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WHITE PINE BLISTER RUST IN THE PACIFIC NORTHWEST

The discovery of white pine blister rust in the Pacific Northwest in 1921 added another problem of vital importance to the protection of the Idaho forests. The rapid spread of this disease in the West indicates that it will inevitably reach this state. Unless it is controlled, Idaho white pine, a timber tree of major importance to the lumber industry of Idaho, will suffer incalculable damage.

Blister rust was introduced into Vancouver, British Columbia, probably by shipment of diseased pines from Europe. The original infection probably occurred in 1910. Since that time it has spread northward to the limit of distribution of white pine, south along the coast to the Columbia River, and eastward to Revelstoke and Nelson, British Columbia. Its occurrence at the latter points definitely establishes it in the upper end of the vast white pine belt of the Inland Empire and consequently constitutes a direct menace to one of Idaho's most valuable timber resources.

Blister rust is a fungous disease which can attack only white pines, currants, and gooseberries. It cannot spread from a diseased pine to a healthy one. It first lives on the pine, then spreads to currant or gooseberry leaves, where it passes part of its life, and from these returns to the pine, forming cankers on the branches and trunks which eventually girdle and kill the tree.

In the spring, sacs of orange-yellow spores push through the diseased bark of white pines. These sacs or blisters break open, and the wind scatters the powdery spores over wide areas. Some of them falling upon the leaves of currant and gooseberry bushes germinate and infect the leaf tissue. After two or three weeks of growth, small orange-yellow pustules appear on the under side of the leaf. These break open, liberating a different kind of spore, which infects other currant and gooseberry leaves in the vicinity. With favorable weather conditions, this reinfection of currant and gooseberry leaves is repeated every two or three weeks during the summer months and greatly increases the amount of local infection. The orange-yellow pustule stage on the under surface of currant and gooseberry leaves is soon followed by numerous brownish, hair like columns. The columns are about one-eighth of an inch long and produce the spores which infect pine trees. These spores are also scattered by the wind, falling upon white pine needles, where they germinate and grow downward through the leaf into the bark. After a period of growth varying from two to four years in the pine bark, new blisters are produced and give off spores that again start the disease upon currant and gooseberry leaves.

After the blisters are once formed on an infected pine, new ones are usually produced annually until the tree is killed.

Blister rust can spread long distances from infected pines to currants or gooseberries, particularly to the cultivated black currant, but only a short distance from infected currants or gooseberries to pines.

Circumstantial evidence indicates that it may be distributed from infected pines to currants or gooseberries for over 100 miles. It is thus possible for it to spread into northern Idaho from pines now infected in eastern British Columbia.

Control of the disease is based upon the fact that it does not spread for more than 300 yards from diseased wild currants or gooseberries to white pines. By the removal of these plants within a white pine stand and for 300 yards around it the pine is protected from blister rust. Seven years of experience in the eastern states in the use of this method has proved it to be effective and practical.

Our present knowledge indicates that four different wild currants and gooseberries occur over quite large areas of the white pine belt of Idaho. These are the wild black currant, which grows in great mats along the streams; the prickly currant, which grows along the streams and in moist places on the hillsides; the sticky currant, which often grows on burns; and the white-stemmed gooseberry, which grows in the willow-alder flats. Observations show that all of these species are susceptible to blister rust, and are capable of causing considerable damage to white pine.

Since the discovery of blister rust in the West in 1921, Federal, State, and private agencies have cooperated to prevent its spread and secure its control. A general program of considerable magnitude has been formulated, and is being carried out. In brief, this program consists of two phases, (1) emergency measures to prevent the rapid spread of the disease, and (2) experimental work to devise control measures suitable to western forest conditions.

The emergency program consists of the eradication of the cultivated black currant, and the enforcement of State and Federal blister rust quarantines.

The presence of cultivated black currants in the West constitutes the greatest single menace in the rapid spread of blister rust. This currant is often, and very properly, spoken of as the nurse plant of blister rust. It is far more susceptible to the disease than any other kind of currant or gooseberry, wild or cultivated. It is this currant which contracts the disease at great distances from infected pines. By this means it is the agent most responsible for the rapid spread of the rust.

Since the inception of the western blister rust program, nearly 7700 plantings of cultivated black currants have been eradicated in the West. The number of plants eradicated is over 118,000. In Idaho alone, over 750 plantings, representing nearly 5,000 bushes have been removed.

The States of Idaho and Oregon have passed definite legislation, making it unlawful to possess, propagate or sell cultivated black currants.

Quarantine enforcement is a vital part of the emergency program. State and Federal quarantine officials are actively cooperating to prevent shipment of currants, gooseberries, or white pines out of the infected regions. The shipment of a single diseased plant into uninfected territory might well result in a tremendous advance in the area of infection, and consequent damage to white pine timber.

Experimental work on proper local control methods is being principally conducted by the Office of Blister Rust Control, U. S. Department of Agriculture. Because of differences in forest conditions, methods suitable for the eastern United States must necessarily be considerably modified for use in the West. This experimental work is being carried on in the white pine belt of northern Idaho.