of thimet applied at 1 and 2 lb. a.m. per acre but found it ineffective against bollworms (*Pectinophora* and *Earias* spp.). Hopkins and Taft (1968) obtained good control of cotton aphid and mite with temik used as 'in-furrow' or 'side-dress' treatments, but found it ineffective against bollworms. Similarly, Cowan *et al* (1966) got good control of thrips and aphids for about 9 weeks with U.C. 21149, applied as 'side-dressing'. In the present experiment, temik showed almost similar results and gave good control of cotton jassid and whiteflies for about 4 weeks and of thrips for about 3 weeks and proved to be ineffective against *Pectinophora* and *Earias*

spp. Similarly, di-syston proved equally good for controlling aforementioned three pest insects but gave no control of bollworms.



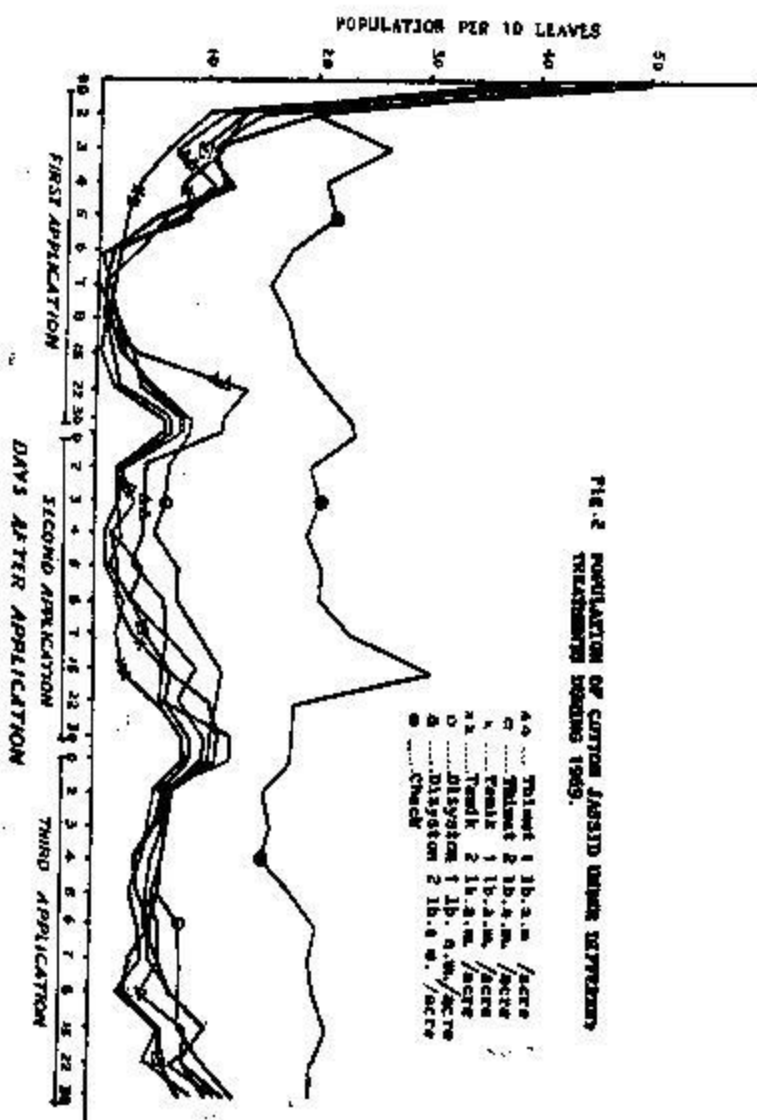
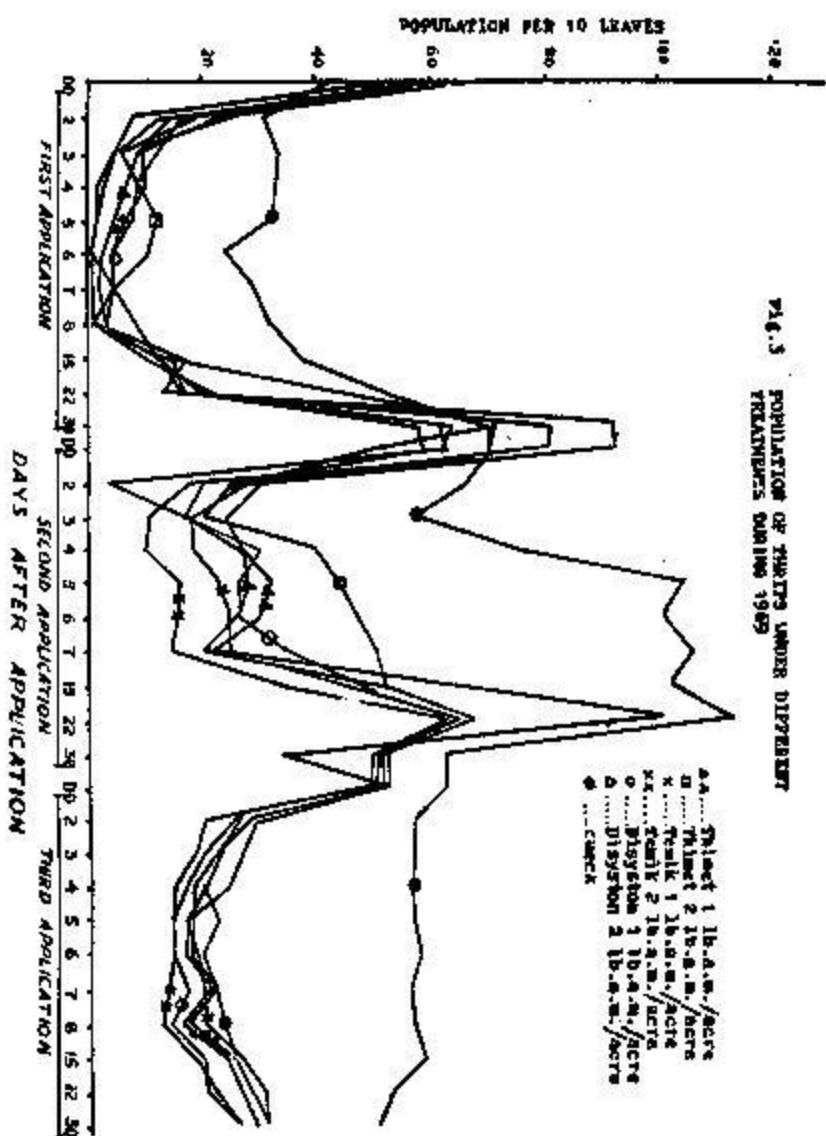


FIG. 2. POPULATION OF COTTON APHIDS UNDER VARIOUS TREATMENTS DURING 1969.



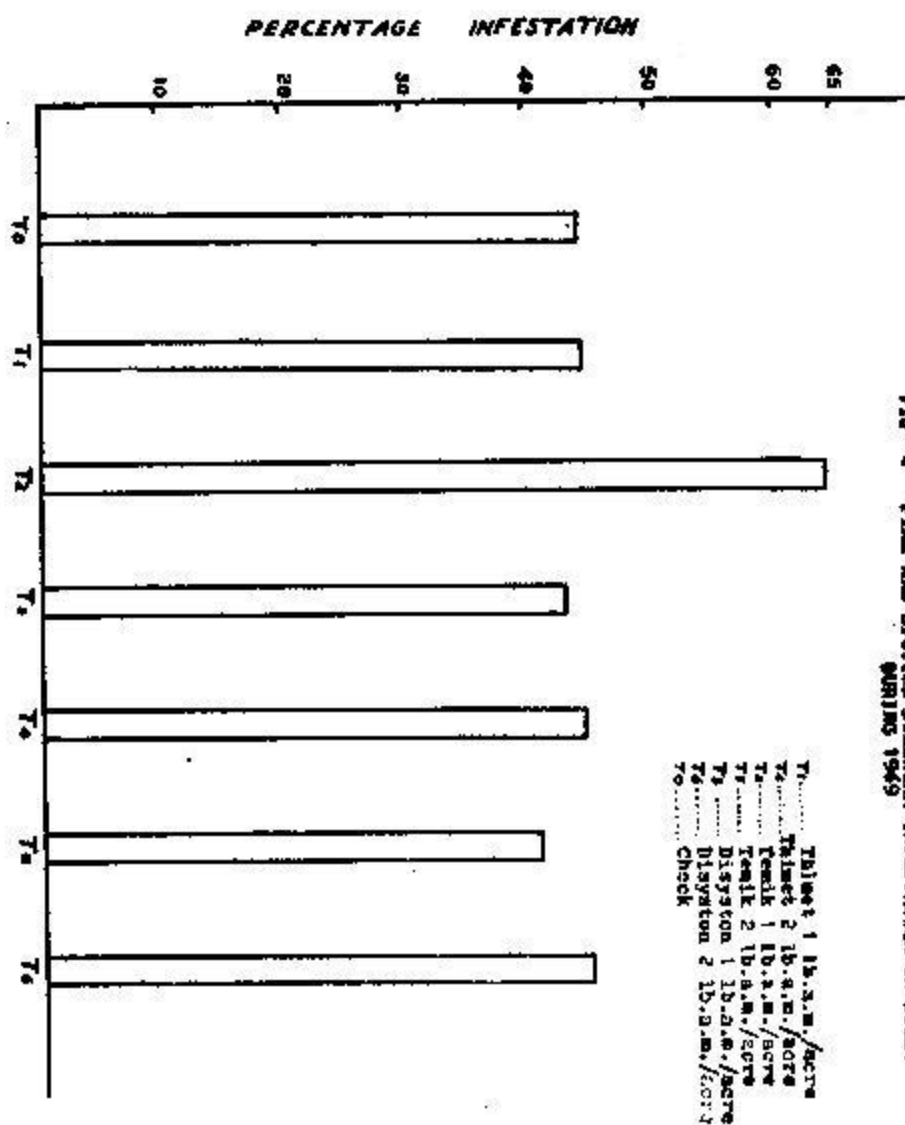


FIG. 4. PINK AND SPOTTED BOLLWORM INFESTATION OF BOLL  
DURING 1969

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