



Note No. 5

Northern Forest Research Centre

Edmonton, Alberta

## WESTERN GALL RUST INFECTIONS OF NURSERY ORIGIN ON JACK PINE IN MANITOBA

Western gall rust (*Endocronartium harknessii* (J.P. Moore) Y. Hiratsuka) is common throughout northern North America. It is causing serious economic losses of hard (two-needle) pines in Christmas tree plantations and ornamental tree farms and is considered to be an important disease in man-made and man-assisted forests as well as in natural regeneration.

During a preliminary pest survey of young man-made and man-assisted forests in the prairie provinces in July 1978, western gall rust infections were observed in a plantation located 3 km north of Cowan, Manitoba, along Highway 10. The site had been scarified after logging and was planted with jack pine seedlings in 1972. In both machine- and hand-planted areas (65 and 25 ha, respectively) seedling survival has been excellent and officials of the Manitoba Forest Service consider the site to be adequately stocked.

Close examination of the plantation, however, revealed that significant numbers (about 10%) of the seedlings were infected with western gall rust at the base of the main stems. Samples of the galls indicated that the infections had originated in the nursery that produced the seedlings, the Pineland Nursery at Hadashville, Manitoba. Furthermore, two seedlings that exhibited yellowing of needles and poor growth were examined and found to have western gall rust infections below the soil line. This observation supports the contention that the infections occurred before planting.

Mortality of trees infected by the western gall rust is low and most infected seedlings survive for many years in plantations, although trees with basal stem galls grow slowly and subsequently are unmerchantable when the mature stand is harvested. Because infected seedlings are still alive, they are usually counted when survival and stock-

ing are assessed; in properly managed stands they are removed and burned. In time the problem will become more acute, because infected stock will permit the spread of the disease throughout the plantation and into the adjacent forest.

The presence of a significant amount of western gall rust at the Pineland Nursery, where the seedlings for the plantations originated, had been reported nearly 10 years earlier by Carlson (1969). In his report he made a number of recommendations to eliminate the problem in the nursery: 1) grow jack pine seedlings only in locations at least 275 m away from native jack pine stands; 2) remove the existing source of inoculum by pruning or clear-cutting; and 3) develop a fungicide spray schedule to protect the seedlings from infection.

This example of western gall rust originating at the nursery reemphasizes the importance of producing disease-free nursery stock for reforestation and the need for proper methods of detection and elimination of disease at tree nurseries established close to natural hard pine stands infested with the disease.

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*Forest Insect and Disease Survey*

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### REFERENCE

- Carlson, L.W. 1969. Western gall rust on jack pine nursery stock in Manitoba. *Plant Disease Reporter* 53(2): 100.



Western gall rust infections on roots and stems of jack pine seedlings.

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