Table 3. Yield Loss by Feeding of Cotton Leaf Perforators. Cotton Research Center, Phoenix, AZ 1975.

| Treatments[1] | Seasonal means larvae/leaf | Mean yield - lbs. of seed cotton/acre |
|---|---|---|
| B - economic level | 0.31 | 2213 a[2] |
| C - one week after B | 0.42 | 1806 ab |
| D - two weeks after B | 0.82 | 1683 b |
| A - untreated check | 1.20 | 1605 b |

1. Treatments: A. Untreated check
   B. Treatment initiated at economic infestation level
   C. Treatment initiated one week after Treatment B
   D. Treatment initiated two weeks after Treatment B

2. Mean yields followed by the same letter are not significantly different at the .05 percent level.

C. Control of Lygus Bugs:

The purpose of this experiment was to determine the effects of Temik on the control of lygus bugs and cotton yields. Temik was applied at 2.0 lbs. AI/acre as a side-dress application to squaring cotton. Two treatments were utilized, an untreated check and a treatment where Temik was applied.

No population differences occurred in the adult numbers between the two treatments. However, consistent nymphal differences did occur throughout the sampling period. On an average, the untreated check had five nymphs per 50 sweeps more than did the Temik treatment. This nymphal difference was reflected in the yields as the Temik treatment produced more seed cotton per acre than did the untreated check. This data is expressed in Table 4.

Table 4. Evaluation of Temik for the Control of Lygus Bugs and its Effects on Yield. W. Wuertz Farm, LaPalma, AZ 1975.

| Treatments | Mean no. lygus bugs per 50 sweeps | | Mean yields lbs. seed cotton/acre | Statistical Significance |
|---|---|---|---|---|
| | Adults | Nymphs | | |
| Untreated check | 8.8 | 5.7 | 1979 | a |
| Temik treated at 2.0 lbs. AI/A | 6.3 | 1.0 | 2816 | b |

## PINK BOLLWORM PHEROMONE AND PREDICTION RESEARCH

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Objectives: 1. To develop and evaluate early season mass trapping programs for male moths to reduce and/or delay subsequent boll infestations in Arizona cotton.
2. To determine the feasibility of using pheromone trap catches as a method of scheduling insecticide application for pink bollworm control in cotton.

A. A grower-financed mass trapping program was conducted on 7,634 acres of cotton in the Safford area during 1975. Traps were placed at densities of two or five per acre depending on the 1974 pink bollworm infestation levels and/or cropping history. Results indicated the latest and lowest pink bollworm infestations since pest management infestation records were begun in 1969. A comparison of 1973 and 1975 follows (these are similar years based on degree-day heat units and general growing conditions):

| | 1973 | 1975 |
|---|---|---|
| Program Acres | 5,487 | 7,634 |
| Sprayed Acres (Total) | 45,618 | 1,957 |
| Spraying Cost (Total) | $155,100 | $11,032 |

The program will be continued in 1976, with all cotton being trapped at the rate of five traps/acre during spring moth emergence.

B. In the Marana area, two Pima S-5 cotton fields with the same planting dates and rates of growth, which were adjacent to each other, were compared. One field was trapped at five traps per acre during the spring moth emergence period after first squaring, and the other field had no pheromone traps.

The trapped field had a lower pink bollworm infestation, and the population buildup occurred 12 days later in the trapped field when compared to the untrapped check field. The 12-day delay represents two spray applications at $5.00/acre or a $5.00 per acre net savings assuming a trapping cost of $5.00 per acre.

C. At the U. of A. Experiment Station Farm at Yuma one field was trapped at five traps/acre with no apparent effect on the rate of population buildup or infestation levels of pink bollworm.

D. Pheromone trap catches were compared with boll samples to determine if monitor traps could be used to schedule pink bollworm insecticide applications. In all experiments, the trap catch increased significantly at the same time the boll infestations increased. However, once spraying was initiated there was no association between boll infestations and trap catches. This was because the insecticides that were used had no apparent effect on adult male pink bollworms, but were effective on the exposed larvae. This resulted in high trap catches but low boll infestations, once spraying was started. Since pheromone traps capture only males, there is no way of knowing whether the insecticides were effective on the female moths.

E. Pink bollworm moth emergence, plus moth and larval generation peaks were determined and placed on a heat unit physiological time scale. Using this method of following insect population development eliminates most of the variability found when peaks occur later or earlier because of "colder or warmer than normal" conditions in any given year. Because insects are "cold-blooded," their development time is governed by heat. By keeping track of heat inputs in an area we find that the same total heat units are required for pink bollworm development even if in one year this total happens three weeks earlier than normal and in another year the total occurs three weeks later.

A table of heat units is available along with instructions on using them by contacting Dr. R.T. Huber, Dept. of Entomology, University of Arizona, Tucson, AZ 85721.

Intensive mass trapping of pink bollworm males will be continued in 1976, along with the research on pink bollworm prediction. The pheromone used in all instances is Gossyplure.

## INSECT INVESTIGATIONS: HOST PLANT RESISTANCE

R.L. Wilson, F.D. Wilson, and G.H. Abel, Jr.

A. *G. hirsutum*.

Ten of 72 photoperiodic race stocks, exposed to natural populations of pink bollworms in Puerto Rico, showed significantly less seed damage than "Deltapine 16," as follows: Texas 127, T-142, T-257, T-265, T-273, T-302, T-303, T-331, T-378, and T-668.