

HERBICIDE COMBINATIONS FOR IRRIGATED POTATO. Harlene M. Hatterman-Valenti and Paul G. Mayland, Assistant Professor and Research Specialist, North Dakota State University, Fargo, ND 58105.

Field research was conducted at the Northern Plains Potato Growers Irrigation site near Tappen, ND during 2002 and 2003 to evaluate preemergence and postemergence rimsulfuron and new products either tank-mixed or applied sequentially for crop safety and weed control in Russet Burbank potato. The studies were conducted on a loamy sand soil with 1.8% organic matter and 7.6 pH. Seed pieces (2 oz.) were planted May 21, 2002 and May 12, 2003. Preemergence tank-mix treatments consisted of rimsulfuron and dimethenamid-P, flumioxazin, metribuzin, or sulfentrazone. Sequential treatments consisted of preemergence dimethenamid-P, flumioxazin, metribuzin, or sulfentrazone followed by rimsulfuron applied postemergence. One additional herbicide treatment consisted of rimsulfuron plus EPTC applied postemergence. Methylated seed oil was used with all postemergence applications. In addition, ammonium sulfate was added to rimsulfuron plus EPTC. Sprinkler irrigation was scheduled every three to four days following potato hilling. Machine harvest occurred October 2, 2002 and September 30, 2003.

Weed populations in the untreated control and border check areas were sufficient for meaningful weed control data only during 2002. Evaluations indicated that all treatments except rimsulfuron plus EPTC provided greater than 80% green foxtail, Palmer amaranth, and wild buckwheat control at 52 days after treatment during 2002. Treatments with flumioxazin caused approximately 10% potato injury across years primarily as necrotic lesions near the stem base and plant stunting. Marketable yield of potato treated with flumioxazin followed by rimsulfuron during 2002 was the lowest at 255 cwt/A. This was significantly less than potato yield from preemergence tank-mix treatments and similar to the untreated. During 2003 the lowest marketable yield (364 cwt/A) occurred from potato treated with flumioxazin and rimsulfuron applied preemergence. This was only significantly less than potato yield from dimethenamid-P followed by rimsulfuron.