SOIL-APPLIED MESOTRIONE IN GRAIN SORGHUM. James M. Lee, Phillip W. Stahlman, Patrick W. Geier, and John C. Frihauf, Assistant Scientist, Professor, Assistant Scientist, Kansas State University Agricultural Research Center, Hays 67601, and Biological Science Technician, USDA-ARS, Urbana, IL 61801.

Experiments were conducted near Hays, KS in 2003, 2004, and 2005 to evaluate weed control and grain sorghum tolerance to prepackaged mixtures of mesotrione&*S*-metolachlor&atrazine (1:10:3.7 ratio) and mesotrione&*S*-metolachlor (1:10 ratio) compared to *S*-metolachlor&atrazine (0.774:1 ratio). Herbicides were applied 20 days preplant (20 DPP), 10 days preplant (10 DPP), and preemergence (PRE) at 1X rates (2.77, 2.06, and 3.25 kg/ha, respectively) and 2X rates (5.33, 4.12 and 6.50 kg/ha, respectively) each time. Soil was a Crete silty clay loam soil with 1.8 ± 0.2% organic matter and pH 6.3 ± 0.2. DeKalb 'DK36' or 'DKC36-00' grain sorghum was planted no-till at 103,000 ± 2,000 seed/ha. Herbicides had no visible effect on grain sorghum in any of three experiments when applied 20 DPP, and little or no effect when applied 10 DPP in 2003 or 2004. Most 10 DPP treatments stunted grain sorghum <10% in 2005, but the effect was temporary. However, grain sorghum was injured as much as 20% in 3 of 4 experiments when mesotrione&*S*-metolachlor&atrazine or mesotrione&*S*-metolachlor were applied at 2X rates PRE. Those treatments caused occasional necrosis, reduced sorghum growth and mature plant height, delayed flowering and reduced yields as much as 45%. However, yields were seldom reduced by 1X herbicide rates. In general, mesotrione&*S*-metolachlor&atrazine and mesotrione&*S*-metolachlor controlled pigweed species, puncturevine and annual grass species as well as or better than metolachlor&atrazine, regardless of application timing.

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