

Effect of flumioxazin over-application in irrigated potato. 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 the effect of over-application (2X and 4X rates) of flumioxazin 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 four 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. Crop injury was evaluated 22, 41, and 92 days after treatment (DAT). Plant height measurements were taken at 22 DAT. Plots were hand weeded June 24, July 22, and August 26 to minimize weed influence on potato yield and quality. Water was not limiting as irrigation was schedule every 3 to 4 days 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:		6/4/03
Treatment:		PRE
<u>Sprayer:</u>	gpa:	15
	psi:	30
	nozzle:	11002
<u>Temperature:</u>	Air (F):	72
	Soil (4 inch):	68
Rel. hum. (%):		70
Wind (mph):		5
Soil moisture:		adequate
Cloud cover (%):		100

Flumioxazin at the 2X labeled rate caused visible stunting throughout the season (Table 1). The addition of dimethenamid-P did not significantly alter the phytotoxicity. Increasing flumioxazin to the 4X rate caused significantly more stunting. Flumioxazin at 2X or 4X rates alone or with dimethenamid-P delayed maturation as plants were darker green compared to untreated plants or those in the metribuzin + dimethenamid-P treatment, which were beginning to senesce. Flumioxazin at the 4X rate applied alone or with dimethenamid-P reduced the yield of 6 to 12 oz tubers and 12 to 16 oz tubers compared to the metribuzin + dimethenamid-P treatment. Total marketable yield was significantly lower when flumioxazin at 4X was applied alone or with dimethenamid-P compared to other treatments. Specific gravity was lower when flumioxazin was applied with dimethenamid-P than when flumioxazin at the 2X rate was applied alone or when metribuzin + dimethenamid-P were applied. Fry tests are scheduled to evaluate processing quality.

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

Treatment	Rate (oz ai/A)	Crop Injury			Height (in.)	Yield			US #1	Culls	Specific gravity
		6/26	7/15	9/4		4-6 oz	6-12 oz	> 12 oz			
		-----	%	-----		-----	cwt/A	-----			
Flumioxazin	1.5	11	10	6	13	54	169	151	374	25	1.0877
Flumioxazin	3.0	34	23	10	11	66	140	99	305	23	1.0849
Flmx + Dime	1.5 + 10.2	14	6	5	13	70	163	131	363	25	1.0844
Flmx + Dime	3.0 + 10.2	35	28	10	10	53	142	98	292	20	1.0843
Metr + Dime	8.0 + 10.2	3	2	0	13	76	186	147	408	23	1.0889
Untreated		0	0	0	13	75	175	152	402	21	1.0869
LSD (P=0.05)		8	6	2	1	30	35	39	50	7	0.0031