

SIMULATED GLUFOSINATE DRIFT ON THREE GLYPHOSATE RESISTANT COTTON VARIETIES

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Abstract

Glufosinate (Ignite) will be introduced this growing season for weed control in glufosinate tolerant (Liberty Link) cotton varieties. With the use of glufosinate on numerous acres, the chances of drift to non-glufosinate tolerant cotton varieties greatly increase. To date, little research has been performed examining glufosinate drift injury to non-glufosinate tolerant cotton. Therefore the objective of this study was to evaluate glufosinate drift on non-glufosinate tolerant cotton.

A study was initiated, in 2003, at the West Tennessee Agricultural Experiment Station in Jackson, Tennessee that simulated glufosinate drift on three non-glufosinate tolerant cotton varieties. The cotton varieties evaluated were an early-season variety Paymaster 1218 BG/RR, a mid-season variety FiberMax 960 BG/RR and a full-season variety Delta Pine 555 BG/RR. Drift was simulated by applying 3.2 oz/A, 1.6 oz/A and 0.32 oz/A, which were equivalent to 10%, 5% and 1% of the recommended rate. These applications were applied with a hollow cone (TX-4) nozzle under a pressure of 41 psi at a boom height of 40 inches above the canopy in an attempt to simulate drift size droplets. In addition, applications were made at the 5 to 6 and 8 to 10 nodes to identify the most potentially vulnerable cotton growth stage.

The early-maturing variety PM 1218 showed the most visual injury at all three rates compared to FM 960 and DP 555. The maturity of PM 1218 was unaffected by glufosinate rate or timing. All three rates at both application timings delayed boll opening of DP 555 but only the 10% rate applied at the 8 to 10 node stage delayed boll opening with FM 960. The one percent rate applied at the 5 to 6 and 8 to 10 node growth stage reduced (7-18%) seedcotton yield in all three varieties. The simulated glufosinate drift treatments did not affect the lint quality.

The first year results of this study indicate that at least 1% of the field use rate of glufosinate is required to reduce cotton yield. It also suggests that later maturing cotton varieties are more susceptible to delayed maturity from glufosinate drift.