RESEARCH PROPOSAL FOR 1993

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

TITLE: Storage Losses: Leak and Early Blight

PROJECT LEADER: Joseph P. Hill
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PROJECT STATUS: New

OBJECTIVES FOR 1993: Study the interaction of potato cultivars, pathogen populations, vine desiccation methods, and fungicides on tuber quality, infection and storage. Identify the major risk factors and determine management techniques that efficiently minimize storage loss.

FUNDING REQUEST: $6,000.00 (Laboratory Supplies, Labor, Travel)

RESEARCH OUTLINE:

Recent discussions with growers and potato specialists have indicated an increasing concern with storage rot problems in the SLV. The situation is difficult to accurately assess because there is no recent research information. Pathogen populations may shift over time, especially after significant changes in cultivars and cultural practices. It is therefore important for initial research to focus on identifying the disease causing organisms and accurately estimate the scope of the problem. The proposed research will be conducted in cooperation with station personnel to ensure efficient use of time, effort and funds.

A. LEAK:

Phytophthora erythroseptica, Pythium ultimum, Pythium debaryanum, as well as several other Phytophthora and Pythium species, have been associated with typical leak symptoms. Pathogen species commonly vary with location. Samples of potatoes exhibiting leak symptoms will be collected from commercial storage sheds and selective media will be used to isolate and identify the local causal agent(s) of the disease.

Three commercial fields of cultivars Sangre and Norkota, with histories of leak problems, will be identified and a research

agreement established with the growers. Soil samples will be collected throughout the growing season and assayed for pathogen species and number of propagules per gram. An attempt will be made to determine if a correlation exists between pathogen populations in the soil and storage losses.

The effect of green vine treatment with metalaxl and desiccation with diquat, sulfuric acid, and propane burning on the pathogen population in the soil will studied. Potato samples stored in mesh bags in a commercial shed will be evaluated several times throughout the storage period.

B. EARLY BLIGHT:

Various levels of foliar infection will be established on plots of cultivars Century Russet and Centennial in a research area near the station. A combination of inoculation with a conidial spore suspension of *Alternaria solani* and a fungicide spray program should result in various levels of disease.

The effect of vine desiccation with diquat, sulfuric acid, and propane burning on tuber infection will be determined. Subsamples of potatoes obtained from the treated plots and stored in mesh bags in a commercial shed will be evaluated for disease throughout storage period.