RESPONSE OF XTEND COTTON TO LOW RATES OF 2,4-D

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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. However, as in-crop applications of 2,4-D or dicamba become more common, the chances for volatility and potential for fine particle movement to adjacent or susceptible crops will increase. A field study was conducted at the Delta Research and Extension Center, in Stoneville, MS, to evaluate the response of Xtend cotton growth stages to low rates of 2,4-D. Xtend Cotton (DP 1518 B2XF) 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 design with a factorial treatment structure and three replications. Two factors were included: growth stage (3- to 4-leaf, square, flowering) and 2,4-D rate [1/16X + non-ionic surfactant (NIS) at 0.25% (v/v), 1/32X + NIS, and 1/64X + NIS]. The 1X rate of 2,4-D is 32 fl oz/A. A nontreated check was included for comparison.

At 10 weeks after emergence (WAE), cotton injury was greatest (43%) for 2,4-D at 1/16 X at the square growth stage. In general, cotton was more injurious at the square stage. At 10 and 14 WAE, no injury was observed for 2,4-D at 1/64X at the flowering growth stage. Cotton height at 10 WAE ranged from 27 to 33 inches at the flowering growth stage. Seedcotton yield were reduced across all treatments, except for 2,4-D at 1/64 X at the flowering growth stage. When 2,4-D applied at 1/16 X and 1/64 X reduced seedcotton yield 83 and 50% at the 3- to 4-leaf and 87 and 44% at square growth stages as compared to nontreated check, respectively. Based on these results, susceptible cotton varieties can be vulnerable to herbicide drift. Although the Xtend technology allows for in-crop use of dicamba, this trait does not mean that exposure to low rates of 2,4-D will not affect cotton tolerance or yield.