PERFORMANCE OF RESIDUAL HERBICIDES APPLIED IN TANK-MIXTURES WITH STAPLE LX AND GLYPHOSATE

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Abstract

Staple LX (pyrithiobac) and Dual Magnum (*S*-metolachlor) are labeled for use in cotton and provide residual control of weeds. Currently, Mississippi State University and the Louisiana State University AgCenter recommend co-application of Dual Magnum with glyphosate for the two- to four- leaf cotton application timing to provide residual control of weeds. However, producers have encountered times when cotton fields are too wet to apply glyphosate plus Dual Magnum by ground and weeds reach a size too large for control by glyphosate. In these instances, Staple LX is a viable choice for management of these weeds. However, the residual activity of Dual Magnum for control of grass and small-seeded broadleaf weeds is still needed. Previous research has shown that co-applications of glyphosate, Dual Magnum, and Staple LX injured cotton 15 to 24% 3 to 7 days after application (DAT); however, little to no injury was observed 14 to 28 DAT and yield was not affected. Recently, a supplemental label was granted to allow Prowl H2O (pendimethalin) applications postemergence in cotton. Prowl H2O provides residual control of many grass and small-seeded broadleaf weeds, which may provide an alternative to Dual Magnum when considering a glyphosate plus residual herbicide application to two- to four- leaf cotton. Therefore, research was initiated in Mississippi and Louisiana to investigate the feasibility of glyphosate co-applied with Prowl H2O or Dual Magnum with and without Staple LX.

Treatments were arranged as a two-factor factorial within a randomized complete block experimental design with four replications. Factor 1 was glyphosate plus residual herbicide and included glyphosate (0.77 lb ae/A) plus Dual Magnum (0.95 lb ai/A), glyphosate (0.77 lb/A) plus Prowl H2O (1 lb ai/A), or glyphosate (0.77 lb/A) alone. Factor 2 was Staple LX (0 or 0.043 lb ai/A). Treatments were applied in early-June at all three sites when cotton was in the two- to four-leaf stage. Control of Palmer amaranth, barnyardgrass, and entireleaf morningglory was visually estimated on a scale of 0 to 100% (0 = no control and 100 = total plant death) at 3, 7, and 14 DAT.

Entireleaf morningglory was controlled 85 to 88% with all treatments that included glyphosate 14 DAT. When Staple LX was applied alone, entireleaf morningglory control was only 67%. Palmer amaranth control was 94 to 97% for two- or three-way co-applications containing glyphosate. Staple LX alone controlled Palmer amaranth 39%. Similar to trends observed with entireleaf morningglory and Palmer amaranth, treatments containing glyphosate controlled barnyardgrass 95 to 99% 14 DAT regardless of whether a residual herbicide or Staple LX was included in the tank-mixtures. Potential cotton injury warrants further investigation before adoption of weed control programs containing three-way co-applications of glyphosate with a residual herbicide and Staple LX.