

**SUMMARY RESEARCH PROGRESS REPORT FOR 1991**

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

**TITLE:** REACTION OF POTATO VARIETIES TO FUSARIUM SEEDPIECE DECAY AND  
EVALUATION OF FUSARIUM ISOLATES FOR DEVELOPMENT OF  
RESISTANCE TO THIABENDAZOLE.

**PROJECT LEADERS:** Kenneth W. Knutson and Borghild Glorvigen

**PROJECT JUSTIFICATION:** Fusarium fungi are well-known to be an important cause of seedpiece decay and they can also aggravate the severity of Erwinia bacterial rot. Although varietal differences to fusarium seedpiece decay have been observed we do not have reliable information about the reaction of currently grown varieties in Colorado. A better understanding of the susceptibility picture would aid growers in developing control strategies. Research in North Dakota has indicated that some strains of fusarium seedpiece decay fungi have developed resistance to thiabendazole (Mertect). Since this chemical is widely used in the SLV it would be of interest to know if such resistant strains might be present.

**PROJECT STATUS:** New in 1991. The major objective of the project was completed; the work on thiabendazole was not completed. A small grant in aid was received from the Kamira Co. to test the effect of a biocontrol agent called Mycostop on Fusarium seedpiece decay; since the research was closely related to this project the results are included herein.

**SIGNIFICANT ACCOMPLISHMENTS FOR 1991:**

1. **Varietal Reaction To Fusarium Seedpiece Decay:** A field plot was located at the SLV Research Center involving six varieties- Centennial; AC80545-1 (Chipeta); Norkotah; Sangre; Russet Nugget and Russet Burbank. The seedpieces were inoculated with Fusarium 24 hours prior to hand planting; in addition a non-inoculated check treatment and a bio-control agent (Mycostop) treatment were included; each treatment was replicated four times. Three seedpieces were dug and evaluated for decay on June 11, June 24, July 9 and July 23. The plot was harvested and yields determined.

The major effects of inoculation on seedpiece decay can be seen in Figures 1 to 6. Varieties differed significantly in their response to inoculation with Fusarium; Centennial being the most resistant and Sangre the most susceptible. The overall level of seedpiece decay up through June 24 (39 days after planting) was relatively low for all varieties except Sangre. Sharp differences between varieties became evident from 39 to 68 days. Centennial and Nugget remained relatively low; AC80545-1 increased moderately while the amount of decay in Norkotah, Sangre and Russet Burbank increased abruptly. In general, Mycostop was ineffective in reducing the level of decay. However, for both Norkotah and AC80545-1 at 54 days there appeared to be a definite reduction. Although this does not have any practical importance to the grower it could be a clue

to the manufacturer of Mycostop about the mode of action under field conditions. In spite of the above mentioned differences in seedpiece decay there was not any statistically significant effect of fusarium inoculation on yield. Apparently, the severe levels of seedpiece decay developed too late to have depressing effects on yield.

2. Effect of Mycostop on seedpiece decay of Centennial: This experiment was very similar to that described above except that only one variety--Centennial was included. Six different treatments were used. Seedpiece decay was evaluated on the same four dates and the plot was harvested for yield. Mycostop was applied as a spray at two concentrations either immediately after inoculation or 24 hours later. None of the Mycostop treatments had a statistically significant effect on seedpiece decay or yield.

PLANS FOR 1992:

Although the varietal responses to inoculation with Fusarium justify further study; current priorities, considering time and personnel available, do not warrant a project for 1992. The Project Leaders recommend that evaluations for clonal response to Fusarium seedpiece decay be incorporated into the SLV Research Center Cultivar Development Program at some appropriate time in the future.

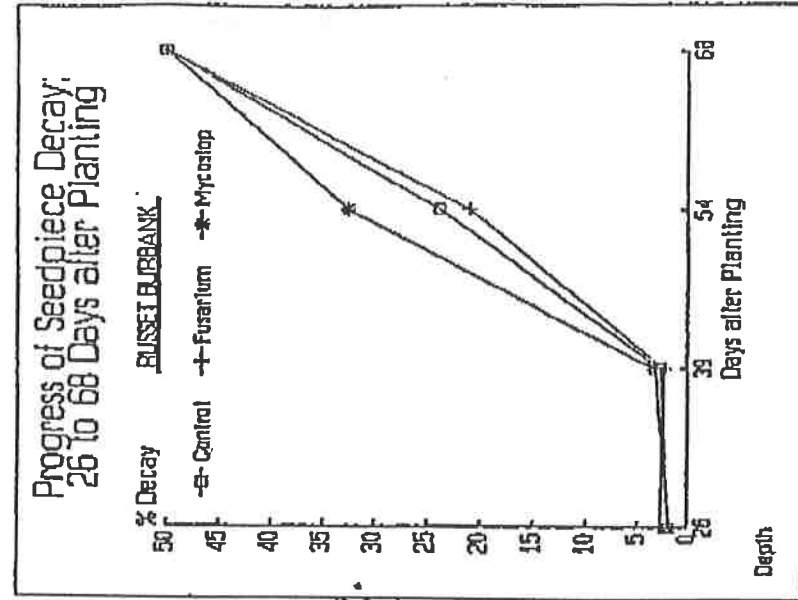


Fig. 3

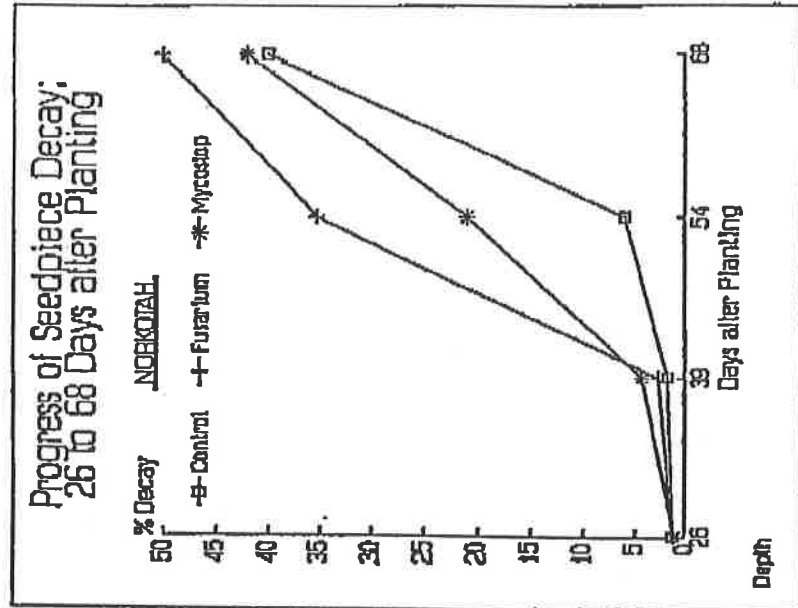


Fig. 2

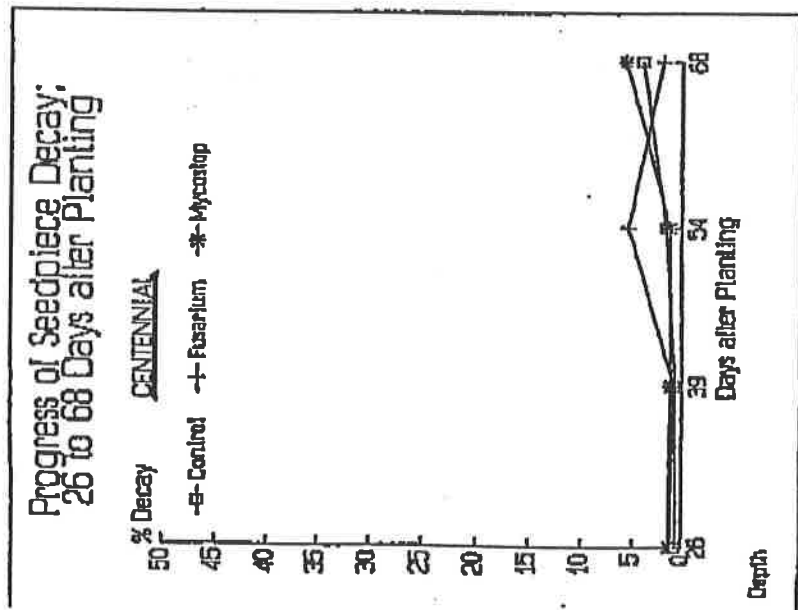


Fig. 1

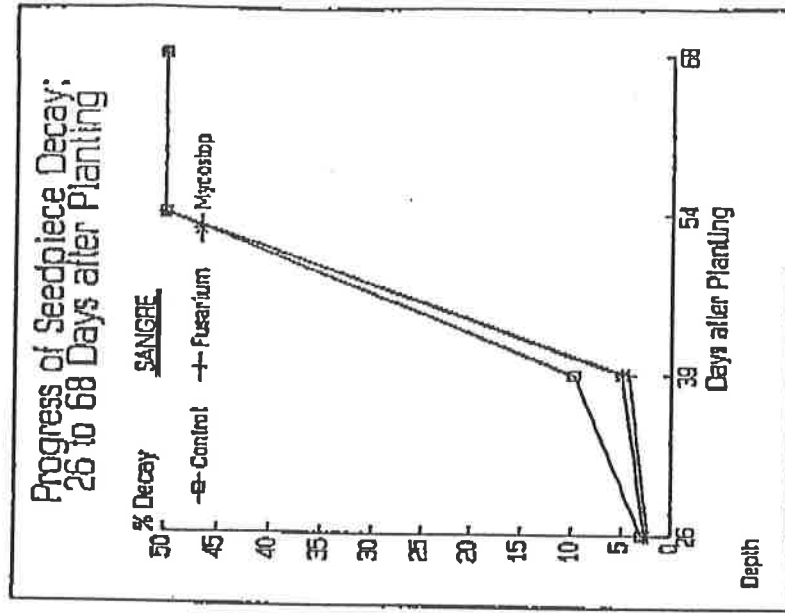


Fig. 6

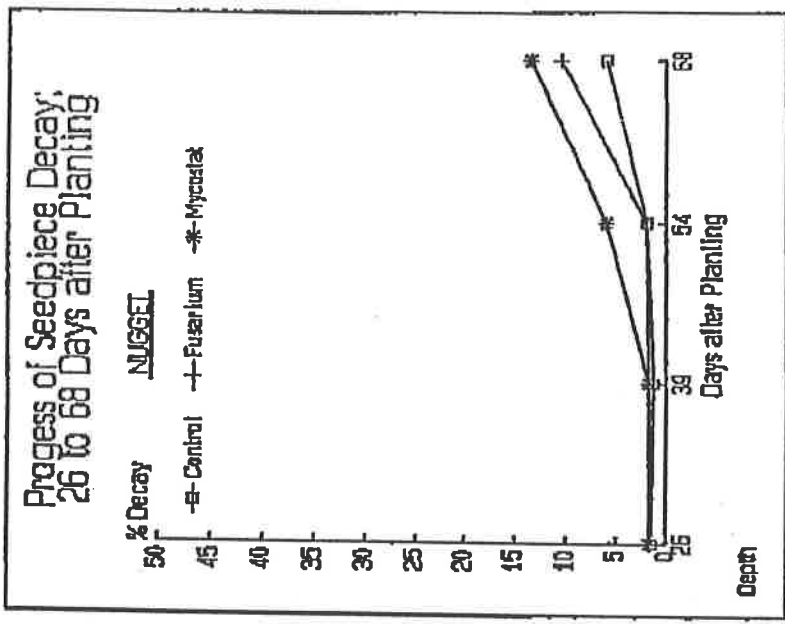


Fig. 5

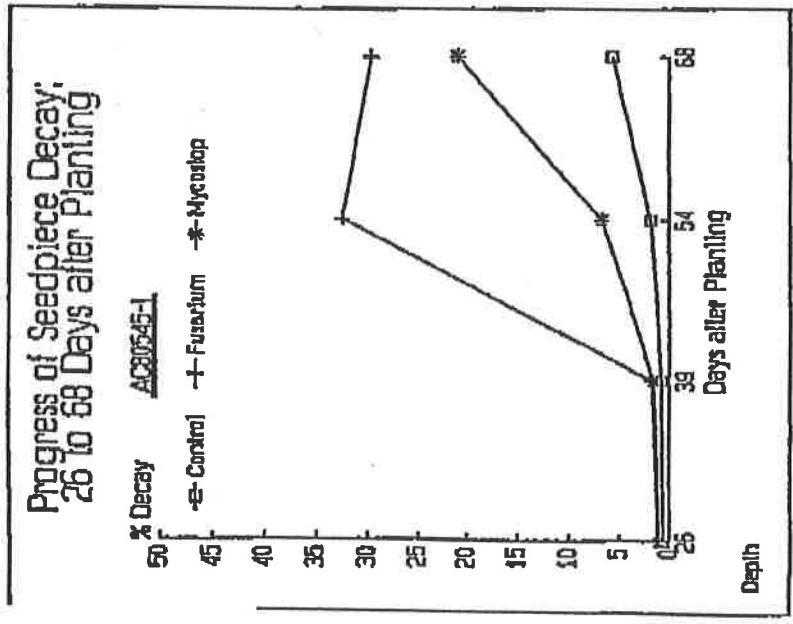


Fig. 4