AN EFFICIENT AND ECONOMIC WAY OF KILLING PINK BOLLWORMS IN COMMERCIAL COTTON

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Introduction

Because several countries have forbidden the importation of the pink bollworm, Pectinophora gossypiella (Saunders) (Lepidoptera, Gelechiidae), it is essential that exported cotton bales are free from infestation. We have studied the technical details of the machinery used at each stage of processing raw cotton. The effect of the processing and storing of cotton on the pink bollworms was discovered, and an efficient and economic method of killing pink bollworms in commercial cotton was developed.

Materials and Methods

Several standard saw-cylinder ginning mills, found to be free of pink bollworm and in good working order, were tested. The machines were "washed" by passing 200 kg of unginned cotton that is free of pink bollworm through them. The tests were then carried out by passing unginned and raw cotton, artificially infested with pink bollworm, through the machines.

A flow diagram can explain cotton processing (fig. 1); arrows represent the direction of flow of processing, numbers represent the name of each stage in process. The area enclosed at the top represents the vulnerable initial storage stage; the area enclosed at the lower left represents the relatively safe baling and bale-stacking stage. Three machines were tested: multiroller machines for removing impurities; saw-cylinder machines with brush rollers for ginning; and machines for baling.

Results and Discussion

The impurity-removing machine (fig. 2) consists of 5 rollers, each with 12 rows of staggered spikes, to remove impurities which then drop through a net. The rollers rotate at 400-500 rpm, giving a line speed of 10.5 ms. The larvae are killed or wounded by cotton seed and impurities moving at this speed. A few living larvae also drop through the impurity net. By passing infested cotton through the machine 95.4% of the larvae were killed (table 1).