

The Pink Bollworm

insect pest of cotton thrives in dry climates and is difficult to control by application of insecticides

Gordon L. Smith

The pink bollworm is the most serious insect threat to the production of cotton in California.

Unlike the cotton bollweevil, the pink bollworm thrives in arid sections. It has infested cotton in Arizona, New Mexico and northwest Texas.

The research work done on the control of this insect has shown that the destruction of the long-cycle larvae is of major importance. Long-cycle larvae may live in a quiescent state from six to 30 months before pupation and emergence. If these larvae in the seeds and bolls are buried in the soil four inches or less, many will survive. If the larvae are buried 12 inches in the soil, none will survive. Moisture from rains and irrigation increase the mortality of larvae in the soil. Larvae have survived temperatures down to -6° F.

The moths have been collected in air currents 3,000 feet above the ground. It is believed that moths have been carried about 600 miles by the winds.

The pink bollworm forced Puerto Rico, Hawaii, Cuba and other countries to abandon cotton growing on a commercial basis. In South America, Africa, India and other areas the losses due to this insect are from 20% to 60% of the crop under control practices and 90% to 100% is reported lost where little or no control is practiced.

There is no prospect of eradicating the pink bollworm by chemicals although DDT has been found to be the most satisfactory of effective insecticides. It must be applied every week to keep this insect at a satisfactory low population, because the eggs hatch in five days and the worms enter the bolls immediately and remain in that boll to maturity. The corn earworm or cotton bollworm moves from one boll or square to another and thereby comes in contact with insecticides. Therefore insecticides are more effective on the cotton bollworm than on the pink bollworm.

Frequent, heavy applications of DDT necessarily would continue year after year. The costs would finally far exceed the costs of eradication by noncotton zones, cultural control and other quarantine measures.

Quarantine regulations in the United States have been set up for many years. From 1917 to 1951 the United States

Government spent \$21,500,000 on pink bollworm eradication work. One million of this was on research for finding a practical, effective and economical artificial control. Add to this, \$2,500,000 of state funds which does not include the millions of dollars that have been spent by farmers, ginners, oil mills, and other people interested in suppression of this cotton pest.

In some of the pink bollworm quarantined areas of Texas in 1949 conditions were unfavorable for the early stalk destruction at the date set for it. What was expected to be a short delay grew into an extended delay, with a subsequent top crop of bolls heavily infested with overwintering pink bollworms. In 1950 this developed into widely scattered infestations throughout Texas and parts of Oklahoma and Louisiana.

In most instances the insect has been introduced into new areas by the transportation of seed, as: India to Egypt in 1906-1907; India to Hawaii probably and somewhat prior to 1909; India to the Philippines about 1906-1907; the West Indies cotton fields were infested in 1911 through seed from Hawaii for experi-

mental purposes. Brazil imported Egyptian cotton seed in 1911 to 1913 and with it came the pink bollworm. It reached Mexico in 1911 in imported seed. Some infested seed was shipped to an Arizona cotton grower in 1913 but the infestation was discovered and the seed destroyed before it could be planted.

About 1915 and 1916, when cotton seed was in great demand, much of it was moved from Mexico to Texas coast cities for milling. During the Galveston storm, seed washed overboard from docks was distributed along the Texas coast and resulted in pink bollworm infestations in Texas.

Since 1917 there have been scattered outbreaks in Texas, Arizona, New Mexico, Oklahoma, Louisiana, Florida and Georgia. There have been millions of dollars spent in eradicating it from some areas and trying to keep it confined in others.

Gordon L. Smith is Assistant Entomologist in Entomology and Parasitology, University of California College of Agriculture, Berkeley.

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A. Moth, 3/8" long at rest, 3/4" wing expanse, fore wings narrow, fringed, pointed and mottled dark brown. B. Egg, 1/25" and 1/50" broad, pale greenish to near red at hatching, marking similar to that of a peanut shell. C. Larva, 1/2" or less when mature, 1/5 as broad, pink dorsally and only when mature, small larva glassy white. D. Pupa, 2/5" long and 1/3 as broad, brown with fine whitish pubescence and hooked tip. E. Larva in cotton square—flower bud. F. Larvae and pupae in seeds of a boll. G. Typical mature infested boll.

Photographs: U. S. Department of Agriculture

