

SUMMARY RESEARCH PROGRESS REPORT FOR 1988

Submitted to:

SLV Research Center Committee

and

Area II Potato Administrative Committee

TITLE: Potato Breeding and Selection

PROJECT LEADER: David G. Holm

PROJECT JUSTIFICATION:

Development of new potato cultivars will help assure that the industry in Colorado remains productive and in a competitive position. New cultivars with increased yield, improved qualities and resistance to various physiological disorders, diseases and pests can provide long-term, cost-effective benefits to the potato industry.

PROJECT STATUS:

This is a long-term ongoing project. Characteristics being emphasized are yield, specific gravity, russeting, and fresh market/processing qualities. Some emphasis is being placed on reds and chipping clones also.

SIGNIFICANT ACCOMPLISHMENTS IN 1988:

Thirty parental clones were intercrossed in 1988. Seeds from 207 combinations were obtained. Sixty seedling families were grown in the greenhouse, producing 14,444 tubers for initial selection in 1989.

A total of 42,764 first-year seedlings were planted, with 484 being selected for further observation. Another 518 clones were in various stages of preliminary and intermediate testing. One hundred sixteen of these clones were saved for further evaluation. Nineteen advanced selections (15 russets, 2 chippers, 1 red, and 1 long white) were saved for increase and continued evaluation. Seed of two russets (AC77101-1 and CO8011-5) and a long white (BC0038-1) will be released for grower tests in 1989.

Ten selections were tested in the Western Regional Trial. Based on yield and grade most selections performed better than the standard cultivars included in the trial. The top rated clones for fresh market based on yield and grade were AC79100-1, AC80369-1, and CO08014-1. For processing the top rated clones were AC80369-1, BC0038-1, and CO08014-1.

Six selections were compared in the Western Regional Chipping Trial. Top rated clones were A80559-2, AC80545-1, and BR7093-24.

Grower evaluations were conducted on two russets (A74212-1 and AC79100-1) and two chippers (AC80545-1 and BR7093-24). AC79100-1 was discarded due to excessive shatter bruise. The other three selections will be retested in 1989. A74212-1 and BR7093-24 are to be named in 1989 by Oregon State University and Idaho respectively. Idaho recently announced that BR7093-24 will be named Gemchip. AC80545-1 will be retested by growers in 1989.

Grower response to the three Sangre selections remains favorable.

Russet Nugget (TC582-1) was released by the Colorado and Texas Agricultural Experiment Stations in 1988. This cultivar is an oblong, smooth, high yielding dual purpose potato with fresh market and processing qualities.

Two leaf mutations of Centennial Russet were compared to the standard for yield, grade, vine maturity, and virus content for a second year. The yield of the flat leaf mutation was greater than the standard and the pebble leaf mutation. The pebble leaf plants had 100% PVS infection compared to an average of 15% for standard and flat leaf plants.

OBJECTIVES FOR 1989:

1. The potato breeding and selection program will be continued. Advanced clones will be tested in yield trials, out-of-state trials, and by growers.
2. The Colorado Western Regional Trial and Regional Chip Trial will be conducted again.
3. The study comparing Centennial Russet mutations will be continued. Yield and virus content comparisons will be made. Additionally, virus tested seed stocks will be generated for future studies to determine if the supposed pebble leaf mutation is primarily due to PVS infection. Also, potential differences in the mutations for PVS susceptibility will be evaluated.

FUNDING: 1988 Allocation: \$8,100.00

1989 Budget Request

Labor	\$5,800.00
Travel	700.00
Supplies	<u>2,200.00</u>
Total	\$8,700.00