

## Annual Report

### Fungus and Bacterial Diseases of Potatoes

Monty Harrison  
Colorado State University

#### SUMMARY:

Research was carried out during 1988 which involved blackleg, ringrot, early blight and early dying. Details of the studies and results are included in the attached report.

The most important results are summarized here for the convenience of the reader.

#### Ringrot:

- 1) Inoculated seedpieces planted in the San Luis Valley and Platteville produced very different percentages of visibly infected plants. Much higher percentages were found in the warmer (Platteville) area than in the San Luis Valley.
- 2) Ringrot bacteria were not found in three species of weeds sampled in the field.
- 3) Two samples of irrigation water collected at the bottom end of a field infected with ringrot produced ringrot symptoms in eggplants.
- 4) Tissue culture plantlets of cv Sangre carried ringrot bacteria for two nodal transfers without showing ringrot symptoms.
- 5) Ringrot symptom expression in Russet Burbank, Sangre and Centennial Russet is affected by light and air temperature.

#### Blackleg:

- 1) Blackleg-free seed stocks of Norgold Russet, Centennial Russet, Russet Burbank and Sangre show no detectable reduction in performance when irrigated with water containing high levels of Erwinia carotovora inoculum for one year. When exposed to high levels of bacteria in irrigation water for two consecutive years, stands, rate of growth and yield can be affected. Cultivars differ in their response to water-borne inoculum.
- 2) Treatment of cut Sangre seed with a new antibacterial compound, S-0208, did not affect populations of Erwinia or the surface of cut seed pieces nor improve performance in the field.

### Early Blight:

Twelve fungicide treatments applied as individual chemicals or combinations of materials significantly reduced early blight infection in Centennial Russet potatoes. None of the treatments significantly increased tuber yields. Materials tested included Manzate 200, Bravo 720, CGA 169374 + Bravo 720, Bravo CM and Bravo 720 + tin.

### Early Dying:

- 1) Early dying in Russet Burbank was more severe and tuber yield decreased as soil moisture increased from low to high.
- 2) Erwinia carotovora alone did not affect the severity of early dying appreciably.
- 3) Erwinia inoculated into seedpieces which were planted into soil with Verticillium dahliae produced the highest yield reductions and the highest severity of early dying. The combination of the two pathogens reduced overall yield 11.4% in this experiment.