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PEST REPORT

Pacific and Yukon Region • Pacific Forestry Centre • 506 West Burnside Road • Victoria, B.C. • V8Z 1M5

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Rhizina Root Disease and Conifer Seedling Mortality in British Columbia, 1989

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Forest Insect and Disease Survey

Seedling mortality linked to infection by the causal agent of **Rhizina root disease, Rhizina undulata**, ranged from 1 to 74% (average 24%) in 37 of 72 recently burned and planted sites examined in wetter parts of the Prince Rupert and Nelson Forest regions, and 12% at one site in the Cariboo Region. Fruiting bodies were present, but seedling mortality was not evident at an additional 13 sites or at one site north of Kamloops. There was no evidence of Rhizina in a further 22 sites. This was the second consecutive year of seedling mortality in the Prince Rupert and Nelson Forest regions, but the first occurrence of the fungus in the Kamloops Region recorded by the Forest Insect and Disease Survey. None was reported in the Prince George Region where it was collected for the first time in 1988, or in the Vancouver Region where it was last reported in 1968/69.

Seedling mortality was greatest in the Prince Rupert Region where an average of 23% (range 1 to 74%) of the conifer seedlings were killed in 24 plantations examined. This is an increase from an average of 14% at 10 sites in 1988. In five plantations where seedling mortality occurred in 1988 and re-examined in 1989, an additional 17% were killed at one site and 5% at each of the other four sites. An average of 46% of the western hemlock (range 2 to 74%) were killed in five plantations; 30% of the lodgepole pine (range 1 to 69%) at 16 sites; 22% of the Sitka spruce at seven, and 11% of the western red cedar at three sites. This was the first record of mortality of western red cedar associated with **Rhizina**.

Seedling mortality in the Nelson Region increased from an average of 9% in eight plantations in 1988 to 17% (range 2 to 39%) in 13 of 48 plantations surveyed by FIDS in 1989. **Rhizina** fruiting bodies were present but not associated with seedling mortality at 13 of the plantations and were not detected in an additional 22 sites. The highest mortality was 39% of the Douglas-fir and lodgepole pine at a site in the West Kootenay; 36% of the Douglas-fir were killed at two sites, and 18% of the Engelmann spruce, western larch and Douglas-fir at four sites. Up to 60% of the lodgepole and white pine seedlings in very localized pockets were killed in parts of one site in the East Kootenay.

About 12% of the Douglas-fir seedlings were killed in a 5-ha recently burned site south of Cariboo Lake in the eastern part of the Cariboo Region. This was the first record of seedling mortality linked to the fungus in the region since 1983.

Fruiting bodies were common and widely scattered over 84 ha in a recently burned and planted area west of Clearwater in the Kamloops Region. The scattered seedling mortality was not attributable to infection by **Rhizina** or any other pest.

Mass fruitings of **Rhizina** in forest situations occur after wild fires or prescribed burns. Most seedling mortality occurs within the first year of infection but conifer seedling mortality has been recorded for two successive years in the eastern part of the Prince Rupert Region, during the current outbreak and in 1968/69 when the disease was first recorded killing seedlings in British Columbia.

An abundance of fruiting bodies in 1989 could provide inoculum to infect recently burned nearby sites where spores could remain viable for up to 3 years. As yet, there is no reliable method of forecasting the presence or severity for this fungus. Natural factors known to favor **Rhizina** include acid soils and high rainfall.

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