

SUMMARY RESEARCH PROGRESS REPORT FOR 1987

Submitted to:

SLV Research Center Committee

and the

Area II Potato Administrative Committee

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TITLE: Potato Breeding and Selection

PROJECT LEADER: David G. Holm

DEPARTMENT: Horticulture

PROJECT JUSTIFICATION:

Development of new potato cultivars will help assure that the industry in Colorado remains productive, prosperous, 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 progress has been made in developing new improved cultivars. From 1975 to 1986 there have been three cultivars named that have gone through the breeding and selection project in the San Luis Valley. They are Centennial Russet (1976), Sangre (1982), and Ute Russet (1986). In 1985, Centennial Russet and Sangre accounted for 66.9 and 5.1%, respectively, of the Colorado potato production compared to 24.3 and 1.9% for Russet Burbank and Red McClure, respectively, the old standard cultivars.

SIGNIFICANT ACCOMPLISHMENTS 1987-88:

Thirty parental clones were intercrossed in 1987. Seeds from 155 combinations were obtained. Sixty seedling families were grown in the greenhouse, producing 6,088 tubers for initial selection in 1988.

A total of 36,359 first-year seedlings were planted, with 357 being selected for further observation. Another 562 clones were in various stages of preliminary and intermediate testing. One hundred twenty-two of these clones were saved for further evaluation. Twenty-three advanced

selections (18 russets, 4 chippers, and 1 long white) were saved and will be increased. Grower evaluations were conducted on 5 russet selections. Of these selections, AC79100-1 will be evaluated again and TC582-1 will be named Russet Nugget. Tubers of Russet Nugget have a high solids content and their flesh is a light golden color. Russet Nugget is a dual purpose fresh market and processing potato. It has a high yield potential and produces very attractive tubers with a high content of vitamin C and protein.

Twelve clones were tested in the Western Regional Trial. Top rated clones for processing were AC80369-1 and CO08014-1. Top rated clones for fresh market were AC79100-1, A76147-2, NDTX9-1068-11R, and AC80369-1.

Seven clones were evaluated in the Western Regional Chipping Trial. Top rated clones were AC80545-1, NDA1725-1, and BR7093-24. Seed of AC80545-1 will be released for grower evaluation and seed increase in 1988.

Seed of three Sangre selections was released to growers in 1987. Grower response to these selections has been very favorable. The selections have a more vigorous vine and have a greater yield potential than the standard Sangre.

Two leaf mutations (flat leaf and pebble leaf) of Centennial Russet were compared to the standard for yield, grade, vine maturity, and virus content. Total yield and % US #1 tubers were significantly greater for the standard than the flat leaf mutation. Percent PVX infections was lowest for the mutations. Percent PVS infection was greatest for pebble leaf and lowest for flat leaf.

#### OBJECTIVES FOR 1988-89:

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 Sangre selection studies will be continued one more year. Out-of-state trials will be continued to determine adaptability and stability of these selections.
4. The study comparing Centennial Russet mutations will be continued.

FUNDING: 1987-88 Allocation: \$6,900.00

#### 1988-89 Budget Request

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|----------|-----------------|
| Labor    | \$5,400.00      |
| Travel   | 700.00          |
| Supplies | <u>2,000.00</u> |
| Total    | \$8,100.00      |