

TRIBENURON-TOLERANT SUNFLOWERS: CROP PHYTOTOXICITY AND WEED EFFICACY. James D. Harbour, Michael T. Edwards, Christopher M. Mayo, Robert N. Rupp, Eric P. Castner, and Larry H. Hageman, Field Development Representatives, DuPont Ag & Nutrition, Denver, CO, 80228, and DuPont Ag & Nutrition, Des Moines, IA, 50131.

Field research was conducted in KS, TX, SD, ND, NE, CO, and IL in 2002 and 2003 to determine efficacy and crop response when tribenuron was applied to 2-leaf (V2), 8-leaf (V8), and post-bud (R1) tribenuron-tolerant sunflower. Standard small-plot research techniques were used at all the research locations. Tribenuron was applied at 0.125, 0.1875, 0.25, and 0.5 oz ai/a to V2, V8, R1; and, each herbicide rate was applied sequentially to V2 then V8, growth-stage sunflower. Because of hybrid-line advances in 2003, phytotoxicity results are for only '03BM0024' hybrid data. Phytotoxicity at 7 DAA ranged from 0 to 18% and decreased to less than 5% at 42 DAA. Phytotoxicity was generally greater when tribenuron was applied to V2 or V2 then V8 sunflower (2 – 18%) than V8 or R1 sunflower (<1%). However, tribenuron-tolerant sunflower injury decreased to 4% or less by 42 DAA. Efficaciously, tribenuron controlled common lambsquarters regardless of herbicide rate or application timing; however, common purslane was not controlled by tribenuron. Kochia, palmer amaranth, redroot pigweed, Russian thistle, and puncturevine were controlled best with tribenuron applied sequentially to V2 then V8 sunflowers.

Field research was conducted in KS, SD, CO, and NE in 2002 and 2003 to determine efficacy and tribenuron-tolerant sunflower response to tribenuron and adjuvants. Adjuvants tested included non-ionic surfactant (NIS), crop oil concentrate (COC), modified seed oil (MSO), organosilicone/modified seed oil (OS/MSO), "Kinetic", and "Liberate". Tribenuron was applied at 0.125, 0.25, and 0.5 oz ai/a to approximately V8 sunflowers. Phytotoxicity, averaged across adjuvants, was less than 5% at 14 DAA and decreased to less than 1% by 29 DAA. Averaged across tribenuron rates, phytotoxicity, was not greater than 5% at 21 DAA and decreased to less than 2% by 39 DAA. Tribenuron efficacy, averaged across rates, was better with COC, OS/MSO, MSO, or NIS than with "Liberate" or "Kinetic".

Field research was conducted in SD, KS, ND, and WY in 2002 and 2003 to determine efficacy and tribenuron-tolerant sunflower response to various weed control programs currently used in the US. However, plants at the SD site in 2002 were severely drought stressed causing variable and unreliable results; thus, this study was dropped from the analysis. Pendimethalin, sonalan, and sulfentrazone were applied pre-emergence to tribenuron-tolerant sunflower, after which tribenuron (0.125 oz ai/a) was applied post-emergence to approximately V8 sunflower. Further, tribenuron (post-emergence) was applied without a pre-emergent herbicide for a POST-only herbicide treatment program. Phytotoxicity was less than 4% (14 DAA) regardless of herbicide treatment program. Weed control programs provided good-to-excellent control of kochia, Russian thistle, and puncturevine.