

Pre-proposal for 1989 research

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Project: Epidemiology of Potato Virus S in the San Luis Valley

The rationale behind this work is closely linked to the limited generation program used for Potato Certification in Colorado. The limited generation program provides a convenient way to introduce disease-free, including, PVX- and PVS-free, seed stocks to the SLV potato industry.

Routine testing has shown that reinfection of these seed stocks by potato viruses 'S' and 'X' is occurring during the growing season. Although these infections are usually latent, with no visible symptoms evident to the casual observer, mosaic symptoms can occasionally be seen in leaves of some plants. Regardless of the type of symptom expression, infected plants can be easily detected using serological tests. The significance of these infections to the potato industry lies in the fact that PVS and PVX are the major components in the mosaic complex in the San Luis Valley. Both viruses can be easily spread to healthy seed stocks and infected plants often have a measurable yield loss while producing a greater proportion of small tubers.

Testing over the past three years indicated that PVX is being reasonably contained by the limited generation program. However, PVS is not falling into the same category as PVX and it is not certain why this is occurring. It is possible that weeds are serving as a source of PVS in the SLV and there is some evidence that aphid vectors may be spreading the virus from infected plants to healthy potatoes. Published reports from other potato production areas in North America and other parts of the World provide support to both hypotheses. If either or both situations are occurring in the SLV, some different management strategies will be needed here to control PVS.

Common weeds found near potato fields will be collected and serologically tested for the presence of PVS. This survey will also include Quinoa, an alternative crop becoming more popular in the SLV that could be grown in rotation with potatoes. Aphids will be tested for their ability to transmit PVS under controlled conditions. When completed, this initial work would help to determine where the virus can be found in the SLV and its potential mode of transmission to clean stocks.

Funding request = \$1500.00