SUMMARY RESEARCH PROGRESS REPORT FOR 1997

AND RESEARCH PROPOSAL FOR 1998

Submitted to:

SLV Research Center Committee
and the
Colorado Potato Administrative Committee (Area II)

TITLE: Metribuzin Sensitivity and Model Evaluation

PROJECT LEADERS: Asunta (Susie) Thompson-Johns, Research Horticulturist, San Luis Valley Research Center, Dr. Scott Nissen, Extension Weed Specialist, Department of Plant Pathology and Weed Science, CSU, Fort Collins, CO.

PROJECT JUSTIFICATION:

Potato yield may be impacted by many factors. Weed management, or a lack thereof, may affect yield as a result of a severe weed infestation, or an improper application of herbicide. Common weeds in the SLV include wild sunflower, Canada thistle, green foxtail, hairy nightshade, kochia, lambsquarters, redroot pigweed, quackgrass, wild oats and volunteer grain. An integrated approach to weed management is generally accomplished through a combination of crop rotation, mechanical control and chemical control.

Metribuzin, the active ingredient in Sencor and Lexone, is widely used in the SLV and other potato production areas. It is effective on a variety of weed species and may provide significant partial control of difficult perennial species such as quackgrass and Canada thistle. It is easily applied by many methods and works effectively in tank mixes, with many other products, to give a broader spectrum of weed control.

A limitation to this herbicide is the sensitivity of some cultivars, particularly to post-emergence applications. A model developed in southeastern Idaho has been utilized to predict yield loss by assessing percent foliar damage at 21 days following application and plant height at 60-70 days after planting. The current project was undertaken to begin screening advanced selections from the Colorado potato-breeding program and to verify the model in use for application in the SLV.

PROJECT STATUS: Ongoing

SIGNIFICANT ACCOMPLISHMENT FOR 1997:

Twenty advanced selections and cultivars were screened for sensitivity to a post-

emergence application of metribuzin in 1997. Shepody, the sensitive check, was the most susceptible, averaging 99.5 percent foliar damage. This resulted in an actual yield loss of 100%. AC87084-3 and CO87009-7 also had extremely high levels of foliar damage, at 97.4 and 96.2, respectively. Actual yield loss for AC87084-3 was 94% and for CO89007-4 92.5%. The predicted yield loss was less than the actual. Statistical analysis revealed a very high correlation (0.92) between predicted yield loss and actual, indicating the suitability of the derived model for San Luis Valley evaluations. Many clones exhibited some foliar damage resulting from the 1-lb. rate. Responses of some important advanced selections include: susceptible - AC83064-1 and AC83064-6; moderately susceptible - CO86142-3; moderately resistant - CO86218-2; and very resistant – CO85026-4 and R. Norkotah selections 3 & 8.

OBJECTIVES FOR 1998:

1. Continue evaluation of advanced potato cultivars and new releases for resistance/susceptibility to metribuzin (Sencor/Lexone) as a management tool for weed control.

2. Evaluate the model in use by the Western Regional Potato Program (WRCC-27) for an additional year to determine if it is valid for San Luis Valley production conditions.

FUNDING REQUEST:

1997 Allocation: $2,800

1997 Requested:

Travel	$ 800
Materials and Supplies	500
Support Personnel	1,800
Grand Total	$3,000