

Zach Murray and Bodie Cotter are First Place Winners in the Masters Student Competition

Zach Murray and Bodie Cotter won first place in the masters student division at the ACPA Research Conference.

Murray won a first place award with a presentation titled “Comparison of Transgenic *Bt* Technologies in Arkansas Cotton Systems for Control of Cotton Bollworm, *Helicoverpa Zea*”. Murray stated that transgenic *Bt* technology is the most widely used method of controlling cotton bollworm (*Helicoverpa zea*) in U.S. cotton. Resistance has recently been documented in cotton bollworm to two gene cotton cultivars and supplemental foliar applications may be required in these cultivars to manage high populations of bollworm. There is some evidence that, while more efficacious against bollworm, many three gene cotton cultivars yield less than two gene cultivars. Despite this yield gap, growers could have greater profits using three gene cultivars due to lower input and production cost. Research was conducted in 2020 in Drew County, Arkansas to evaluate the efficacy of several *Bt* technologies and the economic value of Bollgard II and Bollgard III technologies. Results suggest sprayed two gene cultivars had similar levels of damage to unsprayed three gene cultivars. An economic analysis will be performed after harvest.

Cotter won a first place award with a presentation titled “Coating Loyant on Urea: A Novel Approach to Reduce Herbicide Off-Target Movement”. Cotter stated that following commercial launch of Loyant™ (florpyrauxifen-benzyl) in 2018, frequent off-target movement of the herbicide to adjacent soybean (*Glycine max* (L.) Merr.) fields was observed. Hence, a field experiment was conducted in 2020 and 2021, in Fayetteville, AR, to evaluate the sensitivity of soybean to low-dose rates (0 to 3 fl oz A<sup>-1</sup>) of Loyant as a foliar spray and coated on urea. Applications occurred at V3 stage of soybean. Soybean response to applications of Loyant in a wide-row (36 inch) soybean system was evaluated at 7, 14, 21, and 28 days after application. Maximum soybean injury observed when Loyant at 3 fl oz A<sup>-1</sup> was coated on urea was 25% in 2020 and 30% in 2021. However, both years, the maximum amount of soybean injury observed from a 3 fl oz A<sup>-1</sup> foliar spray application of Loyant was 100% (plant death). At all timings, equivalent rates of Loyant coated on urea caused less injury than that of foliar spray applications. No deleterious effect on yield was observed in 2020 from any Loyant coated on urea treatment when compared to the nontreated, but all foliar spray treatments caused a negative effect on soybean yield. Overall, by coating Loyant on urea, soybean injury was reduced 50 to 91 percentage points in 2020 and 55 to 96 percentage points in 2021, across all rating intervals, when compared to foliar spray applications. Coating Loyant on urea and applying it to rice will likely mitigate the risk for injury to nearby soybean that was observed following aerial spray applications of the herbicide.