Naemacyclus minor Needlecast of Scots Pine in Massachusetts

R. D. FREDERICK, Undergraduate Student, L. ZANG, Research Assistant, and W. MERRILL, Professor, Department of Plant Pathology, The Pennsylvania State University, University Park 16802; and T. A. TATTAR, Associate Professor, Department of Plant Pathology, University of Massachusetts, Amherst 01003

ABSTRACT

Needlecast caused by Naemacyclus minor was found in Scots pine Christmas tree plantations in three towns in central and western Massachusetts. This is the first report of this pathogen from New England.

In 1932, Darker (2) ascribed a needlecast of Pinus spp. in Massachusetts and elsewhere to the fungus Naemacyclus niveus (Pers. ex Fr.) Sacc. Questions arose regarding the morphological variation in and the pathogenicity of this species; some workers considered the fungus a saprobe. Butin's (1) separation of the monotypic genus into two species, N. niveus and N. minor Butin, based on minor differences in size of apothecium, ascii, and ascospores and major differences in pycnidiospore size and host range, eliminated the confusion over the observed morphological differences.

Kistler and Merrill (3) demonstrated that N. minor is a primary parasite causing needlecast of Scots pine (Pinus sylvestris) in Pennsylvania. However, N. niveus, apparently growing as a saprophyte, also has been collected from trees affected by N. minor needlecast in Pennsylvania (Merrill and Zang, unpublished). The following studies were done to determine which species of Naemacyclus was associated with needlecast of Scots pine in Massachusetts.

MATERIALS AND METHODS
In November 1979, branches bearing needles with symptoms of Naemacyclus needlecast, a yellowing and casting of the needles with symptoms of Naemacyclus minor differences in size of apothecia and ascospores and major differences in pycnidiospore size and host range, eliminated the confusion over the observed morphological differences.

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In November 1979, branches bearing needles with symptoms of Naemacyclus needlecast, a yellowing and casting of the second-year needles, were collected from commercial Scots pine Christmas tree plantations in Alford, Leichester, and Princeton, MA. In all three plantations, approximately 80% of the trees showed symptoms; approximately 50% of the second-year needles on each affected tree were symptomatic at the time of inspection.

The sizes of the apothecia on 60 needles from Princeton was 519 μm (range, 292-810 μm). The average width of the apothecia was 349 μm (range, 225-540 μm). The average length of 80 ascospores from several apothecia was 78.8 μm (range, 54.0-106.2 μm). The average length of 80 pycnidiospores of each isolate produced in vitro was as follows: Alford—5.7 μm (range, 4.0-8.8 μm); Leichester—5.5 μm (range, 4.0-7.2 μm); Princeton—7.3 μm (range, 4.8-9.6 μm).

The sizes of the apothecia and ascospores were within the ranges reported for N. minor (1). Pycnidiospores were somewhat smaller than reported for N. minor, but the average length fell within the range reported by Butin (1). Thus the fungus associated with the needlecasts of Scots pine in Massachusetts is N. minor. This is the first confirmation of this pathogen in the New England states.

LITERATURE CITED