

**SUMMARY RESEARCH PROGRESS REPORT FOR 1992
AND RESEARCH PROPOSAL FOR 1993**

Submitted to:

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

TITLE: Potato Breeding and Selection

PROJECT LEADER: David G. Holm

PROJECT JUSTIFICATION: Many challenges and opportunities are confronting the Colorado potato industry. These challenges/opportunities include food safety, water quality, current market constraints, new market development (processing, exporting, etc.), changing consumer expectations, and increasing costs with highly variable potato prices.

To help meet each of these challenges, continued emphasis needs to be placed on developing potato cultivars with increased yield, improved quality, resistance to disease and pests, and tolerance to environmental stresses. Increased emphasis needs to be placed on breeding for improved postharvest and processing qualities such as lengthened dormancy, ability to process after cold storage, and resistance to storage diseases such as early blight. Cultivars with these characteristics will help assure that the potato industry in Colorado remains productive and in a competitive position.

Once cultivars with these characteristics are identified, limited generation seed stocks need to be rapidly developed and made available to growers for evaluation and increase. These capabilities facilitate development of markets for new cultivars and promising selections.

PROJECT STATUS: This is an ongoing project.

SIGNIFICANT ACCOMPLISHMENTS FOR 1992:

Thirty-three parental clones were intercrossed in 1992. Seeds from 119 combinations were obtained. Sixty-four seedling families were grown in the greenhouse producing 15,159 tubers for initial field selection in 1993. Surplus tubers will be distributed to Idaho, Oregon, Texas, and Alberta, Canada.

A total of 68,800 first-year seedlings were planted, with 727 being selected for further observation. Another 1,106 clones were in various stages of preliminary and intermediate testing. Two hundred three of these clones were saved for further evaluation. Twenty-nine advanced selections were saved and will be increased.

Grower evaluations were conducted on five russets (AC75430-1, AC78069-17, C080011-5, C081082-1, and C082142-4) and one chipper (AC80545-1). Selection

AC75430-1 was discarded from further testing. Testing will continue on AC78069-17, C081082-1, and C082142-4 during 1993.

Selections to be released for initial grower evaluation in 1993 are AC83068-1, AC83064-6, AC83068-1, AC83172-1, and AC83306-1. AC83306-1 is a chipper. The other selections are russet. AC83068-1 has red eyes. Selections with processing potential are AC83064-6 and AC83172-1.

Growers have recommended naming C080011-5 (Crestone Russet) and AC80545-1 (Chipeta). AC80545-1 clone was selected in Colorado and will be released in early 1993 jointly by the Colorado and Idaho Agricultural Experiment Stations and the USDA-ARS. AC80545-1 will be released as a chipping potato. C080011-5 will be released in mid 1993 by the Colorado Agricultural Experiment Station in as a high yielding, medium-early maturing, fresh market potato.

Fourteen selections of Russet Norkotah have been selected for further evaluation in yield trials in 1993.

OBJECTIVES FOR 1993:

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 And Regional Chip Trials will be conducted. A separate Western Regional Red Trial will be initiated in 1993.
3. Clonal selections of Russet Norkotah will be compared in yield trials.
4. Twelve-hill plots and clones acquired from other programs will be screened for potato spindle tuber viroid (PSTV).

FUNDING REQUEST: 1992 Allocation - \$14,100.00

1993 Budget Request

Labor	\$8,650.00
Travel	800.00
Supplies	<u>5,450.00</u>
Total	\$14,900.00