INFLUENCE OF THE SEQUENTIAL ORDER WHEN USING LIBERTY AND DICAMBA

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Abstract

Bollgard II XtendFlex® cotton, which contains herbicide resistance to dicamba, glyphosate, and glufosinate, was available for planting in 2016. Because of the selection and spread of glyphosate-resistant Palmer amaranth (*Amaranthus palmeri*), growers will have the option to use this new technology to improve weed management. Dicamba and glufosinate are both active on glyphosate-resistant Palmer amaranth; however, the sequential order of using these herbicides (glufosinate followed by (fb) dicamba or dicamba fb glufosinate) to achieve most effective weed control needs to be evaluated. The objective of this research was to compare the control of Palmer amaranth when using glufosinate and dicamba when varying the order of sequential postemergence applications. Field studies were conducted at the Fiber & Biopolymer Research Institute and at the Texas A&M AgriLife Research Center in Lubbock. All postemergence applications were made with a CO_2–pressurized backpack sprayer calibrated to deliver 15 or 20 GPA. TTI11004 nozzles were used for dicamba treatments and AIXR 11002 or XR 11003 were used for glufosinate treatments. Sequential treatments included dicamba (either XtendiMax® With VaporGrip® Technology or Engenia® Herbicide) at 0.5 lb. ae/A (22 oz. or 12.8 oz./A, respectively) and glufosinate (Liberty® 280 SL) at 0.59 or 0.79 lb. ai/A (32 or 43 fl oz./A, respectively). Application timings and weed sizes varied across locations. Regardless of Palmer amaranth size at the initial application (2- to 4-inch and 12-to 16-inch), Xtendimax fb Liberty was more effective than Liberty fb Xtendimax when evaluated 18 d after the sequential application. Xtendimax fb Liberty controlled 6-inch Palmer amaranth 99% when evaluated 21 d after the sequential application, whereas Liberty fb Xtendimax controlled 6-inch Palmer amaranth 85% at this same evaluation period. At a dryland location, Engenia controlled 7-inch Palmer amaranth 75% whereas Liberty at 43 oz. controlled this weed 63% 13 d after the initial application. Liberty fb Engenia was more effective at controlling Palmer amaranth when compared to Engenia fb Liberty when evaluated 27 and 54 d after the sequential application. In summary, dicamba fb glufosinate was more effective when spraying larger weeds (12-to 16-inch); however, the sequential order on smaller weeds in a dryland environment suggests that glufosinate fb dicamba was more effective. Future research is needed to further explore the importance of sequential order when using Liberty and dicamba.