EFFECTIVENESS OF MESOTRIONE FOR WEED CONTROL IN GRAIN SORGHUM. Curtis R. Thompson, Mark M. Claassen, Larry D. Maddux, David L. Regehr, Alan J. Schlegel, John Frihauf and, Phillip W. Stahlman, Associate Professor, Professor, Professor, Professor, Professor, Research Scientist, and Professor, Kansas State University Southwest Research Extension Center, Garden City, KS, 67846, Kansas State University Harvey County Experiment Field, Hesston, KS 67062, Kansas State University KS River Valley Experiment Field, Topeka, KS 66618, Kansas State University, Agronomy Dept. Manhattan, KS 66506, Kansas State University Southwest Research Extension Center, Tribune, KS 67879, Kansas State University Agric. Research Station, Hays, KS 67601 and Kansas State University Agric. Research Station, Hays, KS 67601.

Weed control in grain sorghum continues to be a challenge because of the limited number of herbicide products available to growers. Field experiments were conducted near Hays, Hesston, Manhattan, Powhattan, and Tribune, KS in 2003, to evaluate two prepackaged mixtures mesotrione&S-metolachlor (1:10 ratio) and mesotrione&S-metolachlor&atrazine (1:10:3.7 ratio) were compared to prepackage mixes of S-metolachor&atrazine (1.247:1 or 0.774:1 ratio) for grain sorghum tolerance and weed control. All herbicides were soil surface applied at one (1X) and two (2X) times the field use rates 20 days before planting (20 DBP), 10 days before planting (10 DBP), and preemergence (PRE) immediately following planting. Use rates were mesotrione&S-metolachlor 2.06 kg/ha, mesotrione&S-metolachlor&atrazine 2.76 kg/ha, S-metolachlor&atrazine (1.247:1 ratio) 2.52 kg/ha or (0.774:1 ratio) 3.24 kg/ha. Mesotrione&S-metolachlor&atrazine at the 2X rate applied PRE injured sorghum 3% at Tribune 3% and 8% at Powhattan. Mesotrione&S-metolachlor at the 2X rate applied PRE injured sorghum 5% 2 WAT at Powhattan. No other treatments visibly injured sorghum at any location. Sorghum injury at Powhattan may have been confounded with a soybean herbicide, sulfentrazone carry over. Sorghum injury at Tribune was confounded with iron chlorosis. It appears that grain sorghum has adequate tolerance to soil applied mesotrione&S-metolachlor and mesotrione&S-metolachlor&atrazine. Grain sorghum yields were similar among treatments at 3 of the 5 locations. Grain sorghum yields were highest with PRE treatments compared to treatments applied 10 and 20DBP and tended to be higher with the 2X rates compared to the 1X rates at Tribune and Hays.

All treatments at one or more locations controlled green foxtail, large crabgrass, carpetweed, redroot pigweed, tumble pigweed, kochia, and Russian thistle. Puncturevine controlled 95% or better at all locations except Tribune, where control was 80% or better with the 2X rates applied PRE providing the most control.

These results indicate that grain sorghum has adequate tolerance to soil applied Mesotrione&S-metolachlor and mesotrione&S-metolachlor&atrazine and that these herbicides could offer effective weed control in grain sorghum. However, these herbicides are not registered for use in grain sorghum at this time.

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