SUMMARY RESEARCH PROGRESS REPORT FOR 1999

AND RESEARCH PROPOSAL FOR 2000

Submitted to:

San Luis Valley Research Center Committee

and the Colorado Potato Administrative Committee (Area II)

TITLE: Metribuzin Sensitivity and Model Evaluation

PROJECT LEADER: Asunta (Susie) Thompson, Research Horticulturist, San Luis Valley Research Center and Dr. Scott Nissen, Extension Weed Specialist, CSU, Fort Collins

PROJECT JUSTIFICATION:
Potato yield and quality are affected by many factors. A critical factor is pest management. Common weeds, frequently a problem in the San Luis Valley include, wild sunflower, Canada thistle, green foxtail, hairy nightshade, kochia, lambsquarters, redroot pigweed, quack grass, wild oats and volunteer grain. Typically producers will utilize an integrated management approach, incorporating crop rotation, canopy competition, mechanical and chemical controls to address these pests.

Metribuzin, the active ingredient in Sencor and Lexone, is one of the most widely utilized chemical weed control agents in potato crops. Metribuzin may provide significant partial control of quackgrass and Canada thistle, two perennial species difficult to control in a growing crop, in addition to it's effectiveness against many weed species. Application is achieved by a variety of methods and it works effectively in tank mixes, providing a broader spectrum of weed control.

A limitation of metribuzin is the sensitivity of some cultivars. The primary objective of the current project is to screen advanced selections from the Colorado potato breeding program. Information obtained is included in cultivar specific management profiles and provided to producers when trying new selections.

PROJECT STATUS: Ongoing

SIGNIFICANT ACCOMPLISHMENTS FOR 1999:
In 1999, sixteen advanced selections and named cultivars were screened for sensitivity to metribuzin. The post-emergent treatment was applied on July 7. The weather at that time was mostly sunny. Plants were about 8 inches tall at time of treatment. A 1 lb. per acre active ingredient rate is compared to the check of 0 lbs. per acre. AC87084-3 and

Shepody (a sensitive check) were very susceptible to the chemical treatment, 40% and 22.5% foliar damage, respectively. Keystone Russet and Silverton Russet continued to demonstrate susceptibility. AC87079-3, AC89653-3 and NDC4655-1R were considered moderately susceptible in 1999. Foliar damage was noted for many of the selections, however the damage did not usually result in a yield reduction, but instead an enhancement (AC87138-4, AC87340-2, CO89036-10, CO89097-2, Centennial Russet, AC89536-5, Russet Norkotah). Two genotypes expressed a yield enhancement from the metribuzin treatment, CO85026-4 and Pike, while exhibiting no foliar damage.

A draft document is in development to provide screening results from trials conducted in 1996 to 1999 to producers and agricultural consultants. This document may serve as a supplement to the San Luis Valley Potato Production Manual and will also be available at the San Luis Valley Research Center website. An important objective is to demonstrate the validation of the model developed by the program of Dr. Stephen Love at Aberdeen, Idaho. Research data is ready for preparation of a scientific article to be submitted to the American Journal of Potato Research in 2000.

OBJECTIVES FOR 2000:

1. Continue evaluation of advanced potato selections and recently named cultivars for resistance/susceptibility to metribuzin as a management tool for weed control.

2. Develop a weed management guide for Colorado potato production, specifically related to metribuzin usage. Publish research results related to the model (Idaho program) validation under San Luis Valley production conditions.

FUNDING REQUEST:

1999 Allocation:	$2,600
2000 Request:	
Supplies	$ 300
Travel	800
Support Personnel	1,500
Total	$2,600