

WEED CONTROL IN SULFONYLUREA-TOLERANT SUNFLOWER. Phillip W. Stahlman, John C. Frihauf, and Curtis R. Thompson, Research Weed Scientist, Assistant Scientist, and Extension Crops and Soils Specialist, Kansas State University, Agricultural Research Center, Hays, KS 67601 and Southwest Research-Extension Center, Garden City, KS 67846.

Three field experiments were conducted near Hays and Tribune, KS in 2003 to evaluate weed control in sulfonylurea (SU)-tolerant sunflower. One experiment evaluated weed control and crop tolerance to postemergence-applied tribenuron at four rates (0.125, 0.188, 0.25, and 0.5 oz ai/A) applied singly and sequentially at three sunflower growth stages (3- to 4-inch, 8- to 12-inch, and bud). At 47 days after treatment (DAT), no singly-applied tribenuron treatment controlled Palmer amaranth more than 58%. Most sequential tribenuron treatments were more effective than single applications; control ranged from 68 to 78% control at 62 DAT. Imazamox at 0.031 lb ai/A was no more effective on Palmer amaranth than tribenuron treatments. Tribenuron treatments applied at the 8- to 12-inch growth stage cause minor (3 to 4%) leaf chlorosis 5 DAT; the effect disappeared within a week. Imazamox applied at 3- to 4-inch or 8- to 12-inch growth stages caused 5 to 10% more chlorosis than tribenuron treatments. Plants recovered within 10 days. Tribenuron treatments did not stunt sunflower plant growth or reduce yield, whereas imazamox stunted growth by as much as 40% and reduced yield by as much as 57%. Clearly, the SU-tolerant line used in this study was not tolerant to imazamox.

A second experiment evaluated the effects of various adjuvants on the efficacy of tribenuron and crop tolerance. Generally, Palmer amaranth control increased as tribenuron rate increased, with the greater increase occurring between 0.125 and 0.25 oz/A compared to 0.25 and 0.5 oz/A. Only tribenuron at 0.5 oz/A plus Dyne-Amic at 4 pt/A exceeded 70% control. Dyne-Amic consistently enhanced tribenuron activity the most and Kinetic the least of the adjuvants tested. Activator 90, MSO Concentrate, Premium Crop Oil Concentrate, and Liberate were intermediately in effectiveness. Several treatments caused $\leq 5\%$ leaf chlorosis 5 to 7 DAT, but plants recovered within 7 days. Sunflower yields did not differ within herbicide treatments or between treated and non-treated sunflower.

In the third experiment, tribenuron was compared with sulfentrazone. Both herbicides controlled redroot pigweed and tumble pigweed 81 to 100% at 13 and 76 DAT. Redroot pigweed and tumble pigweed control improved as sulfentrazone rate increased with the largest increase occurring between 1.5 and 2.25 oz ai/A. Control was 10% higher when 0.125 oz/A tribenuron was applied following preemergence applications of sulfentrazone or ethalfluralin compared to tribenuron alone. Sulfentrazone at 1.5, 2.25, or 4.0 oz/A controlled kochia 95% or more, whereas control with tribenuron at 0.125 oz/A was 74%. Both herbicides controlled Russian thistle by 91 to 100%. Sulfentrazone at 4 oz/A caused 15% leaf chlorosis at 16 DAT but plants had recovered at 30 DAT. Tribenuron caused no injury and sunflower yields did not differ between treatments.