

Forest Disease Management Notes

United States
Department of
Agriculture

Forest Service
Pacific Northwest
Region



Damping-off

Damping-off of seedlings is caused by fungi in the genera *Phytophthora*, *Pythium*, *Fusarium* and *Rhizodonia*. Damage can be extensive in wet springs or poorly drained soils. Damping-off results in death of succulent seedlings and root rot with associated stunting in older seedlings.

Hosts: Conifer seedlings.

Recognition: Pre-emergent damping-off is characterized by failure of seedlings to emerge due to the infection and decay of the young radicals. Post-emergent damping-off is characterized by infection and decay of succulent stem tissue at or just below the ground line causing seedlings to fall over. At the point of infection, the stem is watersoaked and necrotic. Root infections of slightly older seedlings may also occur causing partial or total decay; in these cases seedlings may remain upright after dying.

No visible signs of fungi are seen on damped-off seedlings. Fungi are easily cultured from infected seedlings and can be separated from one another by differences in spore and mycelium characteristics.

Disease Spread: Damping-off fungi are soil inhabitants, surviving either as dormant spores or mycelium in organic matter. After the seedlings are infected, additional mycelium or spores are formed within seedling tissue so that the population of damping-off fungi increases with each successive crop of trees. Generally, high moisture and high soil pH favor damping-off. Infection by damping-off fungi is usually most severe in very young, succulent seedlings, but these fungi may attack roots of older woody seedlings as well. The disease can be spread by movement of infested soil and seedlings.

Management: Nursery beds with high damping-off fungi populations should be fumigated prior to sowing. Avoid excessive movement of soil between fumigated and non-fumigated areas. Provide good drainage. Maintain acid soil (pH 5.5). Seed treatments have not proven to be consistently effective in preventing damping-off losses. Soil drenches with registered fungicides may be effective if applied soon after sowing.

May be Confused With: Heat injury, wind injury, non-germinating seeds.



Damped-off
Douglas-fire seedling