

FLUMIOXAZIN (VALOR) FOR LAYBY WEED CONTROL IN GEORGIA COTTON

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Abstract

Field experiments were conducted to examine flumioxazin cotton injury and weed control. Flumioxazin was applied to 12-14" cotton post-directed with eleven different nozzle types to determine if nozzle type affected cotton injury or weed control. Even flat-fan, drift guard flat fan, extended range flat fan, twin-jet flat fan, turbo flat fan, air-induction flat fan, low-pressure flat fan, and underleaf banded flat fan nozzles as well as flood and cone nozzles were examined. Flood jet nozzles tended to cause more injury early, but by 30 days after treatment no differences in weed control or injury were observed. In a separate study, cotton injury and weed control were examined from flumioxazin applied at 35 and 70 g/ha alone, tank-mixed with MSMA applied at 2.2 kg/ha or with glyphosate applied at 840 g/ha. As expected, weed control was better from the tank-mixes than with flumioxazin applied alone. However, in the tank mixes, weed control and subsequently cotton yield were equivalent between tank-mixes of MSMA or glyphosate with either the 35 or 70 g/ha rate of flumioxazin. Yields were reflective of cotton injury and weed control.

Introduction

Flumioxazin has shown great potential as a post-directed herbicide in cotton (Altom et al. 2000). It has been shown to provide broad-spectrum control of many important weeds of cotton. However, there have been some concerns about cotton safety with flumioxazin use (Altom et al. 2000; Baker, 1989). The objective of these studies was to examine rates and tank mixes that provide optimum weed control in cotton and to examine if nozzle type affects injury.

Materials and Methods

Field experiments were conducted at the Southwest Georgia Branch Experiment Station near Plains on a Greenville sandy clay loam (Rhodic Paleudult) with a pH of 6.5 and 1.0% organic matter and the Plant Science Farm near Athens on a Cecil sandy loam (clayey, kaolinitic, thermic, Typic Hapludults) with 76% sand, 16% silt, 8% clay, 0.9% organic matter, and pH 5.9 in 2000 and 2001. Roundup Ready cotton ('PM 1218 BG/RR') was planted in Athens and Plains in 2000 while 'Suregrow 501 BRR' was planted in Plains in 2001. Glyphosate was applied broadcast to the test area at the 2-leaf stage and directed at the 6" stage of cotton.

The experimental design was a randomized complete block with three replications. Individual plots consisted of four rows, spaced 91-cm apart, 6.1 m long. In Plains, sicklepod, Texas panicum, and wild poinsettia were present. In Athens, common cocklebur, sicklepod, and tall morningglory were present in the plots.

All herbicide treatments were applied with a tractor-mounted or backpack CO₂-pressurized sprayer, calibrated to deliver 170 L/ha at 220 kPa. Weed control was visually estimated on a 0 to 100% scale where 0 = no control and 100 = complete control. Cotton injury was visually estimated on a 0 to 100% scale where 0 = no injury and 100 = complete kill. Visual estimates of weed control and cotton injury was taken 21, 42, and 84 DAP and 10 wk after planting. All weed control data were subjected to arcsine transformations before analysis. Significance of differences in treatment means for weed control ratings, cotton yield were determined with Fisher's Protected Least Significance Difference Test at the 5% level of probability. Visual estimates of weed control are expressed as untransformed data for reader clarity.

Tank-Mix Study

Weed control was better from the tank-mixes than with flumioxazin applied alone. However, in the tank mixes, weed control and subsequently cotton yield were equivalent between tank-mixes of MSMA or glyphosate with either the 35 or 70 g/ha rate of flumioxazin.

Nozzle-Tip Study

Even flat-fan, drift guard flat fan, extended range flat fan, twin-jet flat fan, turbo flat fan, air-induction flat fan, low-pressure flat fan, and underleaf banded flat fan nozzles as well as flood and cone nozzles were examined. Flood jet nozzles tended to cause more injury early, but by 30 days after treatment no differences in weed control or injury were observed.

References

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