# IMPACT OF REDUCED RATES OF ISOXAFLUTOLE ON COTTON GROWTH AND YIELD

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## Abstract

Crops grown in close proximity along with similar equipment utilized in multi-crop farming operations come with many potential challenges involving off-target movement of herbicides or sprayer contamination. These added concerns justify research identifying possible deleterious effects on high value crops such as cotton. Therefore field studies were conducted in 2018 at the Northeast Research Station near St. Joseph, La with the objective to evaluate potential negative impacts of reduced rates of isoxaflutole on cotton growth and yield. A four replication factorial arrangement of treatments was used and included herbicide application timing (Factor A: cotyledon; 2 lf; or 4 lf) and herbicide treatment (Factor B: no herbicide or isoxaflutole @ 1x (0.094 lb ai/A), 1/8x, or 1/16x). Treatments were applied at designated timings following planting of ST5517GLTP cotton on 5/8. Parameter measurements included visual crop injury 7 and 14 d after application (DAT), crop height 14 and 28 DAT as well as prior to harvest, and yield.

At 7 DAT, at both the cotyledon and 2 lf application timings, greatest injury was observed with the 1x herbicide rate (65 and 45%, respectively) in comparison to lower herbicide rates (8 to 14 and 30 to 31%, respectively). All herbicide rates resulted in equivalent injury ranging from 30 to 31% when applied at the 4 lf timing. At 14 DAT, at the cotyledon application timing, the 1x herbicide rate resulted in 70% injury in comparison to the 1%injury observed at both lower herbicide rates. At the 2 lf application timing, injury was equivalent among herbicide rates and ranged from 16 to 28%. At the 4 lf application timing, injury was 50% for the 1x herbicide rate which was equivalent to the 41% at the 1/16x herbicide rate and greater than the 28% at the 1/8x herbicide rate.

At 14 DAT, cotton height at the cotyledon application timing was reduced only at the 1x herbicide rate (34%). At the 2 and 4 lf application timings, height was reduced 26 to 32 and 11 to 23%, respectively, and equally among all herbicide rates. At 28 DAT, at the cotyledon application timing height was reduced at all herbicide rates (13 to 40%0 and greatest for the 1x rate (40%). At the 2 lf application timing, height was reduced at all herbicide rates with the 1x rate resulting in a reduction of 30% which was equivalent to the 24% at the 1/8x rate but greater than the 20% at the 1/16x rate. Prior to harvest, when averaged across application timing, height reduction was significant and equivalent for all herbicide rates ranging from 7 to 11%.

Averaged across application timing, a significant yield reduction was noted only at the 1x (20%) and 1/8x (11%) herbicide rates.