PREPLANT BURNDOWN WEED CONTROL FOR CONSERVATION-TILLAGE COTTON

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Abstract

With increasing acceptance of conservation-tillage practices, burndown weed control is becoming more important. Roundup and Gramoxone Extra are the basis for burndown weed control, but when applied alone, these herbicides often do not control all weeds. The objective of this research was to compare different herbicides tank mixed with Roundup or Gramoxone Extra for burndown control.

Roundup and Gramoxone were applied at 0.56 lb ae/A and 0.63 lb ai/A, respectively. The tank mixed herbicides included Bladex 1.0 lb ai/A, Karmex 1.0, Caparol 1.0, Lorox 1.0, Blazer 0.25, Reflex 0.25, Goal 0.25, Cobra 0.10, Harmony Extra 0.016, Staple 0.063, Banvel SGF 0.25, and 2,4-D amine 0.50. Three-way tank-mix treatments of Gramoxone 0.63 lb/A + 2,4-D 0.50 with either Bladex, Caparol, or Karmex at 1.0 lb/A were also included. All treatments were applied with Induce 0.5% v/v on March 21, 1995, in 20 GPA water at 40 PSI. Visual ratings of annual bluegrass (*Poa annua* L.), mouseear chickweed (*Cerastium vulgatum* L.), and cutleaf eveningprimrose (*Oenthera laciniata* Hill) control were made at 2, 4, and 6 weeks after treatment (WAT). Horseweed [*Conyza canadensis* (L.) Cronq.] control was rated at 6 WAT. Compared to the 2 WAT ratings control with Roundup tended to increase by 6 WAT and Gramoxone tended to decrease by 6 WAT. All weed control data presented is from the 6 WAT ratings to indicate the level of weed control at the time of cotton planting.

When Bladex, Karmex, or Cobra was tank mixed with Roundup, annual bluegrass control increased to 97% compared with 85% with Roundup alone. With Caparol or Banvel plus Roundup, annual bluegrass control decreased by 25 and 35%, respectively, compared to Roundup alone. All Gramoxone treatments, including the three-way tank mixes, provided at least 94% control of annual bluegrass. Mouseear chickweed was completely controlled by all Roundup treatments. Gramoxone applied alone provided 87% control of mouseear chickweed, and there was a trend for all tank mix herbicides except Blazer, Reflex, Goal, and Cobra to increase control. There was a trend for Gramoxone tank mixed with Blazer, Reflex, or Goal to reduce mouseear chickweed control compared to Gramoxone alone, and control with the Cobra tank mix was significantly lower.

Roundup controlled cutleaf eveningprimrose 76%, and when Roundup was tank mixed with Karmex, Harmony Extra, or Staple, control increased to around 85%. Roundup plus Banvel or 2,4-D provided at least 95% control, but Roundup plus Goal or Blazer controlled cutleaf eveningprimrose only 67 and 64%, respectively. At 6 WAT, Gramoxone controlled cutleaf eveningprimrose only 45%. Gramoxone plus Lorox or Staple increased control to 55 and 68%, respectively. Tank mixes with Bladex, Karmex, Caparol, and Banvel increased control to approximately 77%, and 2,4-D tank mixed with Gramoxone resulted in nearly complete control of cutleaf eveningprimrose. Three-way tank mixes of Gramoxone + 2,4-D + Bladex, Caparol, or Karmex completely controlled cutleaf eveningprimrose.

Roundup applied alone completely controlled horseweed, but adding Staple decreased control to 79%. All other Roundup combinations provided at least 90% control. Gramoxone plus Bladex or Banvel provided at least 92% horseweed control, but when mixed with 2,4-D or Karmex control decreased to 66 and 44%, respectively. All three-way mixes provided at least 90% control of horseweed. Horseweed control with all other Gramoxone treatments was less than 25%.

In conclusion, tank mixing herbicides with Roundup or Gramoxone Extra can increase the control of annual bluegrass, mouseear chickweed, cutleaf eveningprimrose, and horseweed. Adding Blazer, Reflex, Cobra, and Goal generally did not have affect the final burndown rating. Antagonism of Roundup from the tank mix herbicides was not a large problem, but did occur in a few instances. Tank-mix treatments with Bladex, Karmex, Caparol, Banvel, or 2,4-D tended to enhance weed control with Roundup and Gramoxone, but the three-way tank mix treatments provided the highest level of burndown control. Future research needs to evaluate 2,4-D and Banvel as a component in a weed control program that includes a burndown and a residual herbicide so the broadest spectrum of weeds possible can be controlled quickly after burndown application and last until cotton planting.

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