



CANKERS AND RUSTS: TREE TRUNK DISEASES

A tree's trunk is a vital organ in many ways. It is the central pillar of the tree supporting the canopy of branches and leaves. It conducts enormous quantities of water and minerals to the foliage; and it transports the nourishment produced by the foliage to the rest of the tree.

The trunks of B.C.'s conifers are also the main support of the provincial economy. The straightness, strength and flexibility of trunk wood is valued as a construction material and its fibre is the major constituent of pulp and paper.

The conifer trunk is vulnerable to several diseases. These are primarily caused by fungi; cankers and rusts are the most serious in B.C. They weaken the trunk, interfere with its life functions and threaten the productive growth of individual trees or whole stands.

One group of canker diseases is caused by several fungi called the ascomycetes. They attack trees which are in a weakened condition, perhaps from drought, nutrient deficiency or injury due to hail or frost.

These canker diseases can be reduced upon reforestation by carefully selecting and planting the best seedlings of the most resistant tree species for each site. This helps ensure that the young forest gets the best possible chance - the more vigorous the tree, the less susceptible it is to disease. A secondary measure can be taken when the stand is thinned by removing severely diseased trees.

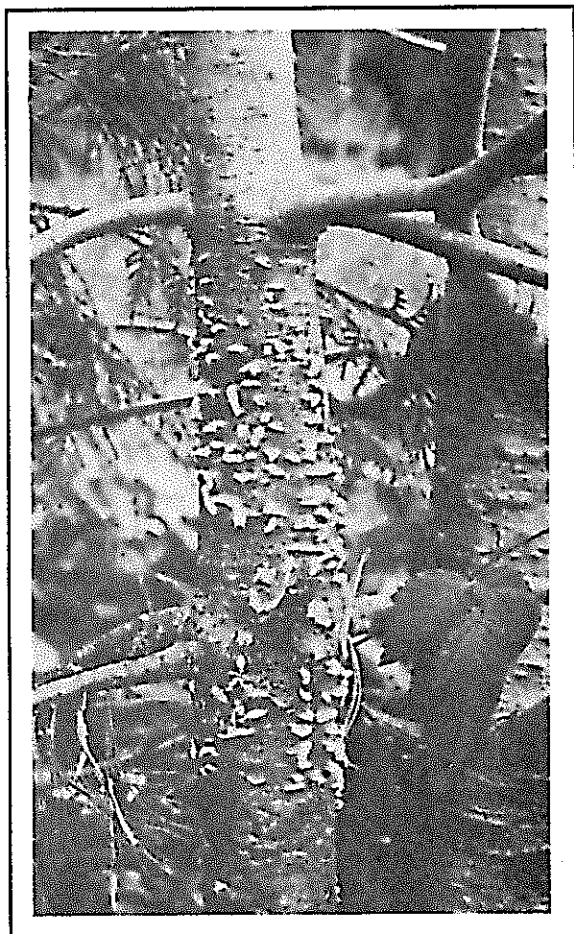


Diatorella canker on western hemlock
Photo courtesy B.C. Parks

Even vigorous young forests are not always in the clear. Healthy trees are the favorite targets of another group of fungi called the rusts. Lodgepole pine is often afflicted by one or more rusts including comandra, stalactiform and gall rust.

A more notorious example is white pine blister rust, caused by the fungus ***Cronartium ribicola***. It spread quickly through B.C. killing stands of white pine, shortly after it was introduced in 1911.

For years this valuable species was thought to be doomed in British Columbia, but today commercial management seems feasible.



White pine blister rust canker

Photo courtesy Canadian Forestry Service

Rust first penetrates the tree's needles and progresses through the bark of the branches to the trunk. After one or two years it forms cankers or galls. These can eventually kill the tree by girdling it below the foliage. Seedlings are often killed outright; more mature trees suffer repeated loss of branches or tops. Because young, vigorous trees are more susceptible to rusts, new plantations and nurseries are prime targets.

On level sites rust is usually found only in branches up to two meters above the ground. Pruning these branches from young trees could be a partial answer to the problem. Trials have recently begun to test the method.

Research results and field observation suggest that trees can be selected and bred to be more rust-resistant. Breeding programs for rust-resistant white pine have been underway for several years - with promising results. Trials of the strains produced are now being carried out in B.C.

Careful management of these fungi in our nurseries, plantations and young forests is part of an ongoing battle against forest pests and diseases. The fight helps to maintain full productive capacity for all forest values.