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PEST REPORT

Pacific Forestry Centre • 506 West Burnside Rd. • Victoria, B.C. • V8Z 1M5

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Seedling Mortality by Rhizina Root Disease, British Columbia, 1988

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Forest Insect and Disease Survey

Seedling mortality linked to infection by Rhizina undulata was found on 18 recently planted sites (20% of those examined) burned in 1987, in wetter parts of the Prince Rupert, Nelson and Prince George forest regions (Table). This was the first significant seedling mortality linked to this pathogen recorded by FIDS since 1969. Fruiting bodies were present in six additional areas in the three regions, but there was no evidence of seedling mortality.

In the Prince Rupert Region an average of 14% (range 3-34%) of the white spruce, Sitka spruce and lodgepole pine seedlings were killed in ten plantations from north of Houston to the Kispiox, Nass, and Bell-Irving river valleys. The greatest mortality was recorded northeast of Meziadin Lake.

In the Nelson Region an average of 9% (range 2-26%) of the Engelmann spruce, lodgepole pine and Douglas-fir seedlings were killed in eight plantations, from Redding Creek north into the Columbia River drainage between Golden and Revelstoke. The highest, 26%, occurred in a plantation in the Bush River Valley northeast of Golden.

A less than 1% mortality of lodgepole pine seedlings in a plantation near Weeden Lake north of Prince George was attributed to infection by the disease.

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Region/Location	Tree sp.[1]	Percent seedling mortality[2]	Biogeoclimatic zone[3]
Prince Rupert			
East			
Bridge Main CP 017	lP, wS	12	ICHmc3
Bush Main CP 019	lP, wS	5	ICHmc3
Corral Creek CP 314	wS, lP	8	ICHmc3
Corral Creek CP 316	wS, lP	6	ICHmc3
Guess Creek CP 321 Block 1	lP, wS	3	SBSmc
Guess Creek CP 321 Block 2	lP, wS	13	SBSmc
West			
Beam Station Road	sS	4	CWHws1
Kiteen River	sS	30	ICHmc2
Nass River (5 km S Meziadin L.)	lP	23	ICHmc2
3 km NE Meziadin Lake	lP	34	ICHvc
Nelson			
East			
Beaverfoot River	eS, lP	12	MSa
Bush River	eS	26	ICHa2
Chatter Creek	lP	4	ICHa2
Redding Creek	eS	8	ICHa2
West			
Cariboo Creek	D-fir	6	ICHb
Downie Creek	eS	15	ICHb
S. Fosthall Creek	wL, lP	2	ICHa2
Upper Koch Creek	D-fir	2	ICHa2

[1]Tree Species: D-fir - Douglas-fir; eS - Engelmann spruce; lP - lodgepole pine; sS - Sitka spruce; wL - western larch; wS - white spruce

[2]Percent mortality: Includes seedlings directly associated with Rhizina fruiting bodies exhibiting symptoms of severe stress (chlorosis), and presumed to be dying.

[3]Biogeoclimatic zones:

ICHa2 - upper Columbia-Kootenay moist southern interior cedar-hemlock
ICHb - wet interior cedar-hemlock
ICHmc2 - moist, cold interior cedar-hemlock - upper Nass basin
ICHmc3 - moist, cold interior cedar-hemlock - lower Nass basin
ICHvc - very wet, cold interior cedar-hemlock
MSa - dry southern cordilleran montane spruce
SBSmc - moist, cold sub-boreal spruce

Though no mortality was reported, fruiting bodies were abundant in burns in the Prince Rupert Region in 1987, providing inoculum for the mass fruitings and damage recorded this year. The moist early summer weather provided ideal conditions for mycelial growth and subsequent attack of the roots of freshly planted seedlings.

Where they have occurred, mass fruitings of Rhizina in forest situations have always followed wild fires or prescribed burns, since the generated heat greatly increases the frequency of spore germination and temporarily eliminates competing organisms from the site (J. Ginns 1968). Rhizina fruits from early summer through to fall frost, a minimum of four months following a burn, and since it is a poor competitor the fungus normally survives for only a few years after the burn, after which it is succeeded by more aggressive fungi. Most seedling mortality occurs within the first year but Douglas-fir mortality on the coast was reported on the same sites for two successive years in 1968/69. In the same two years, mortality of lodgepole pine seedlings and exotic western larch seedlings was closely associated with Rhizina fruiting bodies in two plantations in the Prince Rupert Region.

All areas where Rhizina fruiting bodies were seen in 1988 will be resurveyed in 1989 to record any further seedling mortality.