OCCURRENCE OF TUBERCULINA MAXIMA ON PINE STEM RUSTS IN WESTERN CANADA

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Abstract

The purple mold Tuberculina maxima Rost. has been collected in western Canada on Cronartium coleosporioides Arth. infecting Pinus contorta Dougl.; on Cronartium comandrae Pk. infecting Pinus banksiana Lamb., Pinus contorta and Pinus sylvestris L.; on Cronartium comptoniae Arth. infecting Pinus banksiana and Pinus contorta; on Cronartium ribicola J.C. Fisch. infecting Pinus monticola Dougl.; and on Endocronartium harknessii (J.P. Moore) Y. Hiratsuka infecting Pinus contorta. There are no records of T. maxima on any of these rusts from Saskatchewan and Manitoba. In southern Alberta, T. maxima was found at nearly all locations where C. comandrae occurred.

Introduction

The purple mold Tuberculina maxima Rost. was first recorded on pine stem rust cankers in British Columbia in 1926(5), but not in Alberta until 1964(7). Additional information has now been obtained by personnel of the Forest Insect and Disease Survey, Canadian Forestry Service, about the distribution and occurrence of the purple mold on pine stem rusts in western Canada. Other collections have been made by the author in southern Alberta and adjacent areas of British Columbia. Information was also obtained from serveral herbaria, but only the following herbaria contained T. maxima on pine stem rusts from western Canada: CFB, DAOM, DAVFP, NY, OSC (Herbarium codes follow Lanjouw and Stafleu [4]).

Records of Tuberculina maxima on pine stem rust

Figure 1 shows the collection locations of the following records of T. maxima on the various pine stem rust cankers in western Canada.

Cronartium coleosporioides Arth.

Powell and Morf (7) found T. maxima on stalactiform rust cankers on Pinus contorta Dougl. var. latifolia Engelm. at three locations in Alberta. This included specimens found on C. coleosporioides f. album Ziller. One collection has been taken from C. coleosporioides infecting P. contorta var. contorta on Vancouver Island, British Columbia (DAVFP 15469).

Cronartium comandrae Pk.

In Alberta, Powell and Morf (7) found T. maxima on cankers of comandra blister rust affecting P. contorta at 11 locations, and at one location affecting Pinus sylvestris L. Since 1964, T. maxima has been found on C. comandrae cankers affecting P. contorta at 14 other locations in Alberta, and at 2 locations in British Columbia (CFB 7583, DAVFP 17248) and 1 in the Yukon (CFB 8937). Several collections were also made from cankers on P. banksiana Lamb. at one location in the Northwest Territories (1).

Cronartium comptoniae Arth.

Mielke (5) first reported T. maxima on sweetfern blister rust affecting P. contorta in British Columbia. More recently, another collection was made in this province (DAVFP 12908). It has also been collected on this rust affecting P. banksiana (CFB 9054) and a natural P. banksiana x P. contorta hybrid (CFB 7736), both from the Northwest Territories.

Cronartium ribicola J.C. Fisch.

Mielke (5) reported the occurrence of T. maxima on white pine blister rust affecting P. monticola Dougl. from seven locations in British Columbia, and Hubert (3) added another location. There are also six collections from other British Columbia locations in DAVFP, and another in OSC(27,699).

Endocronartium harknessii (J.P. Moore) Y. Hiratsuka

One specimen of T. maxima was collected on western gall rust affecting P. contorta (CFB 6895) in Kootenay National Park, British Columbia, in 1965.

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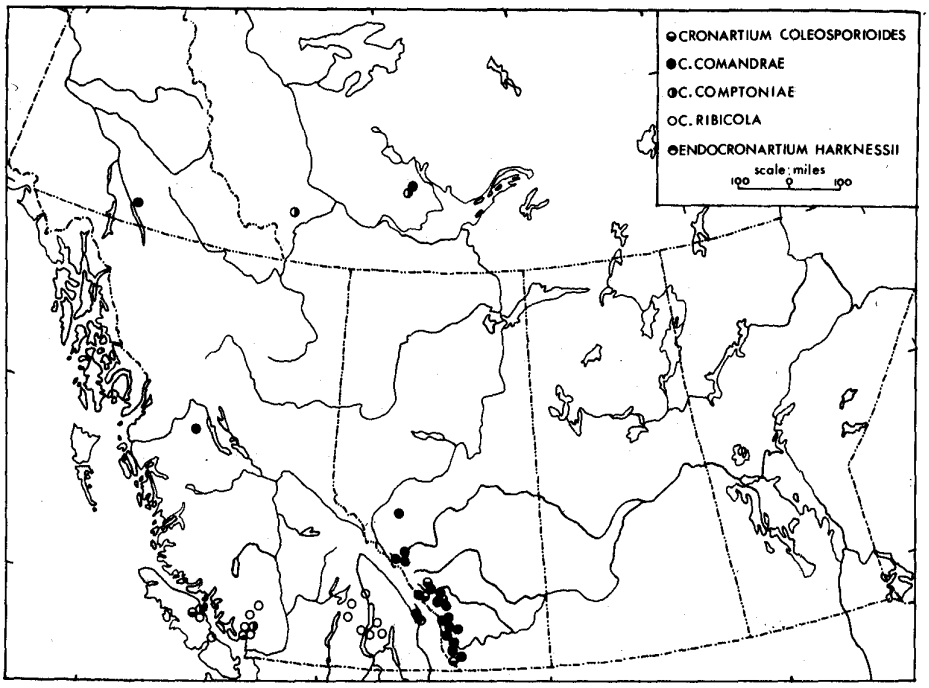

Figure 1. Distribution of Tuberculina maxima on pine stem rusts in Western Canada.

Discussion

The occurrence of T. maxima on pine stem rusts in western Canada is probably more widespread than the collections indicate. The known distribution of T. maxima is only a reflection of the specific surveys performed to date, with the real distribution probably closely related to the range of the pine stem rusts. Intensive surveys conducted in southwestern Alberta indicate that it could be found at nearly all the locations where the host, C. comandrae, was found. To date there are no records of T. maxima from Saskatchewan and Manitoba, or on rusts infecting P. banksiana in Alberta, although cankers of Cronartium and Endocronartium occur throughout these provinces. There are also no reports or collections of T. maxima on C. ribicola occurring on Pinus albicaulis Engelm. and Pinus flexilis James in Alberta or British Columbia, although the rust is common on the latter host (2). Similarly, there are no reports of T. maxima on the three pine stem rusts that occur on Pinus ponderosa Laws. in British Columbia.

Molnar et al. (6) indicated that T. maxima is known on 15 species of tree rusts in British Columbia; however, there has been some question about the taxonomy of the Tuberculina occurring on gymnosperm and angiosperm hosts. Dr. J.L. Cunningham (personal communication, 1970) considers the Tuberculina on Cronartium spp. in western North America to be T. maxima.

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