

## RESEARCH PROGRESS REPORT FOR 1997

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### Metribuzin Sensitivity and Model Evaluation

Twenty advanced selections and cultivars were planted at the SLVRC in 1997 for evaluation of metribuzin sensitivity. Two herbicide rates were used, the control of no herbicide, and a 1-lb. rate applied when the plants were eight inches tall. Plots were planted on May 13 in a split-block design, blocked on metribuzin rate. Within-row spacing for the two replicate trial was 12 inches on 34-inch centers. The trial was irrigated by solid set sprinkler and liquid fertilizer (40-60-30) was banded at planting. Cultural practices typical of the growing area were adhered to during the production season, except for the post-emergent herbicide application. Metribuzin was applied on June 24. Foliar damage was assessed 21 days later on July 17. Vine kill was with sulfuric acid applied on August 28. Plots were harvested on September 9 and weighed for total yield.

As in 1996, Shepody, the sensitive check was the most influenced by the metribuzin application. Percent plant injury was 99.5 (Table 1). AC87084-3 and CO87009-4 were nearly as susceptible to the herbicide as the check. In the 1997 evaluation, many advanced selections showed foliar damage and also had an actual yield loss, unlike the 1996 trial. Other selections, however had slight foliar injury with a negative yield loss, indicating an actual enhancement. This phenomenon has been noted in the literature, however there have been no reports of the herbicide's function as a growth regulator.

The model used in the Western Region Potato project was applied to the data obtained from the study. The model, Percent Yield Loss =  $(1 - (1.142 + (0.176 * (\log(\text{plant height treated} / \text{plant height control}))) - (0.00796 * \text{percent damage}))) * 100$ , appears to adequately assess sensitivity in trials conducted in the San Luis Valley. Statistical analysis of the relationship between predicted yield loss and actual yield loss resulted in an R-square value of 0.848, which is indicative of a correlation of 92%. This is quite high and may be considered adequate.

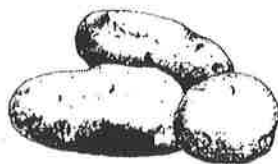


Table 1. Reaction of twenty advanced selections and cultivars to metribuzin.

Clone	Plant Injury <sup>1</sup>	Predicted Yield Reduction <sup>2</sup>	Actual Yield Loss <sup>3</sup>	Susceptibility Rating <sup>4</sup>
	~ % ~			
AC78069-17	1.0	-12.2	13.7	MR
AC83064-1	17.5	1.6	31.6	S
AC83064-6	57.5	32.9	56.7	S
AC87084-3	94.0	73.3	97.5	VS
AC88042-1	32.5	12.6	16.9	MS
AC88162-4	0	-13.7	4.8	R
AC88165-3	12.5	-9.4	3.3	MR
AC88357-3	67.5	39.8	36.3	S
Alpha	0	-12.8	8.7	R
CO81082-1	1.5	-11.0	-9.6	R
CO86142-3	47.5	22.3	36.5	MS
CO86218-2	3.5	-15.3	8.0	MR
CO87009-4	92.5	67.6	96.2	VS
R. Norkotah – S3	0	-9.8	-17.8	VR
R. Norkotah – S8	0	-12.3	6.6	R
DT6063-1R	6.5	-9.5	-5.1	VR
R. Norkotah	2.5	-11.3	-19.6	VR
Shepody	99.5	-	100.0	VS
Yukon Gold	1.5	-12.7	20.1	MR
CO85026-4	0	-9.3	-10.0	VR

<sup>1</sup>Foliar damage assessed 21 days after herbicide application.

<sup>2</sup>Negative yield reductions equal an enhancement of yield or at least not a loss.

<sup>3</sup>Yield loss equals ((untreated yield minus treated yield)/untreated yield)\*100. Negative values indicate an enhancement in yield, or at least not a loss.

<sup>4</sup>Reaction ratings = very susceptible, susceptible, moderately susceptible, moderately resistant, resistant and very resistant.