

and debris for several years. We have suggested lygus control or protection of the plant from lygus early but only the good farmers have done this. In spite of the pink bollworm, growers who protected the plants in pink-bollworm areas made from 3.2 to 4.5 bales per acre.

Yes, we can and will continue to grow top quality and yields of cotton in Arizona in spite of the injurious insects.

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"OPERATION EARLY" PROPOSED FOR PINK BOLLWORM CONTROL

C. R. Farr, Agricultural Extension Agent, Maricopa County

Plans for cultural control of the pink bollworm must be made early so that various conditions can be controlled. It is possible to select conditions and practices that reduce the hazards of production.

A pamphlet entitled "OPERATION EARLY" was distributed by the Maricopa County Extension Office in October 1966 suggesting a management program. This program was designed to eliminate late bolls of poor quality and to reduce soil abuse. Cultural control of pink bollworms fits well in this program.

OPERATION EARLY proposed the following:

1. Plan early for systems, conditions, and methods.
2. Mature an early crop, harvest early and completely.
3. Destroy stalks and cotton trash early as possible.
4. Plow 12 or more inches deep to bury bolls and trash.
5. Irrigate twice at 7- to 10-day intervals or rotate to winter crop.
6. Plant cotton in selected soil situations which favor early plant development and maximum early fruiting.
7. Plant as far away from 1966 infestations as possible.
8. Protect the early plant from disease and insect injury.
9. Control plant type to obtain maximum boll sets during June and July.
10. Mature the early crop and harvest early.
11. Pick, shred, and plow early.

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A SUMMARY OF COTTON INSECT POPULATIONS - 1966

Dale Fullerton, Survey Entomologist

The cotton insect situation was highlighted by a population explosion of the pink bollworm, Pectinophora gossypiella, in most cotton-growing areas of the state. The heaviest populations occurred in Maricopa and Pinal Counties

and in scattered locations of Graham and Yuma Counties. Cotton in Mohave and Yavapai Counties was found to be infested for the first time.

Western flower thrips, Frankliniella occidentalis, built up to very heavy populations on seedling cotton, particularly in high elevation cotton areas. Beet armyworms, Spodoptera exigua, and numerous cutworms were also damaging to seedling cotton during May and June in Graham, Pinal, and Maricopa Counties.

Spotted, but heavier than normal, populations of cotton aphids, Aphis gossypii, damaged cotton during late spring in Pinal and Maricopa Counties. Spider mites, Tetranychus spp., were also troublesome in these same areas and at about the same time.

Medium to heavy infestations of lygus bugs, Lygus spp., caused heavy damage to squares and bolls from early June to September. Heaviest populations were concentrated in Maricopa, Pinal, and northern Pima Counties. Say stink bug, Chlorochroa sayi, and other plant bugs added to the total boll losses. However, these pests were heavy only in scattered areas.

Normal populations of bollworms, Heliothis zea, inflicted moderate to heavy damage to cotton plants in late summer, particularly in Central and Southern Arizona. Lighter than usual populations existed in Cochise and Graham Counties.

Populations of cabbage loopers, Trichoplusia ni, salt-marsh caterpillars, Estigmene acrea, and cotton leaf perforators, Bucculatrix thurberiella, were lighter than is usually found in Arizona and were not a problem except in a small number of isolated areas.

Infestations of the boll weevil complex, Anthonomus grandis complex, were greatly reduced this year when compared to the two previous years. Light to moderate numbers were found in a few fields in the Stanfield area of Pinal County and in areas of Western Maricopa and Eastern Yuma Counties.

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INSECT PARASITES AND PREDATORS OF INSECT PESTS
OF ARIZONA CROPS

T. F. Watson, Associate Entomologist
G. D. Butler, Jr., Entomologist, USDA

Objectives:

- A. To determine the identity, distribution, relative abundance, host relationship, and life histories of representative common and significant species of insect parasites and predators in various taxonomic groups.