DOES LOW RATES OF 2,4-D AFFECT COTTON FIBER QUALITY?

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Abstract

Off-target movement of synthetic auxin herbicides such as dicamba and 2,4-D is an increasing concern for cotton (*Gossypium hirsutum*) growers. Evaluating off-target movement is often captured by overall yield and the impact it has on fiber quality using a high volume instrument (HVI). While the HVI is used most often, the advanced fiber information system (AFIS) may be a useful tool when determining other influences 2,4-D has on susceptible cotton. Field trials were conducted in 2019 and 2020 at the Texas Tech University New Deal Research Farm equipped with subsurface drip irrigation to evaluate dicamba-tolerant cotton response to low rates of 2,4-D choline (0.95 (1X), 0.095 (1/10X), 0.019 (1/50X), 0.0095 (1/100X), 0.0019 (1/500X), and 0.00095 (1/1000X) lb ae/a) when applied at four crop growth stages (first square + two weeks, first bloom, first bloom + two weeks, and first bloom + four weeks). Applications were made using a CO_2-pressurized backpack sprayer with a carrier volume of 15 gallons per acre using TTI 11002 nozzles and were applied to Deltapine 1822 XF. Plots, four rows spaced 40-inches apart by 30 feet in length, were replicated four times and kept weed-free throughout the growing season. Fiber quality measurements were analyzed at the Fiber & Biopolymer Research Institute at Texas Tech University using the AFIS. Short fiber content (n) percent increased following 1/10X rate at first square + two weeks, first bloom, and first bloom + two weeks, as well as from the 1X rate at first bloom + four weeks. The number of neps per g also increased after 1/10X rate at first square + two weeks and first bloom. At first bloom + four weeks, only the 1X rate increased the number of neps. For seed coat neps, increases were observed following 1/10X rate at first square + two weeks, first bloom, and first bloom + two weeks, and following the 1X rate at first bloom + four weeks. While HVI measurements are valuable for determining influences 2,4-D has on susceptible cotton, many parameters important to the spinning industry are going undetected when additional testing such as AFIS is not considered.

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