

INTEGRATING COVER CROPS AND PREEMERGENCE HERBICIDES FOR PALMER AMARANTH CONTROL IN COTTON

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Abstract

The onset of glyphosate-resistant (GR) weeds, especially GR Palmer amaranth, continues to be problematic in areas of cotton production the Midsouth region of the United States. Cotton producers in this area rely heavily on the use of preemergence (PRE) residual herbicides with activity on Palmer amaranth since there are few effective postemergence (POST) weed control options. Moreover, there is increased interest in integrating high residue cover crops with existing herbicide programs for GR weed problems. Therefore, research was conducted at the West Tennessee Research and Education Center in Jackson, TN, during the 2013 and 2014 growing season to evaluate GR Palmer amaranth control when integrating cover crops and PRE residual herbicides. Cover crop treatments of cereal rye, crimson clover, hairy vetch, winter wheat, and all possible combinations of grass and legume cover crops were evaluated for GR Palmer amaranth control. Cover crops were established in late September to early October using a no-till drill and allowed to grow until terminated 3 weeks prior to cotton planting when biomass samples were collected. PRE herbicide treatments of fluometuron and acetochlor were applied immediately following cotton planting. Combinations of grass and legume cover crops accumulated the most biomass ($>3,500 \text{ kg ha}^{-1}$) and had the greatest amount of Palmer amaranth control 28DAA (58%). The PRE herbicides evaluated in this trial were initially effective in controlling GR Palmer amaranth. Fluometuron had 95% GR Palmer amaranth control at 14DAA. However, the encapsulated formulation of acetochlor added the most to GR Palmer amaranth control 28DAA, providing 62% control. Unfortunately, control provided by the best cover crop treatment (58%) and the best herbicide treatment (62%) 28DAA is not adequate GR Palmer amaranth control. However, results of this integrated system using cover crops and PRE herbicides suggest that this system does add to early-season weed suppression and could allow producers to be more flexible in their herbicide applications by delaying PRE or early POST herbicide applications.