Performance of VipCot in Arkansas, 2007

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RESEARCH PROBLEM

In 2007, VipCot was evaluated in two trials in Jefferson and Desha counties to determine the efficacy of this new transgenic for control of 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.

BACKGROUND INFORMATION

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 to 72 hr after consumption. The toxin in VipCot, unlike currently used transgenics, is expressed during the vegetative stage of bacterial growth.

RESEARCH DESCRIPTION

Field trials were conducted under experimental use permits (EUP) in 2007 in Jefferson and Desha counties in Arkansas. Plots were 8 rows (38-inch spacing) and 100 feet in length in a paired comparison with four replications with a 50-ft 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

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bolls in each plot starting late July and sampled weekly through August. At the Jefferson location, data were taken 26 July, and 2, 9, 14, 24, and 30 August. Sampling dates at Desha Co. were 1, 8, 15, 22, and 29 August and 11 and 18 September. 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=0.10, Duncan’s New MRT).

**PRACTICAL APPLICATION**

VipCot will provide growers an alternative to existing transgenic cotton for control of lepidopterous pests in cotton and will reduce the potential for resistance problems.

**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 looper-infested plots at the Desha Co. location on 29 August 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.

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Fig. 1. Seasonal damage on VipCot and conventional cotton, Jefferson Co., 2007.

Fig. 2. Seasonal total larvae on VipCot and conventional cotton, Jefferson Co., 2007.
Fig. 3. Seasonal larvae on VipCot and conventional cotton, Desha Co., 2007.

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