Impact Of Pigweed Size On Dicamba Activity

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Palmer amaranth has become one of the most competitive and troublesome weeds in broadleaf agronomic crops throughout the Mid-south. Factors that contribute to difficulty in managing Palmer amaranth include herbicide resistance (dinitroanilines, acetolactate synthase inhibitors, Protox inhibitors, glyphosate), continual emergence throughout the growing season, and rapid growth (short window for proper timing with postemergence herbicides). New technology on the horizon, specifically dicamba- and 2,4-D-resistant broadleaf crops, offers additional options for managing Palmer amaranth. An experiment was established at the Delta Research Center to determine the response of glyphosate-resistant Palmer amaranth at different growth stages to variable rates of dicamba. Land was tilled in early May to stimulate emergence of Palmer amaranth. In late May, plastic cups were used to cover Palmer amaranth plants at different stages of growth. The experimental area was then treated with a mixture of gramoxone, glyphosate, and fomesafen to remove all uncovered vegetation. Using a randomized complete block design with 5 replications, 10 by 45 foot plots were treated approximately two weeks later with one of the following rates of dicamba: 0, 0.25, 0.38, 0.5, 0.75, and 1 lb ae per acre. At the time of treatment, a colored flag was placed adjacent to 6 Palmer amaranth plants at the following growth stages: 2-4, 5-7, 8-10, and 11-13 inches. Palmer amaranth was visually assessed for herbicide injury at 2 weeks after treatment; a scale of 0 (no control) to 100 (complete control) was used on individual plants. For agronomically acceptable control, a minimum rating of 90 is needed. In general, 2-4 and 5-7 inch Palmer amaranth exhibited more injury than larger plants. To achieve 70 percent control or higher on smaller plants, 0.75 or 1 lb/A of dicamba was needed. For larger plants, the highest level of control was 60 percent with 1 lb of dicamba. For each Palmer amaranth growth stage, there was a step-wise increase in control as dicamba rates increased from 0.25 to 1 lb/A. The experiment will be carried out for 5 weeks and plant control and biomass estimated to determine the extent of dicamba activity on Palmer amaranth. Δ

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