

JOHNSONGRASS CONTROL WITH POSTEMERGENCE CORN HERBICIDES APPLIED ALONE OR IN TANK MIX COMBINATIONS. James R. Martin and Charles R. Tutt, Extension Professor and Research Specialist, Department of Plant and Soil Sciences, University of Kentucky, Princeton, KY 42445.

Postemergence herbicides used to manage johnsongrass are sometimes tank mixed with other herbicides to broaden the spectrum of weeds controlled in corn. There is concern this practice may cause antagonism in the form of reduced control of johnsongrass.

Five field studies were conducted during 2002 through 2005 at University of Kentucky Research and Education Center in Princeton to evaluate johnsongrass control with five postemergence corn herbicides applied alone or in combination with other herbicides. The herbicides and rates used to control johnsongrass were foramsulfuron at 0.53 oz ai/A, glyphosate at 0.75 lb ae/A, nicosulfuron at 0.5 oz ai/A, the sulfonyleurea premix of nicosulfuron at 0.38 oz ai/A plus rimsulfuron at 0.19 oz ai/A, and the imidazolinone premix of imazethapyr at 0.67 oz ai/A plus imazapyr at 0.22 oz ai/A. These were applied alone or in combination with atrazine at 1 lb ai/A, carfentrazone at 0.13 oz ai/A, mesotrione at 1.5 oz ai/A, 2,4-D at 5.7 oz ae/A, or the premix dicamba at 2 oz ae/A plus diflufenzopyr at 0.8 oz ae/A. Adjuvants were included according to label directions of the herbicides used for johnsongrass control.

The first three studies designated as 2002A, 2002B, and 2003 were conducted in fallow areas where johnsongrass was mowed and allowed to regrow. Treatments were applied in mid June to late July when johnsongrass was at a height of 24 inches in 2002A study, 21 inches in 2002B study, and 14 inches in 2003 study. Studies conducted in 2004 and 2005 were planted to corn on May 7 and 5, respectively, using conventional tillage practices and treated with S-metolachlor and atrazine at planting. Postemergence treatments were applied June 3 in 2004 and 2005 when johnsongrass was approximately 12 inches in height. Based on field histories, the majority of johnsongrass plants originated from rhizomes or produced rhizomes and therefore was more prone to regrowth than seedling plants.

Visual ratings at four weeks after application indicated the overall average control of johnsongrass in the fallow studies was less than where corn was grown. The average control across all treatments was 62% for 2002A, 47% for 2002B, 69% for 2003, 85% for 2004 and 92% for 2005. The greater control observed where corn was present is likely due to shading from the crop plants and smaller johnsongrass plants that were more actively growing at the time of application. The extreme dry conditions in the 2002B study caused poor johnsongrass control for all treatments, except for glyphosate.

Control in the two studies with corn (i.e. 2004 and 2005 studies) was at least 93% for all johnsongrass herbicides that were applied alone, except for 80% control with the premix of imazethapyr plus imazapyr in the 2005 study. Glyphosate was superior to the other johnsongrass herbicides, except for the premix of nicosulfuron plus rimsulfuron in the 2002A study, in controlling johnsongrass in fallow areas.

Tank mixing reduced rhizome johnsongrass control in only a few cases. There were six treatments in the 2002 B study where control with tank mix combinations was less relative to the johnsongrass herbicide alone. Johnsongrass control with the premix of nicosulfuron plus rimsulfuron was reduced by 20% with atrazine, 17% with mesotrione, 17% with the premix of dicamba plus diflufenzopyr, and 14% with 2,4-D ester. The control with the premix of imazethapyr plus imazapyr, when combined with 2,4-D ester, was reduced by 10% in the 2002 B study and by 7% in the 2005 study.

In summary, antagonism in the form of reduced rhizome johnsongrass control from using tank mix combinations was an issue in only a few instances. Control with all five johnsongrass herbicides applied alone was generally equal when corn was present and johnsongrass was 12 inches in height at the time of application. However, glyphosate was usually the best among the herbicides tested for controlling rhizome johnsongrass in fallow areas when plants were large and stressed at the time of application.