IMPROVING GLUFOSINATE BY ELIMINATING ENVIRONMENTAL VARIABILITY

GL Priess
JK Norsworthy
RB Farr
MC Castner
JW Beesinger
N Godora
University of Arkansas
Fayetteville, AR
T Barber
University of Arkansas-Extension
Lonoke, AR

The incorporation of glufosinate-resistance into XtendFlex, Enlist, and LibertyLink crops has increased glufosinate use and subsequent selection pression on troublesome weed species. One weakness of glufosinate is the decrease in efficacy that is observed when applications are made in low-humidity and low-light intense environments. To overcome the impact that light-intensity has on glufosinate efficacy field experiments were conducted in 2019 and 2020, in Fayetteville, AR. The experiments were designed to evaluate the utility of mixing a broad-spectrum glutathione *s*-transferase inhibitor with glufosinate to improve efficacy of monocot and dicot weed species while maintaining adequate glufosinate-resistant-crop tolerance. When applications of glufosinate (32 fl/oz/a) plus the GST inhibitor (0.24 lbs/ai/A) were applied at 10pm Palmer amaranth and large crabgrass control improved 26- and 36-percenatage points, respectively, when compared to glufosinate (32 fl/oz/A) alone at 10pm. Additionally, when glufosinate plus 0 to 0.96 lbs/ai/A of the metabolic inhibitor was applied at 10am or 10pm less than 5% injury of XtendFlex and Enlist cotton, LLGT27 soybean, and LibertyLink corn was observed. Thus, mixing the GST inhibitor and glufosinate improved weed control in low-light environments and did not significantly impact crop tolerance. With increased glufosinate use and the subsequent selection pressure placed on weed population the addition of metabolic inhibitors to glufosinate may alleviate variability in efficacy and mitigate selection for resistant-biotypes.