

**PALMER AMARANTH CONTROL WITH ENGENIA/LIBERTY TANK-MIXES AND SEQUENTIAL APPLICATIONS****C. D. R. White****J. W. Keeling****J.L. Spradley****Texas A&M Agrilife Research****Lubbock, TX****Abstract**

Glyphosate-resistant Palmer amaranth (*Amaranthus palmeri* S. Wats) changed weed management strategies in the Texas High Plains and shifted back to tillage and residual herbicides. Palmer amaranth is the most troublesome weed in Texas cotton production. Dicamba-tolerant (XtendFlex) varieties are planted on the majority of cotton acres in the region. Dicamba (Engenia) is a very effective herbicide postemergence on Palmer amaranth. However, control of this troublesome weed with Liberty (glufosinate) is challenging due to the tough, dry growing conditions. These two herbicides may be used together to both delay resistance to dicamba as well as increase efficacy of glufosinate. Studies were established in Lubbock, Texas across a three-year period (2019-2021) to evaluate Palmer amaranth control comparing tank-mixes and sequential applications of Roundup (glyphosate), dicamba, and glufosinate. Applications were made using a CO<sub>2</sub>-pressurized backpack sprayer calibrated to deliver 140 L ha<sup>-1</sup> with TurboTeeJet 11002 nozzles for glufosinate treatments and TurboTeeJet Induction 11002 nozzles for dicamba treatments. In 2019, sequential applications of dicamba followed by (fb) dicamba and glufosinate fb dicamba provided more effective control of Palmer amaranth than glufosinate fb glufosinate or dicamba fb glufosinate. In 2020, less weed pressure was observed, and all sequential applications provided similar Palmer amaranth control. Greater weed pressure was observed in 2021, and any early postemergence dicamba treatment was not improved with the addition of glufosinate. Most effective control with sequential combinations was achieved with dicamba + glyphosate at the first application fb any tank-mix application, either dicamba + glyphosate, dicamba + glufosinate, or glufosinate + glyphosate. These results indicate that glufosinate can be more effectively used in XtendFlex cotton as a sequential treatment with dicamba and not as a tank-mix partner.