

FUSARIUM ROOT DISEASE OF BAREROOT SCOTS PINE SEEDLINGS FANTASY FARMS NURSERY, PECK, IDAHO

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Diseases of bareroot conifer seedlings have been investigated periodically at the Fantasy Farms Nursery in Peck, Idaho. Several different types of diseases have been found including Diplodia tip blight (James 1984b; James 1986; James et al. 1987), Phoma blight (James 1984a), and root diseases (James 1983). During a recent visit to the nursery, root diseases of bareroot 1-0 Scots pine (*Pinus sylvestris* L.) were evaluated.

Mortality within seedbeds was mostly grouped, and many different portions of seedbeds were affected (fig. 1). Affected seedlings were necrotic and standing upright (fig. 2). There was reduced seedling density in several areas. Eight seedlings with symptoms showing various stages of decline were carefully excavated from affected seedbeds and transported to the laboratory for evaluation. Root systems of each seedling were carefully rinsed in running tap water for a few minutes to remove adhering soil particles. They were then surface sterilized in 10 percent aqueous sodium hypochlorite for 2 minutes and rinsed with distilled water. Six to eight root pieces per seedling were aseptically cut from each root system and placed on a selective medium for *Fusarium* (Komada 1975). Plates were incubated under cool fluorescent light at about 22 degrees C for 7-10 days. *Fusarium* spp. colonizing root pieces were identified using the taxonomic scheme of Nelson et al. (1983).



Figure 1.--Root disease mortality of 1-0 bareroot Scots pine seedlings at the Fantasy Farms Nursery, Peck, Idaho



Figure 2.--Symptoms of root-diseased bareroot Scots pine seedlings at the Fantasy Farm Nursery, Peck, Idaho. Note portion of seedbed with reduced seedling density adjacent to diseased seedlings

All root pieces yielded *F. oxysporum* Schlect. No other species of *Fusarium* was isolated, nor was there much recovery of common saprophytic organisms such as *Trichoderma*. It was apparant that *F. oxysporum* was the major cause of root disease of bareroot 1-0 Scots pine seedlings at the nursery. This fungus might also have been responsible for pre- and post-emergence damping-off that resulted in reduced seedling density.

Growers at the Fantasy Farms Nursery do not fumigate their soil prior to sowing. Therefore, resident populations of *Fusarium* in the soil may have been the major source of inoculum; contaminated seed may also have been important. Analyses of soil pathogen populations and/or evaluations of *Fusarium* on seed would provide important information on location of inoculum. Fungicide applications might not be very effective in reducing disease incidence once the disease is encountered. The best means of control is to reduce infection by locating important inoculum sources and treating them prior to sowing.

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