

THE EFFECT OF AMMONIUM SULFATE AS AN ADJUVANT WITH GLYPHOSATE FOR BURNDOWN CONTROL OF ITALIAN RYEGRASS. James R. Martin and Charles H. Slack, Extension Professor and Research Specialist, Department of Plant and Soil Sciences, University of Kentucky, Princeton, KY 42445.

Two studies were conducted to evaluate AMS as an additive for enhancing burndown control of ryegrass with different formulations of glyphosate applied in mid March or mid April.

Liquid AMS was included in the appropriate treatments in both studies at a rate of 3.7% v/v. Burndown control was evaluated periodically during the first 4 weeks after treatment.

The first study compared seven products based on the following formulations: isopropyl amine salt with 3 lb ae/gal (Clearout 41 Plus, Glyphomax Plus, Honcho); diammonium salt with 3 lb ae/gal (Touchdown IQ); isopropylamine salt with 3.73 lb ae/gal (Roundup UltraMax); potassium salt with 4.17 lb ae/gal (Touchdown Total); and potassium salt with 4.5 lb ae/gal (Roundup WeatherMAX). Glyphosate was applied in all treatments in study 1 at 0.75 lb ae/A in combination of S-metolachlor at 1.3 lb ai /A plus atrazine at 1.6 lb ai/A. The height of ryegrass averaged 3 inches on March 13 for EPP-1 (early preplant -1) and 6 inches on April 14 for EPP-2.

Ryegrass response was substantially slower when treatments were applied at EPP-1 than at EPP-2. Average control ratings across all glyphosate treatments at EPP-1 were 3, 47, and 77% compared with 47, 80, and 86% for EPP-2 treatments at 9, 16, and 24 DAT (days after treatment), respectively. The fact the average temperature for the first 24 days after application was 53<sup>0</sup> F for EPP-1 treatments, compared with 64<sup>0</sup> F for EPP-2 treatments, may have contributed to the difference in speed of response. The addition of AMS did not enhance the speed of control with the EPP-1 treatments. However, the addition of AMS to Clearout 41 Plus tank mixture applied at EPP-2 increased ryegrass control from 43 to 53% at 9 DAT, but did not enhance control of other products. AMS did not enhance ryegrass control of any glyphosate treatment when evaluated at 16 and 24 DAT.

Applying Touchdown Total plus S-metolachlor plus atrazine at EPP-1 provided 90 and 92% ryegrass control at 24 DAT, with and without AMS, respectively. The use of Roundup UltraMax at EPP-1 resulted in 77 and 83% control with and without AMS, respectively. The other glyphosate treatments at EPP-1 provided an average of 74% control at 24 DAT, regardless whether or not AMS was included.

The second study compared Roundup WeatherMAX and Clearout 41 Plus at 0.75 or 1.125 lb ae/A applied either alone or with AMS. The average height of ryegrass was 6 inches on March 15 for EPP-1 treatments and 11 inches on April 5 for EPP-2 treatments.

The cooler temperatures associated with EPP-1 treatments caused ryegrass to respond slower relative EPP-2 treatments. Roundup WeatherMAX and Clearout 41 Plus provided similar ryegrass control, however there were as few instances where differences between products occurred. When 0.75 lb ae/A was applied alone at EPP-1 timing, Roundup WeatherMAX provided 63% control at 30 DAT compared with 50% for Clearout 41 Plus. Including AMS as an additive with glyphosate at 0.75 lb ae/A, resulted in 77% control for Roundup WeatherMAX but only 53% for Clearout 41 Plus.

Increasing the glyphosate rate from 0.75 to 1.125 lb ae/A improved ryegrass control in 3 of 4 instances for EPP-1 treatments and 1 of 4 instances for EPP-2 treatments.

In summary, application timing tended to have the most impact on burndown control of ryegrass, with April applications usually providing faster and slightly better control than March applications. The different glyphosate formulations generally provided similar level of ryegrass control, yet there were a few differences in control due to formulation. AMS generally did not enhance ryegrass control, except in a few instances. Increasing the glyphosate rate from 0.75 to 1.125 lb ae/A tended to improve control, particularly when treatments were applied during early spring.