RESPONSE OF ENLIST COTTON TO LOW RATES OF DICAMBA

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Abstract

Cotton (*Gossypium hirsutum*) is an important crop in Mississippi. To help combat the rise in evolution of herbicide-resistant weeds, new cotton technologies have been developed that allow the in-crop use of dicamba and 2,4-D. As these new technologies are adopted, applications of synthetic auxin herbicides will increase, thus, increasing the likelihood of herbicide drift onto susceptible crops. A field study was conducted at the Delta Research and Extension Center, in Stoneville, MS, to evaluate the response of Enlist cotton growth stages to low rates of dicamba. Enlist cotton (PHY 350 W3FE) was planted on beds with 40-inch row spacing with a seeding rate of 4 seed ft^{-1} on April 30, 2019 and emerged May 8. The experiment was arranged as a randomized complete block design with a factorial treatment structure and four replications. Two factors were included: growth stage (3- to 4-leaf, square, and flowering) and Clarity (dicamba) rate [1/16X + non-ionic surfactant (NIS) at 0.25% (v/v), 1/32X + NIS, 1/64X + NIS]. The 1X of Clarity is 16 fl oz/A. A nontreated check was included for comparison.

In general, cotton was more injurious at the square and flowering growth stages at 10 weeks after emergence (WAE). At 14 WAE, cotton injury was 21 and 24% for Clarity at 1/16X at the square and flowering growth stages, respectively. Furthermore, cotton injury was similar for Clarity at 1/32X at the square and flowering growth stages. When averaged over Clarity rates, cotton height was 35, 35, 33, and 35 inches for 3- to 4-leaf, square, flowering, and the nontreated check, respectively. For seedcotton yield, Clarity at 1/16X reduced yield by 17% (averaged over growth stages). Treatments at the square and flowering growth stages showed 7 and 15% reduction in seedcotton yield (averaged over Clarity rates). Based on these results, susceptible cotton varieties can be vulnerable to herbicide drift. The severity of injury following exposure to low rates of Clarity can be difficult to determine but understanding the risks and outcomes can be beneficial in making the best recommendation.