

## SUMMARY RESEARCH PROGRESS REPORT FOR 1990

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

**TITLE:** Epidemiology of Potato Virus S in the San Luis Valley

**PROJECT LEADERS:** Robert Davidson and Dr. Gary Franc

**PROJECT JUSTIFICATION:** Potato Virus S continues to be one of the primary viruses involved in the mosaic complex in the San Luis Valley. While this virus is usually considered to be latent in symptom expression, that is, with no visible symptoms evident during the growing season, mosaic symptoms can occasionally be seen. These symptoms, coupled with the potential yield losses and production of smaller than normal tubers from infected plants (whether symptoms are visible or latent), can cause problems for the certified seed potato program and subsequently for the buyers of this seed, the commercial producers. PVS is easily spread to healthy stocks through mechanical means (plant to plant contact) and possibly by aphid vectors. There are really only three potential sources of PVS in the San Luis Valley. These are other infected potatoes, weed hosts and/or aphid vectors. This project should help clarify the role of each of these potential sources and their effect on PVS spread to healthy potatoes.

**PROJECT STATUS:** This project was scheduled for completion in 1990. Because of the difficulties in establishing a viable aphid colony, it will be carried on one more year with available funds to verify potential aphid vectors of PVS. In addition, the Potato Certification Service will be assaying several potato fields and weeds in and around these fields for the presence of PVY.

**SIGNIFICANT ACCOMPLISHMENTS FOR 1990:** Potential weed hosts in and around potato fields were surveyed. These samples were tested serologically for the presence of PVS shortly after harvest. In 1989 results from the testing indicated that several common weeds can harbor the virus, but rarely does the percentage of weeds infected with PVS in the field exceed the potato infection rate. This gave a preliminary indication that weeds act as a reservoir for the virus and have the potential for spreading the virus to the potato crop. The results from the 1990 survey were much less conclusive. While some of the weeds sampled did test positive for PVS in initial screening, we were unable to verify this with the bioassay. Additional verification is needed before we can conclusively say that weeds in the San Luis Valley harbor PVS. Again in 1990, the percentage of weeds in any field which exhibited a positive reaction for PVS was lower than the actual PVS infection rate of the potatoes.

**OBJECTIVES FOR 1990:** The weed survey will be repeated with full testing for the presence of PVS and PVY including a followup inoculation of virus free micropropagated potato plants (to establish the effectiveness of weeds as a source for infection) or other appropriate indicator plants. In addition, aphid colonies will be established in the field, representing the San Luis Valley biotypes and tested for their ability to spread PVS and PVY from infected potato plants and weeds to healthy potatoes.

**FUNDING REQUEST:** No funds are requested from the SLVRC committee.