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SUMMARY RESEARCH PROGRESS REPORT FOR 1987

Submitted to:

SLV Research Center Committee

and the

Area II Potato Administrative Committee

TITLE: Physiological and Cultural Studies

PROJECT LEADER: David G. Holm

DEPARTMENT: Horticulture

PROJECT JUSTIFICATION:

Identification of the various strengths and weaknesses in clones for various postharvest storage, quality, and physiological disorder characteristics is essential in the selection and release of new cultivars.

The development of improved potato production practices is a key component in maximizing the yield of quality potatoes while minimizing associated production costs.

PROJECT STATUS:

This is an ongoing project. For reporting simplification, this project now encompasses both the Postharvest Evaluations and the Physiological and Cultural Studies projects.

SIGNIFICANT ACCOMPLISHMENTS 1987-88:

Fifty-five clones were evaluated for blackspot susceptibility, storage weight loss, dormancy, french fry color, and texture.

Clones with very little or no blackspot susceptibility were: A76147-2, AC75430-1, AC77226-10, AC8184-2, AC82263-1, CO7918-11, CO8118-2, CO8182-1, and TC582-1.

Weight loss over a four month period ranged from 3.4 to 7.9%. Generally the advanced selections had less weight loss than Centennial Russet (6.3%). All clones, except AC75430-1 and AC77513-1, sprouted earlier than Russet Burbank.

Clones with acceptable processing qualities (fry color and texture) were: A79141-3, AC77226-13, AC80369-1, BC0038-1, CO8195-4, CO8204-3, CO08014-1, TC582-1, Lemhi Russet, and Russet Burbank.

Previous studies, in cooperation with Rob Davidson, have indicated the potential of using a 250 ppm solution of streptomycin-oxytetracycline seedpiece treatment in reducing the rot potential of the daughter tubers of WNC521-12 based on mist chamber assays. Studies in 1987 were expanded to evaluate the effectiveness of the same treatment on the Sangre cultivar. Treatment did not affect total yield or stand. Mist chamber assays are currently in progress to determine rot potential of daughter tubers.

The effects of preplant storage temperature on seed of Centennial Russet, Russet Burbank, and Sangre were evaluated for a third year. These clones tended to have greater average tuber weights and fewer stems per plant when warmed at 50-55°F for a minimum of two weeks prior to planting. This is consistent with observations in 1986 and 1987. This year warming for 29 days resulted in a significant decrease in total and US #1 yield. In summary, optimum total and US #1 yields should be obtained if seed is stored at 40°F and warmed for no more than two weeks prior to planting.

OBJECTIVES FOR 1988-89:

1. Evaluate blackspot susceptibility of advanced selections from the breeding project and Western Regional Trials.
2. Evaluate weight loss during storage and dormancy of advanced selections to determine relative storability and potential weaknesses in these clones.
3. Evaluate fry color and texture of advanced selections to determine processing potential.
4. Evaluations will be expanded to include protein, alkaloids, taste, vitamin C and sugars in cooperation with Joe Maga, Department of Food Science and Human Nutrition.

FUNDING: 1987-88 Allocation: $5,700.00

1988-89 Budget Request

Labor	$3,850.00
Travel	300.00
Supplies	1,250.00
Total	$5,400.00