TRIBENURON RATE AND TIMING EFFECTS ON WEED CONTROL IN SULFONYLUREA-TOLERANT SUNFLOWER. Curtis R. Thompson, Troy M. Price, Phillip W. Stahlman, and Alan J. Schlegel, Associate Professor, Assistant Scientist, Professor, and Professor, Southwest Research Extension Center, Northwest Research Extension Center, Agricultural Research Center-Hays, and Southwest Research Extension Center- Tribune, Kansas State University, 4500 E. Mary, Garden City, Kansas 67846.

Few herbicides are registered for use in sunflower and none are registered for postemergence control of broadleaf weeds. Objectives of these experiments were to evaluate tribenuron for broadleaf weed control in sunflower and to evaluate sulfonylurea (SU)-tolerant sunflower response to tribenuron.

SU-tolerant sunflower were planted at 25,000 seeds/a into silt loam soil at Colby Kansas on June 17 and at 14,000 seeds/a into silt loam soil at Tribune Kansas on May 29. Tribenuron was applied at 0.125, 0.188, 0.25, and 0.5 oz/a in combination with 1 oz quizalofop and 0.25% v/v NIS. Treatments were applied to sunflower at the 4-leaf, 8-leaf, 4 and 8-leaf, and bud growth stages. Treatments were applied with a tractor sprayer delivering 12 gpa at Colby and with a CO_2 backpack sprayer delivering 10 gpa at Tribune. Crop chlorosis and weed control were evaluated visually several times during the season. Only results of the 3 wk (Colby) and 5 wk (Tribune) evaluations following the bud stage treatment are reported. The experiment was a 4 by 4 factorial arrangement in a RCB design with 3 or 4 replicates.

No chlorosis or other crop injury was observed in the Colby experiment. Only slight (<5%) sunflower chlorosis was observed with bud stage treatments of tribenuron at 0.188, 0.25, or 0.5 oz/a in the Tribune experiment. No injury was observed from any other treatment. Observed tribenuron injury did not affect sunflower growth or development.

Tribenuron at 0.125 oz applied at the 4-leaf stage of sunflower at Tribune gave 70% Russian thistle control and 0.188 oz or less at the 4-leaf stage at Colby gave 60 to 80% control. All other treatments controlled Russian thistle 90% or greater. Kochia control was more variable and less than 80% at both locations. This in part could be due to partial populations of ALS-resistant kochia in the experiments. At Tribune, redroot and tumble pigweed were very rate responsive to tribenuron; highest control of each was with the 0.5 oz/a rate. Tribenuron at 0.5 oz/a also provided the highest tumble and redroot pigweed control in the Colby experiment, however, control was less rate responsive. Puncturevine was controlled 90% or greater with tribenuron at 0.5 oz at the 4-leaf stage of sunflower, tribenuron at 0.188 and 0.5 oz at the 8-leaf sunflower stage, or all treatments applied at the 4 + 8-leaf or bud stage of the sunflower.

Tribenuron will provide broad spectrum broadleaf weed control in SU-tolerant sunflower. However, limitations are ALS-resistant weeds and the risk of the ALS resistant gene escape into the wild sunflower population.