

**PALMER AMARANTH AND TEXAS MILLET CONTROL IN
BOLLGARD II® XTENDFLEX™ COTTON**

T. S. Morris

Texas A&M AgriLife Research

Lubbock, Texas

P. A. Dotray

Texas Tech University, Texas A&M AgriLife Extension Service, Texas A&M AgriLife Research

Lubbock, Texas

J. W. Keeling

Texas A&M AgriLife Research

Lubbock, Texas

M. R. Manuchehri

Texas Tech University

Lubbock, Texas

R. M. Merchant

Texas Tech University

Lubbock, Texas

Abstract

Bollgard II® XtendFlex™ Cotton is based on a three-way herbicide tolerance stack (dicamba, glyphosate, and glufosinate) when applied preplant, preemergence, and Postemergence. This technology is expected to be available to growers on a limited number of acres in 2015 (pending regulatory approval). The proposed dicamba application window is full season, which is similar to the current glyphosate application window, and the current glufosinate application window is through early bloom. This technology will improve control of many troublesome annual and perennial weeds on the Texas High Plains, including glyphosate-resistant Palmer amaranth (*Amaranthus palmeri* S. Wats.). The objective of this research was to examine weed management systems in Bollgard II® XtendFlex™ Cotton with an emphasis on soil residual herbicides.

Field trials were conducted at the Texas Tech Research facility near New Deal on a sub-surface drip field. The soil type was a Pullman clay loam. Plots, 4 rows by 30 feet on 40-inch centers, were replicated four times. Cotton was planted on May 22, 2014 and replanted on June 6, 2014 following a weather event that included 5-inches of rainfall. Trifluralin was applied pre-plant incorporated (PPI) on May 19 at 15 gallons per acre (GPA). Preemergence (PRE), early-postemergence (EPOST), and mid-postemergence (MPOST) applications were made on May 22, June 19, and July 17, respectively. These applications were made using a CO₂-pressurized backpack 2-row sprayer equipped with TurboTee 11002 AIXR spray tips calibrated to deliver 15 GPA. A postemergence-directed (PDIR) application was made on August 6 using a CO₂-pressurized 4-row Redball hooded sprayer equipped with TurboTee 11002 spray tips calibrated to deliver 15 GPA. Herbicide treatments included trifluralin at 24 oz/A immediately incorporated with a rolling cultivator; combinations of MON 119096 (a new formulation of dicamba) applied PRE at 22 or 44 oz/A with Warrant (48 oz/A), Prowl H₂O (32 oz/A), or Direx (16 oz/A); Liberty (32 oz/A) + MON 119096 (22 oz/A) or MON 76832 (a dicamba + glyphosate premix) (64 oz/A) applied at EPOST; Liberty (32 oz/A) + MON 119096 (22 oz/A) or MON 76832 (64 oz/A) applied at MPOST; and Direx (32 oz/A) + Roundup Weathermax (32 oz/A) applied PDIR.

Minor leaf phytotoxicity (necrotic spotting) was observed following MON 119096 and MON 76832 applied EPOST and MPOST. Palmer amaranth was controlled 91 to 94% when evaluated 28 days after the PRE treatments; however, Texas millet (*Urochloa texana* Buckl.) control did not exceed 71% at this time. Palmer amaranth and Texas millet was controlled at least 98% following MON 76832 applied EPOST when evaluated 18 days after treatment (DAT). Palmer amaranth was controlled 92% and Texas millet was controlled 87 to 92% following Liberty + MON 119096 at this same observation period. Palmer amaranth and Texas millet was controlled 98 to 100% following MON 76832 applied MPOST when evaluated 14 DAT. Less effective control of Palmer amaranth and Texas millet was observed following Liberty + MON 119096 at this same observation period. Late-season control of Palmer amaranth and Texas millet was at least 95% in 10 of 16 “systems” when evaluated 61 days after Direx and Roundup Weathermax applied PDIR. Seed cotton yields ranged from 923 to 1068 lbs/A, which were similar across all treatments but greater than the trifluralin-only control.