

MANAGING GLYPHOSATE RESISTANT PALMER AMARANTH WITH ENGENIA™ AND RESIDUAL HERBICIDES IN BOLLGARD II XTENDFLEX™ COTTON**J. L. Spradley****J. W. Keeling****Texas A&M Agrilife Research****Lubbock, TX****J. D. Reed****A.C. Hixson****BASF Corporation****Lubbock, TX****Abstract**

Engenia™ herbicide, a new dicamba formulation developed by BASF is now registered for use in Bollgard II Xtendflex™ cotton. Engenia can improve control of a wide range of broadleaf annual and perennial weeds, including glyphosate-resistant Palmer amaranth, compared to glyphosate and residual herbicides alone. Field studies were conducted at three locations near Lubbock, Idalou, and Brownfield, TX in 2016. The objectives of these studies were to evaluate weed management in a mixed population of glyphosate susceptible and resistant Palmer amaranth, Russian thistle, and barnyardgrass with Engenia applied postemergence. A second objective was to determine the value of residual herbicides applied preplant incorporated (PPI), early-postemergence (EPOST), and mid-postemergence (MPOST) for season-long weed control in Bollgard II Xtendflex™ cotton.

Treatments at each location included Prowl H₂O PPI at 32 fl oz/A. Early POST treatments compared Roundup PowerMax (32 fl oz/A), Roundup PowerMax + Engenia (12.8 fl oz/A), Roundup PowerMax + Engenia + Outlook (12 fl oz/A), Engenia + Liberty (32 fl oz/A), Engenia alone and Liberty + Dual Magnum (21 fl oz/A). Mid-post treatments were sequentially applied 28 days after EPOST treatments and included Roundup PowerMax, Roundup PowerMax + Engenia, Roundup PowerMax + Engenia + Outlook, Engenia + Liberty, Engenia alone, and Liberty alone. All treatments were applied at 15 GPA using TTI 11002 nozzles. A Bollgard II XtendFlex™ variety (NG 3500XF) was planted mid-May at each location and harvested in November. Weed control was evaluated 7, 14, and 28 DAT.

Palmer amaranth control exceeded 95% at all locations with Engenia as part of system compared to 25-55% with Prowl H₂O PPI followed by sequential Roundup PowerMax applications. Russian thistle was controlled 95-100% with Engenia treatments alone or when combined with Roundup PowerMax or Liberty. Cotton lint yields were reduced 29-92% when Engenia was not part of the system. While the addition of a postemergence residual (Outlook) did not improve Palmer amaranth control at the end of the season, in-season residual herbicides are an important component for weed resistance management.