PINK SNOW MOLD IN SOUTHERN ALBERTA

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Abstract

Pink snow mold caused by Fusarium nivale (Fr.) Ces. was found in southern Alberta in the spring of 1967 and 1968 on winter cereals and turfgrass. The damage was extensive in the spring of 1967 following severe storms of wet snow. The pathogen was isolated from winter wheat (Triticum aestivum, L.), Kentucky bluegrass (Poa pratensis L. 'Merion'), and creeping bentgrass (Aerostis palustris Huds. 'Penncross'). Pink snow mold had previously been described as occurring sporadically in Western Canada and was considered of minor importance. It now appears that F. nivale is widespread in southern Alberta and probably causes damage every year.

Occurrence of low-temperature pathogens

The distribution of psychrophilic pathogens tends to follow a geographic pattern. Within the temperate zone Sclerotinia borealis Bub. & Vleug. is found in the northern regions and Fusarium nivale (Fr.) Ces. occurs farther south. Typhula spp. and the unidentified basidiomycete (3) are usually isolated from intermediate zones (4, 6, 7). The geographic separation of these pyschrophils, however, is not always so distinct. Lebeau and Logsdon (9) isolated S. borealis and the low-temperature basidiomycete in Alaska and Typhula idahoensis Remsb. in the Yukon. Bruehl (2) reported that Typhula spp. and F. nivale often occur together in the Pacific Northwest and form a disease complex.

Pink snow mold

The disease on winter cereals and grasses caused by F. nivale is commonly called pink snow mold although the pigment produced by the fungus is a complex of yellow, red, carmine, and very intense orange (1). The formation of orange or red-orange pigment is often used for a rapid diagnosis of this disease. The disease caused by Typhula spp. is called gray snow mold because of the appearance of the fungus on affected plants. Winter damage caused by the low-temperature basidiomycete could logically be named white snow mold because of the fluffy white appearance of the pathogen.

Pink snow mold has been reported from most of the agricultural regions in the temperate zones. Until recently, however, F. nivale has been found only sporadically on the Canadian prairies and was considered of minor importance (7). In 1963, by limiting the minimum soil temperature to 6C or 3C with buried heating cables, Lebeau (8) produced an epiphytotic of pink snow mold on field plots of turfgrass. This demonstrated that the causal organism was present in southern Alberta and required only the right environmental conditions to incite the disease. The fungus isolated from these plots was identified in 1962 by the late Dr. W. L. Gordon, who stated that it was the first authentic culture of F. nivale of Canadian origin that he had received. In the spring of 1967, following severe storms of wet snow, pink snow mold was found on winter cereals and turfgrass throughout southern Alberta. The damage was extensive and the disease was apparent even to the most casual observer (Fig. 1). The pathogen, F. nivale, was isolated from winter wheat (Triticum aestivum L.), Kentucky bluegrass (Poa pratensis L. 'Merion'), and creeping bentgrass (Agrostis palustris Huds. 'Penncross'). Small pieces of tissue from the bases of the culms were plated on potato dextrose agar (PDA) and incubated at 6C. The growth on PDA showed the characteristic red-orange pigment. The conidia were 0-1 septate and measured 10-18 $\mu \times$ 2.3-5 μ (Fig. 1B); this size range is in agreement with the description of the 0- to 1-septate conidia of F. nivale, given by Gordon (5). No conidia with 2 or more septa were observed.

Pink snow mold was observed in southern Alberta again in the early spring of 1968, and the pathogen was isolated from winter wheat and turfgrass. Damage to these crops then was much less than in 1967, presumably because of a lighter snow cover in the spring of 1968 than in 1967.

Conclusions

Lebeau (7) reported that the unidentified low-temperature basidiomycete was the principal snow mold pathogen in Western Canada and that F. nivale occurred sporadically but was of minor importance. It now appears that in southern Alberta F. nivale is widespread and probably causes damage every year. Evidently F. nivale occasionally can incite an epiphytotic on winter cereals and turfgrasses in this region when heavy wet snow produces moist conditions in the spring. It is also quite likely that snow mold in southern Alberta is caused by a disease complex whose principal components are F. nivale and the psychrophilic basidiomycete.

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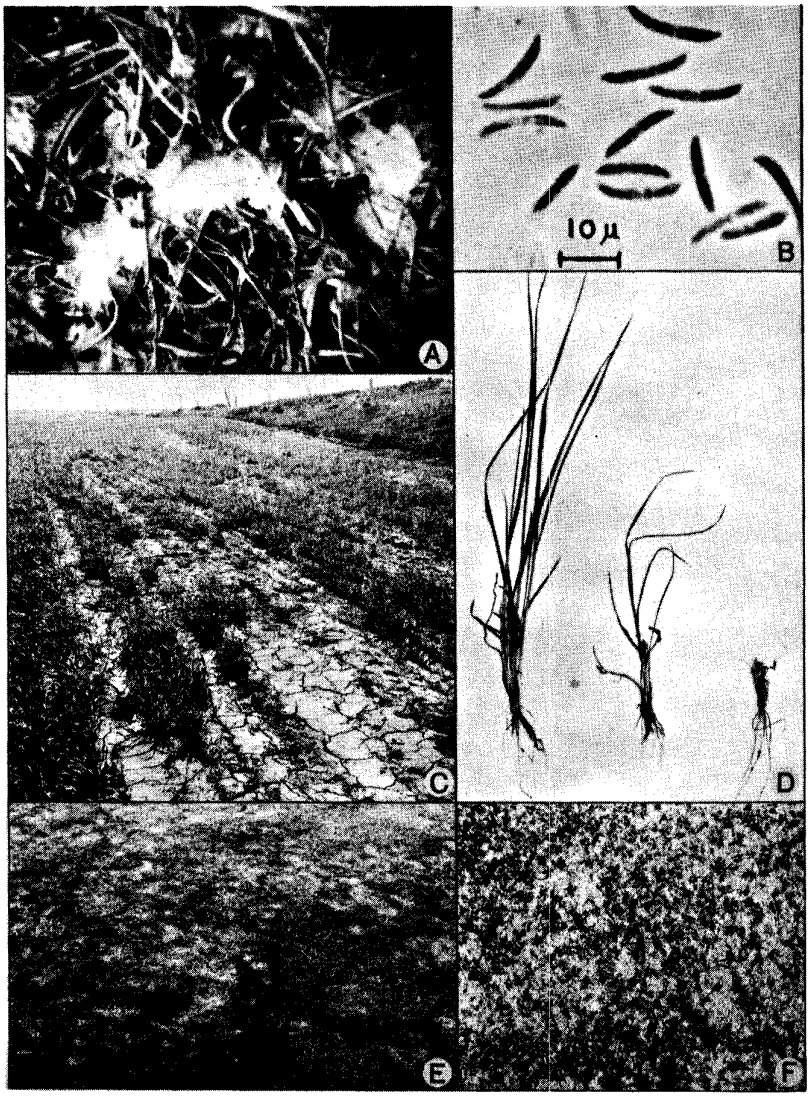

Figure 1. Pink snow mold on winter wheat and turfgross in southern Alberta. A) Myceliol mats of pink snow mold on creeping bentgrass plots at the Conodo Department of Agriculture Research Station, Lethbridge. B) Typical conidia of Fusarium nivale isolated from winter wheat in southern Alberta in 1967. C) Damage caused by pink snow mold to winter wheot in o field near Raymond, Alberta. D) Damage to winter wheat plants by *F. nivale:* healthy (left), intermediate (center), and severe (right). E) Pink snow mold on creeping bentgross on a green ot the Henderson Lake Golf Club, Lethbridge. F) Severe damage from pink snow mold on a lawn of 'Merion' bluegrass at Lethbridge.

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