

WEED MANAGEMENT IN DICAMBA, GLUFOSINATE, AND GLYPHOSATE TOLERANT COTTON

**Scott Bollman
Richard Voth
John A. Kendig
Marianne Malven
Sherry LeClere
Monsanto Company
St. Louis, MO**

Abstract

Currently under development by Monsanto Company, dicamba-glufosinate tolerant cotton is a third generation herbicide technology that will be stacked with Genuity[®] Roundup Ready[®] Flex or Genuity[®] Bollgard II[®] with Roundup Ready[®] Flex. This new technology will provide growers with choices and flexibility in their management of glyphosate-resistant and hard to control weeds.

Field trials were established at 27 locations across the Cotton Belt to evaluate the efficacy of weed control programs in the dicamba-glufosinate tolerant cotton system. Individual plots were 2 or 4 rows x 30-40 ft in length depending upon location. Treatments were replicated 3 or 4 times in a factorial design. Factor 1 was PRE herbicide treatment (1) Reflex[®] (1 pt/acre), 2) Clarity[®] (0.5 lb ae/acre) 3) Reflex (1 pt/acre) + Clarity (0.5 lb ae/acre) and 4) No preemergence (PRE) herbicide treatment) and factor 2 was early postemergence (EPOST) treatment (1) Roundup PowerMAX[®] (22 fl oz/acre)+ Clarity (0.5 lb ae/acre), 2) Roundup PowerMAX(22 fl oz/acre) + Clarity (0.5 lb ae/acre) + Warrant[®] Herbicide(3 pts/acre), 3) Ignite[®] (29 fl oz/acre) + Warrant Herbicide(3 pts/acre), and 4) Ignite (29 fl oz/acre) + Clarity (0.5 lb ae/acre). All treatments received an Ignite + Warrant Herbicide application at late postemergence (LPOST). An additional treatment of Roundup PowerMAX[®] (22 fl oz/acre) was added as a control treatment. EPOST treatments were applied when weeds were 3-4-inch tall and LPOST were applied when the subsequent weed flush was 3-4 inches. Weed control was visually rated at each application timing and at the time a layby application would have been applied.

Control of glyphosate-resistant Palmer amaranth (*Amaranthus palmeri*) in all treatments that included Clarity or Ignite in the EPOST were greater than the Roundup PowerMAX applied alone, regardless of PRE application treatment. Treatments including either Reflex, Clarity or Reflex + Clarity PRE significantly improved the control of Palmer amaranth (all treatment were greater than 92%) compared to those that did not receive a PRE application. Treatments including Roundup PowerMAX + Clarity + Warrant Herbicide EPOST resulted in the most consistent control of Palmer amaranth. Control of morningglory spp. was greater than 90% in all treatments that included either Clarity or Ignite EPOST, which was significantly better than Roundup PowerMAX alone. However, at locations where annual grasses were present, treatments containing Roundup PowerMAX were significantly better than those that did not.

Dicamba-glufosinate tolerant cotton technology will provide grower with multiple herbicide programs to help control glyphosate-resistant Palmer amaranth. The addition of a PRE herbicide application improved the consistency of control; however, timely application of Clarity and Ignite will be important in the dicamba-glufosinate tolerant cotton system. Roundup[®] agricultural brand herbicides will continue to be the cornerstone of the weed control program and will be essential in control of grasses and other susceptible weed species.