The data from this research point out a number of interesting problems related to interpreting pheromone trap catches once a spray program has begun.

1. Trap catches increased after the applications of the two organophosphate insecticides and decreased after the applications of the permethrin.

2. Although the trap catches were very different in the two insecticide type comparisons, larval infestation in susceptible bolls in both program fields were maintained at similar low levels. This indicates that pheromone trap catches of male moths do not reflect spray efficacy against female moths and/or larvae.

3. Variability in border trap catches is such that catches can be higher, lower or about equal to middle traps when compared on a pre-spray vs past-spray basis.

Conclusions

These data indicate that extreme caution should be exercised when pheromone trap catches alone are used to evaluate the efficacy of various insecticides in suppressing pink bollworm infestations in cotton. In addition, the application of insecticides in a cotton field to suppress Heliothis spp. or lygus bugs, may have drastic effects on pink bollworm pheromone trap catches. In either case, the use of pheromone trap data in pink bollworm management and prediction programs is complicated by the effect of insecticide applications in cotton.

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PHEROMONE STUDIES

H. M. Flint, Research Entomologist, Western Cotton Research Laboratory, ARS, USDA, Phoenix, Arizona

The Z,Z-isomer of gossyplure in microencapsulated and laminated flake dispensers depressed trap catches and mating of laboratory females in mating stations eqivalent to gossyplure at the same rate. A comparison of large drop (point source) and spray applications of microencapsulated pheromone materials indicated that more active ingredients must be applied by spray to achieve communication disruption.

PHEREMONE

L. A. Bariola, Research Entomologist, Western Cotton Research Laboratory, ARS, USDA, Phoenix, Arizona

In laboratory tests using a wind tunnel 8′ x 2′ x 2′ high, male moths were killed when the pheromone release formulation, applied to potted plants, contained both pheromone and an

insecticide (permethrin). The plants treated with a formulation without either pheromone or insecticide did not kill any male moths. Plants treated with the insecticide pheromone formulation and aged in a greenhouse showed effectiveness up through 7-10 days, but by the 14th day there was no effectiveness remaining. Potted plants, placed in an open field and treated using an airplane, showed some effectiveness up through 5-7 days. No observations were made on mating ability of survivors nor on effects in the field.

PHEROMONE AND BEHAVIOR

P. D. Lingren, Research Entomologist, Western Cotton Research Laboratory, ARS, USDA, Phoenix, Arizona

A sprayable formulation of Coax plus gossyplure remained attractive to pink bollworm males for 37 days following application to cotton plants held under laboratory conditions.

A 1-mg load of microencapsulated gossyplure, placed on filter paper and used as a bait in live funnel traps, showed attractancy for a much longer period than a standard bait (1 mg in rubber septa). The microencapsulated bait was as attractive for six months in the field as rubber septa changed every 21 days. The microencapsulated baits were still as attractive after being frozen from November to August as standard baits changed every three weeks through September.

BIOLOGY

P. D. Lingren, Research Entomologist, Western Cotton Research Laboratory, ARS, USDA, Phoenix, Arizona

In-field adult Heliothis zea populations were more abundant than H. virescens during the first two weeks of July 1983. Only one economic generation of H. zea developed during the season and this occurred during the first two weeks of August with the peak occurring on August 12. The previous low density peak was on July 8. This shows a 35-day generation developmental cycle. The third generation of H. zea did not develop. Populations declined dramatically after August 12. H. virescens populations cycled at high density levels in July, August, and September in about 32-day periods. These cycles can be calculated by looking at virginity and multiple mating levels and at in-field mating of adult females collected at night.

Pink bollworm overwintering emergence occurred from March through May. No increase was observed in the P_1 and F_2 generations. A 3-7 fold increase was observed between the F_1 and F_2 generations. A 50-100 fold increase was observed in F_4-F_5. No treatment would have been necessary until the F_3 generation which occurred in late August.