Northern distribution of LTB snow mold in Canada[1]

J. A. Traquair[2], J. B. Lebeau[3], J. E. Moffat[3], and M. Kokko

The occurrence of low-temperature basidiomycete (LTB) snow mold *[Coprinus psychromorbidus]* in the Yukon Territory was confirmed in **1964** by the isolation of the LTB from winter rye from Whitehorse. Although the LTB has been reported to occur in Alaska, we are recording its northern 'distribution in Canada. Growth characteristics of the Yukon isolate closely resemble those of isolates from Alaska and Alberta.

Can. Plant Dis. Surv. **63:1, 1-2, 1983.**

L'occurrence du piétin hibernale *[Coprinus psychromorbidus]* dans le Territoire de Yukon a été confirm6 en **1964** par l'isolation du basidiomycete frigophile (BF) sur du seigle d'hiver de Whitehorse. Bien que la présence du BF ait été rapporté en Alaska, ce travail est un registre de sa distribution nordique au Canada. Cet isolat du Yukon prbsente des caractbristiques de croissance similaires aux isolats obtenus de l'Alaska et de l'Alberta.

Introduction

The basis for claims (1, 6) that the low-temperature basidiomycete (LTB), now identified as ***Coprinus psychromorbidus (3,*** 5), occurs in the Yukon is not clear. In their survey of snow mold damage in Alaska and the Yukon, Lebeau and Logsdon (2) found LTB snow mold on ***Poa pratensis*** at College and on ***Calamagrostis canadensis*** at Summit Lake in Alaska. They were unable to find it in the Yukon. Sprague (4) subsequently showed that this snow mold occurred on grasses at Skagway in Alaska.

In May of 1964, Mr. J. Y. Tsukamoto, an agronomist at Whitehorse in the Yukon, submitted snow mold damaged winter rye (cv. Sitnikoff) to J. B. Lebeau for diagnosis. LTB was isolated and stored in the culture collection at the Lethbridge Research Station. This paper describes the Whitehorse isolate in relation to other C. ***psychromorbidus*** cultures and documents the occurrence of LTB snow mold in the Yukon.

Materials and methods

Five isolates from the culture collection at the Lethbridge Research Station (LRS) were examined: LRS 006 (= 64.14.1) from winter rye, Whitehorse, Yukon, May 1964: LRS 010 (= 69.1.1) from winter wheat inoculated with W1, Lethbridge, Alberta, March 1969: LRS 011 (= 69.2.1) from alfalfa inoculated with W1, Lethbridge, Alberta, March 1969; LRS 027 (= W18) from Kentucky bluegrass, College, Alaska, May 1956; LRS 028 (= W19) from reedgrass, Summit Lake, Alaska, May 1956. Each isolate was obtained originally by plating segments of diseased crown tissue washed in water, on potato dextrose agar (PDA) and incubating at 1-2°C. Hyphaltip cultures were stored on PDA in tubes at 4°C.

For culture studies, eight replicates of each isolate were grown on PDA in 9 cm petri plates at 10°C in the dark for 6 weeks. After 6 weeks the cultures were removed to the laboratory bench and incubated at 22°C for two weeks under alternating light and dark conditions.

Results and discussion

On PDA growth of the Yukon isolates is very similar to that of isolates from Alaska and Alberta (Fig. 1). Growth is moderate to slow at 10°C. Colonies spread across 9 cm plates in 7 to 8 weeks. Aerial mycelium is white, while the reverse of colonies is slightly yellowish. The colony margin is even, appressed when 1-2 weeks old and later somewhat densely woolly. The surface mycelium is woolly to somewhat cottony. In this respect, the Yukon isolate resembles A-type (e.g. W 1) isolates of LTB but is not as cottony as B-type isolates (e.g. W2) previously described (5, 9). Hyphal knots or sclerotial (stromatic) patches (8) are not produced. The Alaska and Alberta isolates, on the other hand, regularly produce hyphal knots bearing honey-colored exudates in 4-5 weeks. Failure to produce hyphal knots and sclerotia has been reported for other isolates of C. ***psychromorbidus*** from spores or diseased host tissue (5, 7).

Anatomically, the mycelium of the Yukon isolate is very similar to that of Alberta and Alaska isolates. Hyphae are hyaline, thin-walled, 1.8-4.5 μm wide (average 2.5 μm) with clamp connections at cross-walls. After 6 weeks, gnarled and contorted hyphae are observed in the submerged mycelium. Occasionally, these cells are somewhat refractile and thick-walled. Terminal hyphal swellings and antleroid (5) branches on the surface hyphae are rare.

---

1 Work carried out at the Research Station, Agriculture Canada, Lethbridge, Albert T1J 4B1

2 Present address, Research Station, Agriculture Canada, Harrow, Ontario NOR 1GO

3 Retired

Accepted for publication November 1, 1982

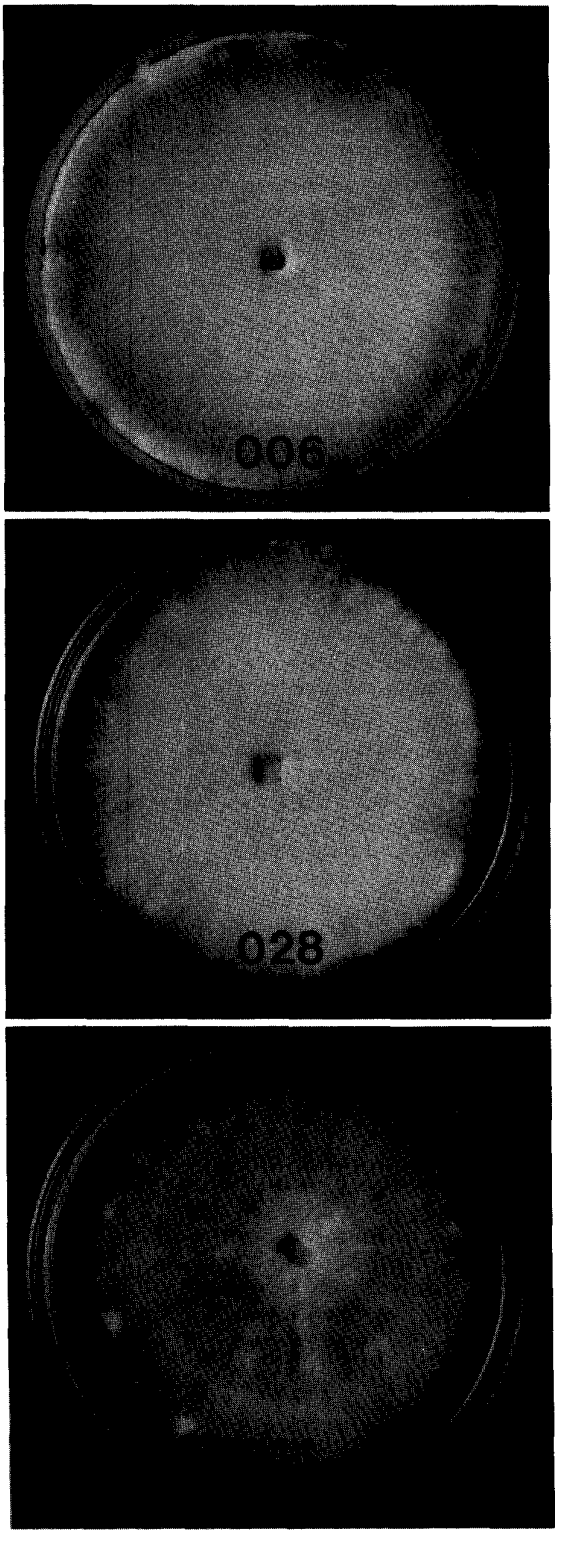

Figure 1. The LTB snow mold, ***Coprinus psychromorbidus*** for the Yukon (LRS 006), Alaska (LRS 028) and Alberta (LRS 011): 8 weeks old cultures on PDA.

Literature cited

1. Jamalainen, E.A. 1974. Resistance in winter cereals and grasses to low-temperature parasitic fungi. Ann. Rev. Phytopathol. 12: 281-301.
2. Lebeau, J.B., and C.E. Logsdon. 1958. Snow mold of forage crops in Alaska and Yukon. Phytopathol. 48: 148-150.
3. Redhead, S.A., and J.A. Traquair. 1981. ***Coprinus*** sect. ***Herbicolae*** from Canada, notes on extralimital taxa, and the taxonomic position of a low-temperature basidiomycete forage crop pathogen from Western Canada. Mycotaxon 13: 373-404.
4. Sprague, R. 1962. Some leafspot fungi on western Gramineae. XVI. Mycologia 54: 593-610.
5. Traquair, J.A. 1980. Conspecificity of an unidentified snow mold basidiomycete and a ***Coprinus*** species in the section ***Herbicolae.*** Can. J. Plant Pathol. 2: 105-115.
6. Traquair, J.A. 1981. Discovery of a sporulating state for the LTB snow mold. Canada Agriculture 26: 18-20.
7. Traquair, J.A., and J. Drew Smith. 1982. Sclerotial strains of ***Coprinus psychromorbidus,*** a snow mold basidiomycete. Can. J. Plant Pathol. 4: 27-36.
8. Ward, E.W.B. 1964. The formation of stroma-like structures in cultures of a sterile low-temperature basidiomycete. Can. J. Bot. 42: 1025-1030.
9. Ward, E.W.B., J.B. Lebeau, and M.W. Cormack. 1961. Grouping of isolates of a low-temperature basidiomycete on the basis of cultural behavior and pathogenicity. Can. J. Bot. 39; 297-306.