

**SEQUENTIAL POSTEMERGENCE APPLICATIONS OF LIBERTY AND ENGENIA IN BOLLGARD II
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Postemergence dicamba applications in Bollgard II XtendFlex cotton are widely utilized to control glyphosate-resistant Palmer amaranth in Texas High Plains cotton. It is estimated that approximately 70% of cotton acres in this region were planted to XtendFlex varieties in 2019. Strategies to avoid or delay development of weed resistance to dicamba includes using additional modes of action of both preemergence and postemergence herbicides such as Prowl H₂O, Liberty, and Outlook. A study was conducted in 2019 at the Texas A&M AgriLife Research Center in Lubbock, TX on an Acuff loam soil to compare sequential applications of Engenia and Liberty herbicides alone, or in combination with Outlook herbicide for season-long Palmer amaranth control in XtendFlex cotton. Pre plant treatments went out on February 11, 2019 and included Prowl H₂O at 40 fl oz/A. POST I treatments were applied on June 11, 2019 and compared Liberty (43 fl oz/A) alone, Liberty + Roundup (32 fl oz/A), and Engenia (12.8 fl oz/A) +Roundup, Liberty + Outlook (16 fl oz/A), Liberty + Roundup + Outlook, and Engenia + Roundup + Outlook. POST II treatments compared Liberty fb Liberty, Liberty + Roundup fb Liberty + Roundup, Engenia + Roundup fb Engenia + Roundup, Liberty + Roundup fb Engenia + Roundup, Engenia + Roundup fb Liberty + Roundup, Liberty + Outlook fb Liberty, Engenia + Roundup + Outlook fb Engenia + Roundup, Liberty fb Engenia + Roundup + Outlook, Liberty + Outlook fb Engenia + Roundup, Engenia + Roundup fb Liberty + Outlook, and Engenia + Roundup + Outlook fb Liberty. Ammonium Sulfate (21% N) was added to all Liberty treatments at 3.0 lbs./A. All treatments were applied at 15 GPA. Liberty treatments went out using TT 11002 nozzles and Engenia treatments used TTI 11002. The trial was planted on May 5, 2019 and weed control evaluations were performed at 14, 28, and 35 DAT. Adequate rainfall and actively growing weeds resulted in effective Palmer amaranth control (>95%) with Engenia or Liberty alone or tank-mixed with glyphosate. The sequential POST application treatments that included Engenia in either POST I or POST II provided similar Palmer amaranth control which was more effective than Liberty fb Liberty. The addition of Roundup to the Liberty treatments did not improve control compared to Liberty alone in this trial. Due to lack of rainfall later in the growing season, additional Palmer amaranth emergence was limited. However, the addition of Outlook to either POST I or POST II improved control for some treatment combinations and is an important part of weed resistance management.