NON-DICAMBA TOLERANT COTTON RESPONSE TO LOW RATES OF DICAMBA

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Abstract

The adoption of dicamba-tolerant cotton (*Gossypium hirsutum*) has increased the number of preplant and postemergence dicamba applications made on troublesome broadleaf weeds including glyphosate-resistant Palmer amaranth (*Amaranthus palmeri* S. Wats). An increase in the amount of dicamba applied increases the risk of off target movement to non-target crops. A field study was conducted at the Texas Tech New Deal Research Farm equipped with subsurface drip irrigation in 2017 and 2018 to evaluate cotton response to dicamba when applied at four crop growth stages (first square + two weeks, first flower, first flower + two weeks, and cutout). Dicamba (Clarity 4L) was applied at 0.50 (1X), 0.05 (1/10X), 0.01 (1/50X), 0.005 (1/100X), and 0.001 (1/500X) lb ae/a to FiberMax 1830GLT using a carrier volume of 15 gallons per acre and TTI11004 nozzles. Plots, four rows spaced 40-inches apart by 30 feet in length, were replicated three times. Only the middle two rows received the herbicide treatments. Cotton was box mapped prior to harvest to determine boll number and distribution as affected by the different rates and timings of dicamba. Plots were machine harvested to determine lint yield. Relative to the non-treated control, no change in boll number and boll position was observed following dicamba at 1/500X and 1/100X regardless of application timing in both years. When applications were made at first square + two weeks, a shift in boll nodal position was observed following dicamba at 1/50X in 2017 and at 1/10X in 2018. A shift in boll distribution from the 1/50X rate of dicamba was noted at the first flower application in 2017, but not in 2018. When applications were made at first flower + two weeks, boll number was reduced following dicamba at 1X. Relative to the non-treated control, no change in boll number and boll position was noted following any dicamba rate when applied at cut out in either 2017 or 2018. Dicamba at 1/500X, 1/100X, and 1/50X did not affect yield at any application timing when compared to the non-treated control. When dicamba was applied at 1/10X, the greatest yield loss was observed when dicamba was applied at first square + two weeks followed by first flower and first flower + two weeks.