

**PREEMERGENCE TOLERANCE OF COTTON TECHNOLOGIES TO AUXIN HERBICIDES****James Rose****University of Arkansas****Fayetteville, AR****Tom Barber****University of Arkansas-Extension****Lonoke, AR****Jason K Norsworthy****Hunter Bowman****Michael Houston****University of Arkansas****Fayetteville, AR****Abstract**

In the 2016 growing season, two new cotton technologies, Enlist and Bollgard II XtendFlex, were released to the market. The Enlist technology was only released on a limited number of acres, while the Bollgard II XtendFlex technology was fully released to the market. When the technologies were released there was no label for use in these crops; however, this has recently changed with dicamba being labeled for in-crop use on Bollgard II XtendFlex cotton. Though labeled for in-season use, there are many questions as to what will happen if other auxinic herbicides are applied preemergence. Reasoning behind this question is that auxin herbicides are known for having some preemergence activity under the correct environmental conditions. To answer some of these questions, tests were conducted in 2016 at the Lon Mann Cotton Research Station near Marianna, AR as well as the Rohwer Research Station near Rohwer, Arkansas, to see how the Enlist and Bollgard II XtendFlex technologies will react to an application of other auxin herbicides at planting. To conduct these tests three cotton varieties were planted: Enlist Bollgard II XtendFlex, and Glytol/LibertyLink cotton. The design of this test was arranged using a split-split-plot design. For the experiment multiple auxin herbicides representing all five families in this group were applied at a 1x and 1/16x rate immediately following planting. Treatments were applied with a tractor mounted sprayer at 40 PSI using TTI 110015 nozzles operating at 40PSI to deliver 12 gallons per acre. Data collection for this test was taken as visual percent crop injury, relative to the untreated, and was recorded at 14, 21, and 28 days after application (DAA) on a scale of 0-100 with rating of 0 being no visible injury and 100 being complete plant death. At 28 DAA biomass was collected from a meter of row from each cultivar, in each treatment, dried, and recorded as a percent of the nontreated plots. The greatest injury, across all technologies, at the 14 DAA or 21 DAA rating was observed in the plots where Milestone (aminopyralid) was applied at 0.109 lb ae/acre, the 1x rate. Injury observed in this application, was greater than 80% at the 14DAA rating and greater than 90% at the 21 DAA rating relative to the nontreated check. The Enlist cotton variety exhibited tolerance to the application of Starane Ultra (fluroxypyr) at 0.14 lb ae/acre relative to the nontreated check. No significant injury or reduction in biomass was seen, which was observed in the other varieties. The only other treatments that did not cause significant injury or biomass reduction was when 2,4-D was applied to Enlist and dicamba was applied to XtendFlex. The Glytol/LibertyLink variety had greater than 50% injury 14DAA and greater than 55% 21 DAA. Where the 1/16x rate was applied, a significant reduction in injury occurred across all varieties, consistent with a reduced rate, except where aminopyralid was applied. This research revealed that Enlist cotton is tolerant to a preemergence application of fluroxypyr, but resulted in a significant reduction in biomass to the other varieties. It can be concluded that preemergence applications of auxinic herbicides to a nontolerant variety will result in significant injury or possible plant death.