EFFICACY OF VIPCOT FOR CONTROL OF LEPIDOPTEROUS PESTS IN ARKANSAS, 2007

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Abstract

In 2007, VipCot was evaluated in two trials in Jefferson and Desha Counties to determine the efficacy of this new transgenic for control the heliothine complex and other lepidopterous pests. Significant differences were observed among treatments for seasonal total damage and seasonal total for heliothine larvae at both locations and VipCot was shown to be efficacious for looper control at the Desha Co. location.

Introduction

VipCot is a new transgenic cotton from Syngenta. It utilizes a recently discovered protein, vip3a (Vegetative insecticidal protein) for control of lepidopterous pests in cotton. Similar to Bollgard the target insects ingest the protein toxin by eating the plant. The toxin attacks midgut cells causing an immediate cessation of feeding and mortality within 24-72 hours after consumption. The toxin in VipCot, unlike currently used transgenics, is expressed during the vegetative stage of bacterial growth.

Materials and Methods

Field trials were conducted under experimental use permits (EUP) in 2007 in Jefferson and Desha counties, Arkansas. Plots were 8 rows (38 inch spacing) and 100 feet in length in a paired comparison with four replications with a 50ft minimum buffer surrounding the study. The treatments were the transgenic, VipCot and a conventional, Coker 312. The Jefferson County study was planted 30 May and the Desha County location 15 June. Fields were scouted by sampling 50 terminals, squares, blooms and bolls in each plot starting late July and sampled weekly thru August. At the Jefferson location data was taken 26 July, and 2, 9, 14, 24, and 30 Aug. sampling dates at Desha Co. were 1, 8, 15, 22, 29 Aug and 11 and 18 Sept. Additional drop cloth samples, 2 per plot, were taken at the Desha Co. location to assess looper numbers.

Data were analyzed using Agricultural Research Manager using Analysis of Variance and LSD (P=.10, Duncan's New MRT).

Results and Discussion

VipCot was shown to have excellent activity for Heliothine control. In the Jefferson Co. trial, significant differences were observed for seasonal total damage (Fig 1.) and seasonal total larvae (Fig. 2.). VipCot had significantly less damage and larvae than the conventional cotton. Similar control of heliothines was observed in the Desha Co. trial (Fig. 3.). A mixed population of soybean and cabbage loopers infested plots at the Desha Co. location on 29 Aug and VipCot had significantly less larvae than the conventional cotton (Fig. 4.)

These trials indicate VipCot has very good efficacy for control of Heliothines in low to moderate population levels and good control of loopers. Further studies are warranted to assess the control with higher population levels and other species such as fall armyworm. With VipCot having a novel mode of action this new transgenic will help with resistance management issues and provide growers with a new tool for control.

Acknowledgements

We would like to thank Chuck Hooker and Frank Appleberry for providing a test location and Syngenta Crop Protection for their support of these studies.

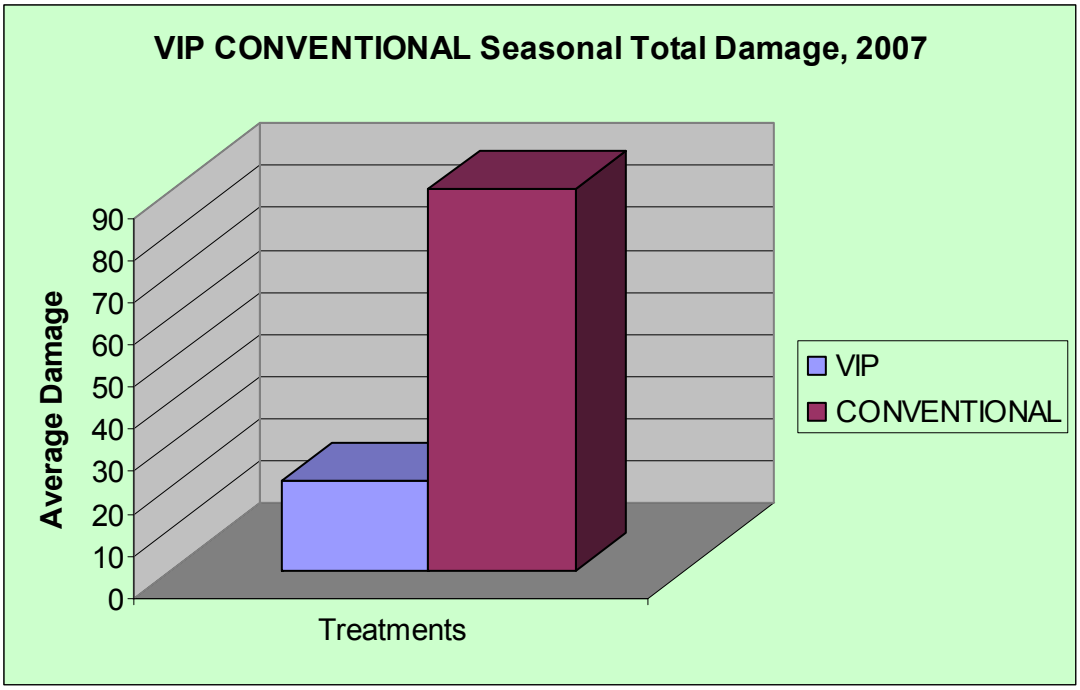

Fig. 1. Seasonal Damage, VipCot and Conventional, Jefferson Co., 2007.

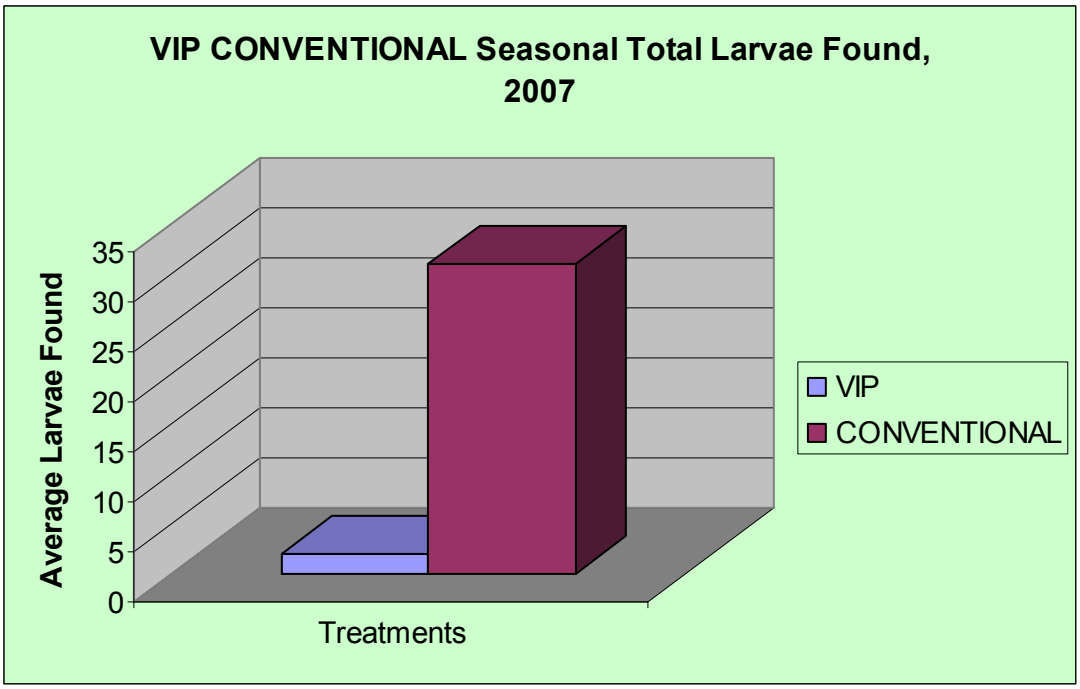

Fig. 2. Seasonal Total Larvae, VipCot and Conventional, Jefferson Co., 2007.

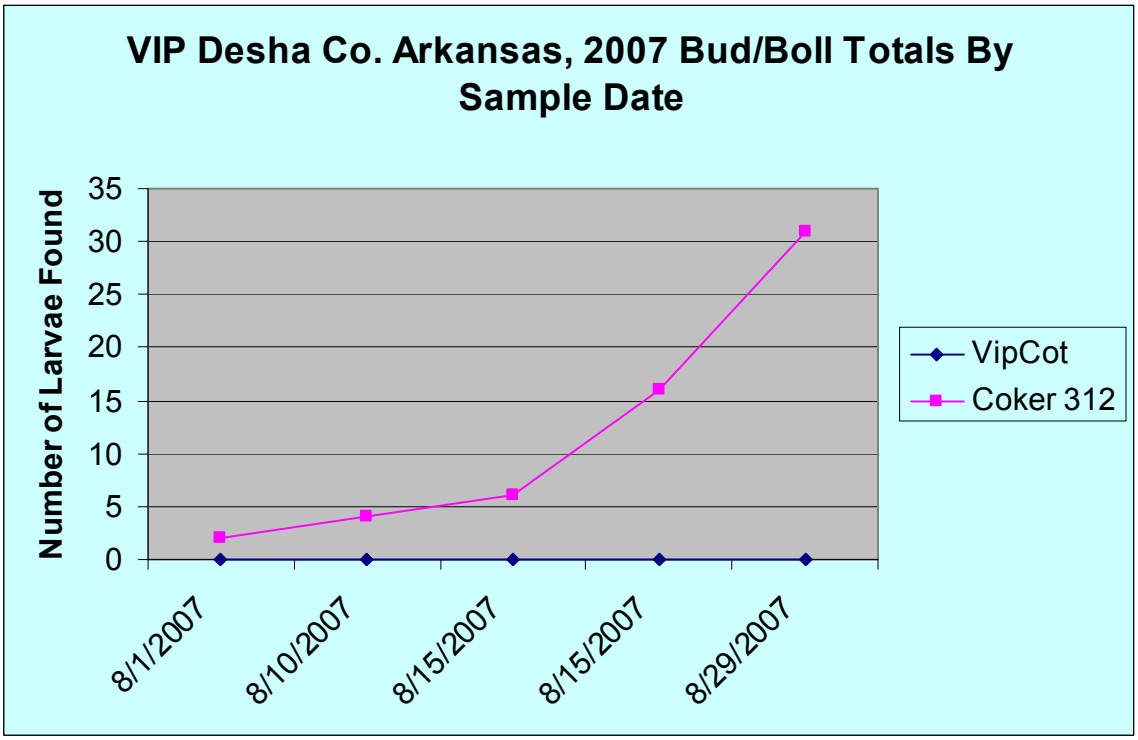

Fig. 3. Seasonal Larvae, VipCot and Conventional, Desha Co., 2007.

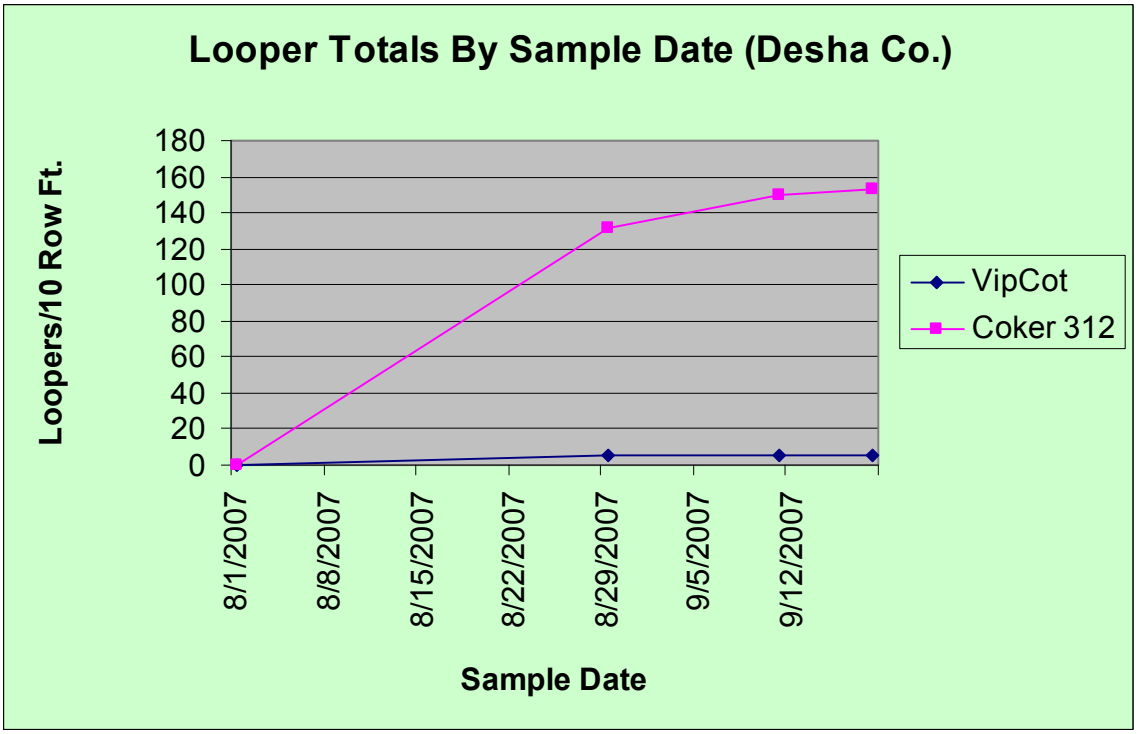

Fig. 4. Looper control with VipCot versus conventional, Desha Co., 2007.