ANNUAL AND PERENNIAL WEED MANAGEMENT WITH ENGENIA™ HERBICIDE IN Bollgard II® XTENDFLEX™ COTTON

J.W. Keeling
Texas A&M AgriLife Research
Lubbock, TX
John Frihauf
Steven Bowe
Jacob D. Reed
BASF Corporation
Research Triangle Park, NC

Abstract

Field trials were conducted in 2013 and 2014 at various locations across the Texas High Plains to evaluate Engenia™ herbicide in Bollgard II® XtendFlex™ cotton, which is genetically modified for tolerance to dicamba, glufosinate, and glyphosate. The use of glyphosate in Roundup Ready cotton has effectively controlled many annual weeds that were problems in cotton prior to commercialization of this technology. However, some weeds including Russian-thistle (*Salsola tragus)*, Kochia (*Kochia scoparia*), horseweed (*Conyza canadensis*) and perennials such as Texas blueweed, woollyleaf bursage, and field bindweed (*Convolvulus arvensis*) are not always effectively controlled with glyphosate, especially under cool or dry conditions. Additionally, glyphosate-resistant Palmer amaranth *(Amaranthus palmeri*), first identified in this region in 2011, has significantly increased in subsequent years and presents a major challenge to cotton producers. The objective of these studies was to evaluate Engenia™ herbicide, a new dicamba formulation specifically developed by BASF Corporation, as part of an overall weed management system in cotton for the Texas High Plains. Small plot field trials were conducted in Lubbock, Hale and Gaines Counties in 2013 and 2014 to evaluate Palmer amaranth, Russian-thistle, and field bindweed control in a system with residual herbicides including Prowl® H2O and Outlook®. All treatments were applied at 20 GPA using TTI 11002 nozzles at 50 psi.

Russian-thistle control ranged from 40-50% with Prowl® H2O PRE followed by (fb) glyphosate POST. The addition of Engenia™ POST at 12.8 floz/A improved Russian-thistle control to 100%. Late-season palmer amaranth control with Prowl® H2O PRE or glyphosate POST alone was less than 50%, while Prowl® H2O PRE fb glyphosate POST controlled Palmer amaranth 80%. When Engenia™ was added to glyphosate POST, Palmer amaranth control increased to 98-100%. When Prowl® H2O was not applied, the addition of Outlook® to Engenia™ + glyphosate improved control compared to Engenia™ + glyphosate POST alone.

Prowl® H2O PRE fb glyphosate POST controlled field bindweed less than 30%. While control improved to 50% with Engenia™ PRE, Engenia™ + Roundup POST controlled this weed 90% or greater. Cotton yields were increased 50-75% where field bindweed was controlled by 90-95% with Engenia™ treatments compared to glyphosate only treatments.

The results of these studies showed excellent crop safety with Engenia™ applied PRE or POST in Bollgard II® XtendFlex™ cotton, with improved control of problem annual and perennial weeds. For resistance management, Engenia™ still needs to be combined with residual herbicides for maximum weed control.