

PINK BOLLWORM PHEROMONE DISPENSER HARVEST LOSSES

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Abstract

Initially 300 hundred pink bollworm pheromone dispenser ‘ropes’ (resembling twist ties) were attached to cotton plants. A harvester went through the plants at normal speed. Afterwards, 290 ties remained on the cotton plants. Seven ties were found on the ground, two were found in the harvested cotton, and one could not be accounted for. Though the percentage of pheromone dispensers harvested is small, the potential for problems at the gin is a function of the number of dispensers per acre and the acres treated.

Introduction

The Boll Weevil Eradication Program and Pink Bollworm Eradication Program in New Mexico are run as a dual program with the same staff and board of directors. In 2002 pink bollworm pheromone dispensers were deployed in an attempt to interfere with breeding and reduce populations. Two dispenser designs were used; ‘ropes’ resembling a twist tie (20 cm length of aluminum wire inside rust-colored plastic insulation saturated with pheromone solution) and ‘loops’ resembling a pig’s tail (a circle approximately 1 inch in diameter made of clear plastic about a quarter inch thick).

A local gin found a rope-type pheromone dispenser choking their Super Jet™ lint cleaner. Concerns over sources of contamination that would adversely affect the marketability of our cotton or that would cause problems in the gin prompted this preliminary investigation.

Materials and Methods

Three hundred pink bollworm pheromone dispenser ‘ropes’ (resembling twist ties) were attached to cotton plants at three marked locations in two 600 foot long rows. Efforts were made to emulate the attachment patterns observed in the field, where 60 contract employees of varying degrees of conscientiousness had been sent by the Boll Weevil Eradication Program. In the pink bollworm eradication program, a pheromone dispenser was affixed approximately every 15 feet in every fifth row. In the harvest loss study, ‘ropes’ were attached to every plant over a short distance to facilitate locating them later. Flagging marked the location of the three clusters of 100 plants with dispensers. The dispensers were counted both before and after deployment. A two-row Case-IH spindle picker harvested the test area at the manufacturer’s normal recommended speed. Researchers then attempted to locate the ‘ropes’ on the plants, on the ground and in the cotton trailer where the picker had emptied its basket.

Results and Discussion

‘Ropes’ Remaining on Plants

There 300 ‘ropes’ initially, 290 remained on the plants. A few had been disturbed (they were no longer twisted together, but they were still around the stalk).

‘Ropes’ Found on Ground

The majority of the ‘ropes’ that were missing (7) had been knocked to the ground by the harvest operation, and were within the search area in the immediate vicinity of the plants where they had been attached.

‘Ropes’ Found in Harvested Cotton

The approximately 500 pounds of seed cotton dumped into a cotton trailer by the picker was carefully searched through by hand. Two ‘ropes’ were found. There is a fairly high probability that the missing ‘rope’, if in that cotton, was overlooked. The rust color of the ‘ropes’ was very similar to the color of the stems and branches from the cotton plants.

‘Ropes’ Unaccounted For

Only one rope was unaccounted for. The most likely place it could be is in the harvested cotton due to the difficulties encountered while searching through the trailer. It is also possible that it fell to the ground outside of the search area. As an uncertainty in the measure, this represents 0.33 percent.

'Ropes' Found at Commercial Gins

Visits to three commercial gins in the treatment area confirmed 'ropes' at various locations in the gin plant. In one gin, a 'rope' was protruding from the Super Jet™ lint cleaner at the time of our visit. In another gin a 'rope' fell to the floor from the gin stand feeder apron. These sightings are more anecdotal than statistical. In no case was a 'rope' found in a bale (however, the bales have not been spun yet). The majority of the 'ropes' were removed by the bur-stick machine or lint cleaners, ending up in the trash. Where the gin trash was used as sheep feed, the sheep had the good sense to leave the 'ropes' alone. The large number of 'ropes' collected by the sheep rancher is a good indication of the number that go through the cotton gin.

Conclusions

No more than and probably less than one percent of the pheromone dispenser 'ropes' were entrained with the seed cotton during harvest. This is a small percentage, but in our area 11,000 acres were treated with this particular type of pheromone dispenser. With approximately 170 'ropes' per acre, there could be as many as 18,700 pieces of additional contamination coming to our local gins. Fortunately, the gins existing cleaning apparatus removes the majority of these 'ropes' without too much trouble. Only occasionally did a pheromone dispenser cause a problem. If complaints from spinning mills are received, however, this issue will bear revisiting.

Disclaimer

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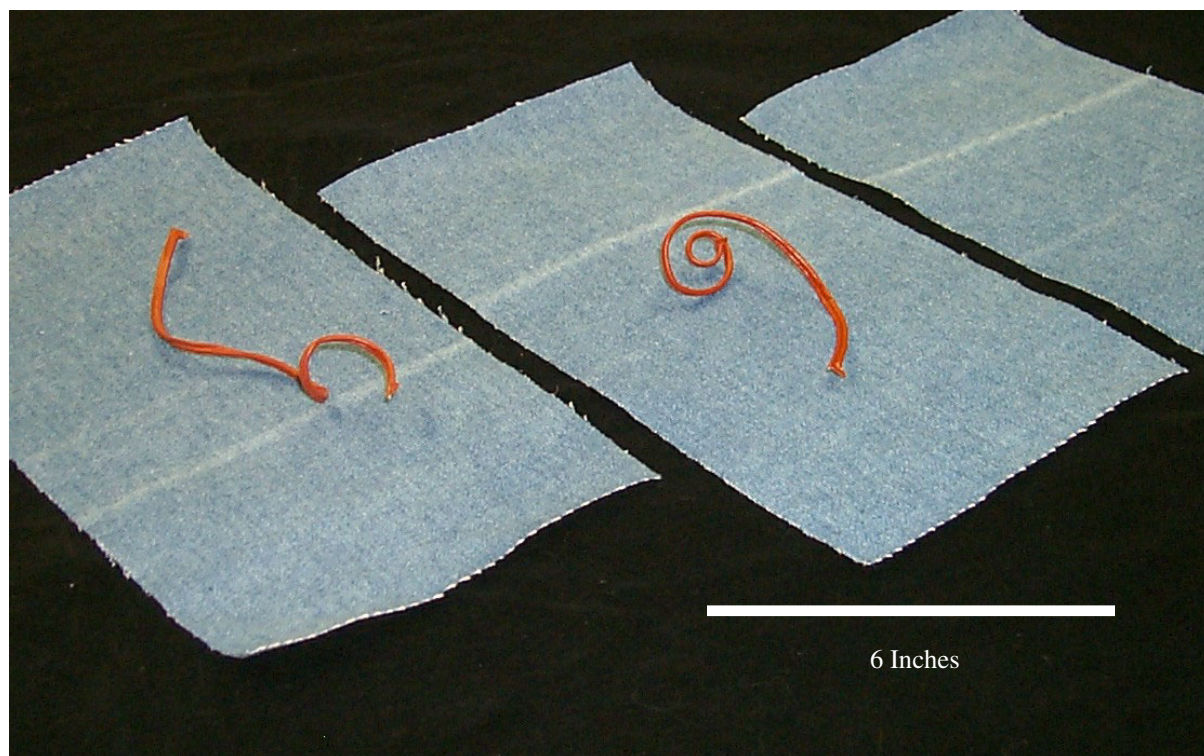


Figure 1. Pheromone dispensers found in the cotton trailer (note twist caused by spindles).