

**WIDESTRIKE® INSECT PROTECTION: ADOPTION, PERFORMANCE AND
OBSERVATIONS SINCE COMMERCIALIZATION**

M. Willrich Siebert

N.P. Storer

L.B. Braxton

Dow AgroSciences LLC, Indianapolis, IN

Abstract

WideStrike™ *Insect Protection* was launched in PhytoGen cotton varieties in 2005 and has since been widely adopted by producers. WideStrike contains Cry1Ac and Cry1F insecticidal proteins and was developed in an effort to broaden the spectrum of activity, reduce the frequency of insecticide spray applications, and to aid in resistance management of Lepidoptera. Since commercialization, Dow AgroSciences has continued with a vigorous research program focused on *Helicoverpa zea* which include 1) efficacy of standard varieties and new candidate varieties, 2) efficacy and benefits of timely foliar applications, and 3) monitoring for geographic-wide shifts in susceptibility to Cry 1Ac and Cry1F.

In two South Carolina locations and spanning 6 years from 2004 to 2010 boll damage in a 400 series non-Bt PhytoGen variety (not oversprayed to control Lepidoptera) ranged from 42.8 to 68.3% for sampling dates that exceeded 5% boll damage. In contrast, boll damage in a similar 400 series WideStrike variety ranged from 4.4 to 15.8% for sampling dates that exceeded 5% in the non-Bt variety in South Carolina. In Bossier City, LA in 5 years from 2006 to 2010 boll damage in a 400 series non-Bt PhytoGen variety ranged from 5.6 to 62.2%. In contrast, boll damage at this same Louisiana location for a similar 400 series WideStrike variety ranged from 1.3 to 13.8% on sampling dates that exceeded 5% in the non-Bt variety. The multi-year mean reduction in boll damage on WideStrike was 82% at each location and data reveal no trends across time for a change in efficacy.

Contributing factors explaining the levels of boll damage in a WideStrike variety in the absence of supplemental foliar sprays may include: 1) intensity and duration of bollworm infestations; and 2) Cry protein expression patterns during periods of bollworm pressure, relating to soil moisture and daytime and nighttime temperatures. There is no evidence that decreased susceptibility across time to Cry1Ac or Cry1F is a factor leading to higher plant damage. Results prior to and from 2010 have demonstrated no shifts in *H. zea* susceptibility to Cry1Ac and Cry1F based on assays against collections from non-Bt hosts.

Since launch, supplemental sprays targeting bollworm have occasionally been necessary in WideStrike cotton, particularly against high and/or sustained infestations. Varieties containing WideStrike should continue to be scouted for *H. zea*. When supplemental insecticide treatments are warranted, appropriate insecticides/rates should be selected and timed appropriately to manage infestations.

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