Weed control in irrigated potato with rimsulfuron combinations. Hatterman-Valenti, Harlene M. and Paul G. Mayland. A study was conducted at the Northern Plains Potato Grower's Association Irrigation Research site near Tappen, ND to evaluate PRE and POST rimsulfuron and new products either tank-mixed or applied sequentially for crop safety and weed control in Russet Burbank potato. The study was conducted on loamy sand soil with 1.8% organic matter and 7.6 pH. Sudangrass was grown during 2002 and an alfalfa/brome mixture cropped for hay prior to 2002. Plots were 4 rows by 30 ft arranged in a randomized complete block design with three replicates. Seed pieces (2 oz) were planted on 36 inch rows and 12 inch spacing on May 12, 2003. Treatments were applied to the middle 2 rows. Methylated seed oil at 1% v/v was used with all POST applications. In addition, ammonium sulfate at 17 lb/100 gal was added to rimsulfuron + EPTC. Crop injury and weed control were evaluated 28 and 49 days after treatment. Water was not limiting as irrigation was scheduled every 3 to 4 d once potato had emerged following hilling. Potato were machine harvested September 30 and graded by October 14. Application, environmental, crop, and weed data are listed below:

Date:		6/10/03	7/1/03
Treatment:		PRE	POST
Sprayer:	gpa:	15	15
	psi:	30	30
	nozzle:	8002	8002
Temperature:	Air (F):	56	82
	Soil (4 inch):	61	84
Rel. hum. (%):		82	59
Wind (mph):		6	9
Soil moisture:		adequate	adequate
Cloud cover (%):		5	10
Potato:	Height (inch):	0	14

Green and yellow foxtail, common lambsquarters, redroot pigweed, and wild buckwheat were present in the trial. Unfortunately, weed populations in the untreated control and border check areas were insufficient for meaningful weed control data. However, the rimsulfuron + EPTC treatment had some common lambsquarters and foxtail, especially in one replicate. The presence of these weeds may have influenced yield.

Treatments with flumioxazin caused significant potato injury at both evaluations (Table 1). Injury consisted of necrotic lesions near the stem base and plant stunting. Potato yield and grade indicated that the herbicide injury did result in fewer tubers that were at least 6 oz and lowered the total marketable yield. However, only rimsulfuron + flumioxazin PRE significantly reduced total marketable yield in comparison to dimethenamid-P PRE + rimsulfuron POST, the highest yielding treatment.

Table 1. Potato injury, grade and yield following rimsulfuron combinations.

	Application		Crop injury		Hollow	Yield				Specific
Treatment	method	Rate	7/8	7/29	heart	4–6 oz	6–12 oz	> 12 oz	US #1	gravity
		(oz ai/A)		%				cwt/A		
Rims + Dime	PRE	0.38+10.6	2	0	17	66	184	156	413	1.0888
Rims + Flmx	PRE	0.38+1.5	10	7	17	60	168	124	364	1.0851
Rims + Suen	PRE	0.38+1.5	6	0	17	70	198	140	416	1.0882
Rims + Metr	PRE	0.38+8	4	0	17	72	206	142	432	1.0889
Dime + Rims	PRE+POST	10.6+0.38	6	2	33	60	174	200	449	1.0875
Flmx + Rims	PRE+POST	1.5+0.38	11	8	33	86	158	148	403	1.0866
Suen + Rims	PRE+POST	1.5+0.38	4	0	17	62	190	172	436	1.0870
Rims + EPTC	POST	0.38+14	0	0	33	60	164	148	392	1.0877
Metribuzin	PRE	10.2	4	0	17	52	172	166	399	1.0902
Untreated			0	0	17	72	174	126	383	1.0877
LSD (P=0.05)			3	2	20	40	62	54	84	0.0067