

**COTYLEDON BLIGHT OF CONTAINERIZED PONDEROSA PINE SEEDLINGS  
AT THE BITTERROOT NATIVE GROWERS NURSERY,  
HAMILTON, MONTANA**

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During the spring of 1987, containerized ponderosa pine (*Pinus ponderosa* Laws.) seedlings displayed cotyledon blight symptoms of cotyledons shortly after seedling emergence. Cotyledons were either blighted at their tips (figure 1), in which case they were often attached to their seedcoat, or sometimes the middle portion of the cotyledons were necrotic (figure 2). The first situation resembled typical cotyledon blight associated with seedborne pathogenic fungi such as *Fusarium* spp. (James 1986a). However, the second type of symptom has not previously been associated with infection by pathogenic fungi.

Six pine seedlings within super Leach<sup>®</sup> cells were analyzed for presence of potentially pathogenic organisms. Necrotic cotyledons were surface sterilized with 10 percent aqueous sodium hypochlorite, rinsed with sterile water and placed on a selective medium used for nursery pathogens (Komada 1975). Roots of all selected seedlings were likewise cultured on the selective medium to isolate associated fungi.

All isolations failed to yield a consistent association with potentially pathogenic organisms. *Fusarium* spp. were isolated from the cotyledons and roots of only one of the seedlings. Common saprophytic organisms such as *Trichoderma*, *Alternaria*, and *Phoma* were isolated from the other seedlings.

It was concluded that the ponderosa pine cotyledon blight was apparently not caused by infection with pathogenic fungi. It is likely that the disorder was associated with some abiotic factor such as temperature extremes, pesticide toxicity, or related nutrient problems. Shortly after emergence, young seedlings may be very sensitive to either high (James 1986b) or low temperatures. If ambient temperatures fluctuate dramatically and greenhouses are not adjusted to stabilize temperature extremes, damage to young seedlings may occur. In addition, many growers apply fungicides to reduce damage to damping-off during and shortly after seedling emergence. Toxicity of seedlings to certain fungicides may occur, especially when application rates are high or fungicides are applied during periods of high temperatures. It is likely that a combination of abiotic factors contributed to causing cotyledon blight of ponderosa pine seedlings at the Bitterroot Native Growers Nursery.



Figure 1. Containerized ponderosa pine seedling with cotyledon blight that occurred shortly after seedling emergence. Seedcoat is still attached to the cotyledons and may be a source of seedborne pathogens such as *Fusarium* spp.



Figure 2. Containerized ponderosa pine seedling with cotyledon blight shortly after seedling emergence. Note that tissue necrosis occurs primarily in the middle of the cotyledons.

#### LITERATURE CITED

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