Ranges of distribution of species of Pratylenchus in Northeastern North America

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Pratylenchus crenatus, P. hexincisus, P. neglectus, P. penetrans and ***P. scribneri*** are sympatric through the upper Great Lakes basin of North America. However, the distribution of ***P. crenatus*** and ***P. penetrans*** extends into the St. Lawrence River basin, northeastern United States, and the Maritime Provinces of Canada.

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Pratylenchus crenatus, P. hexincisus, P. neglectus. P. penetrans et ***P. scribneri*** sont des espèces sympatriques qui peuplent le bassin superieur des Grands Lacs, en Amerique du Nord. Toutefois, la distribution de ***P. crenatus*** et de ***P. penetrans*** s'etend au bassin du St. Laurent, au nord-est des Etats-Unis et aux provinces maritimes du Canada.

Species of the genus ***Pratylenchus*** associated with horticultural and field crops in northeastern North America, have received much attention. The five most common species are ***Pratylenchus crenatus*** Loof, ***P. hexincisus*** Taylor and Jenkins, ***P. neglectus*** (Rensch), ***P. penetrans*** (Cobb), and ***P. scribneri*** Steiner. We are reporting the geographic distribution of these five species in northeastern North America (Figs. 1 & 2) as determined from examination of relevant literature (5, 6, 7, 8, 9, 10, and 11). We considered ***P. pratensis*** reported earlier than 1960 to be ***P. crenatus*** following Loof's ***(3)*** revision of ***Pratylenchus.***

Pratylenchus penetrans, P. crenatus, P. neglectus, P. scribneri, and ***P. hexincisus*** are common in all the states in this study west of the Pennsylvania-Ohio border (Figs. 1 & 2). ***Pratylenchus hexincisus*** is limited in this area (Fig. 2). The ranges of ***P. neglectus*** and ***P. scribneri*** extend eastward into Pennsylvania, New Jersey, and New York (Fig. 2). The range of ***P. neglectus*** extends northward into southern and eastern Ontario. The ranges of the sympatric species, ***P. penetrans*** and ***P. crenatus,*** are the most extensive (Fig. 1), and extend northeast beyond the ranges of the other three species into the St. Lawrence River basin, northeastern United States, and Canada's Maritime Provinces.

Sympatry indicates a common tolerance of climatic and soil conditions, and the presence of suitable hosts for the nematode species sharing the same area. As ***Pratylenchus*** species are distributed less widely than their hosts in northeastern North America, we suspect that environment is a more important determinant of geographic ranges than is host plant distribution.

The optimal temperature for reproduction of ***P. crenatus*** is considered to be 10-15°C (1); in tropical Venezuela, this nematode is found only at high altitudes (2800 m and up) in the Andes Mountains, under temperature conditions typical of the temperate zone (4). In Japan, ***P. penetrans, P. crenatus,*** and ***P. neglectus*** are found primarily on the northern islands of Hokkaido and Honshu where the annual mean air temperature ranges from 15°C on Honshu to 10°C or less on Hokkaido (2). Similarly, in northeastern North America, a 5°C annual mean isotherm coincides with the known northern limit of the ranges of the above species and the 10°C isotherm coincides with the southern limit of the geographic area studied. The 5°C annual mean isotherm also coincides with the northern extent of an area having 120 or more frost-free days. A more critical examination of temperature reveals that the 21°C July isotherm coincides with eastern and northern limits of the range of ***P. scribneri*** and ***P. hexincisus.*** Furthermore, the geographical area in which ***P. scribneri*** and ***P. hexincisus*** occur has 160 or more frost-free days per year. It seems that mean annual temperature and frost-free days probably define the geographical limits of ***Pratylenchus*** species in northeastern North America.

Several other species of ***Pratylenchus*** which are found infrequently or rarely and occur in the central and western portions of the area studied are ***P. alleni*** Ferris, ***P. coffeae*** (Zimmermann), ***P. pratensis*** (de Man), ***P. subpenetrans*** (Taylor & Jenkins), ***P. thornei*** Sher & Allen, ***P. vulnus*** Allen & Jensen (only in greenhouses), and ***P. zeae*** Graham. Of these species only P. ***thornei*** and ***P. pratensis*** occur in southern Ontario, having been identified twice (8). In the province of Quebec, ***P. fallax*** Seinhorst and ***P. flakkensis*** Seinhorst occur rarely (11).

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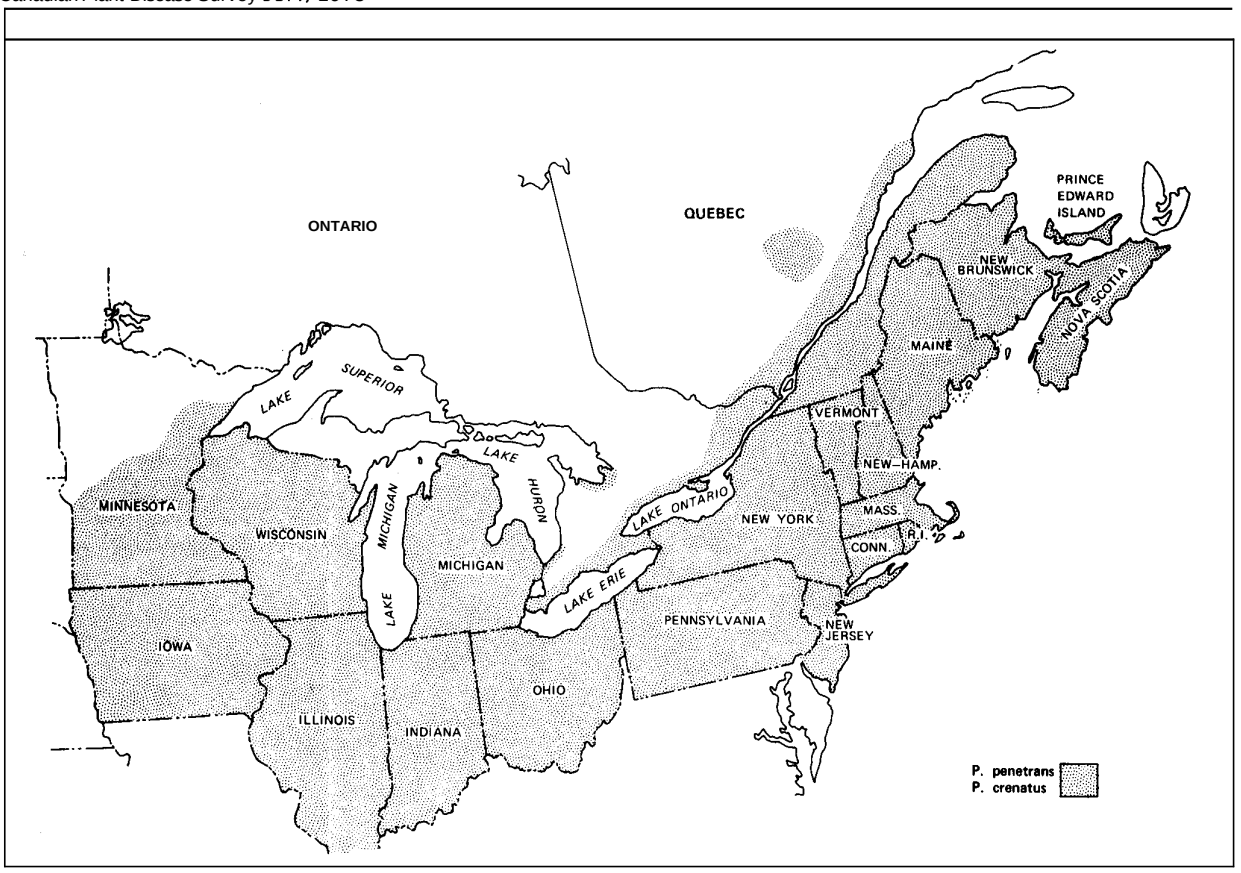

Figure 1. Distribution of ***Pratylenchus penetrans*** and ***P. crenatus*** in northeastern North America. The shading is not intended to imply that a nematode species is uniformly distributed throughout a state or province.

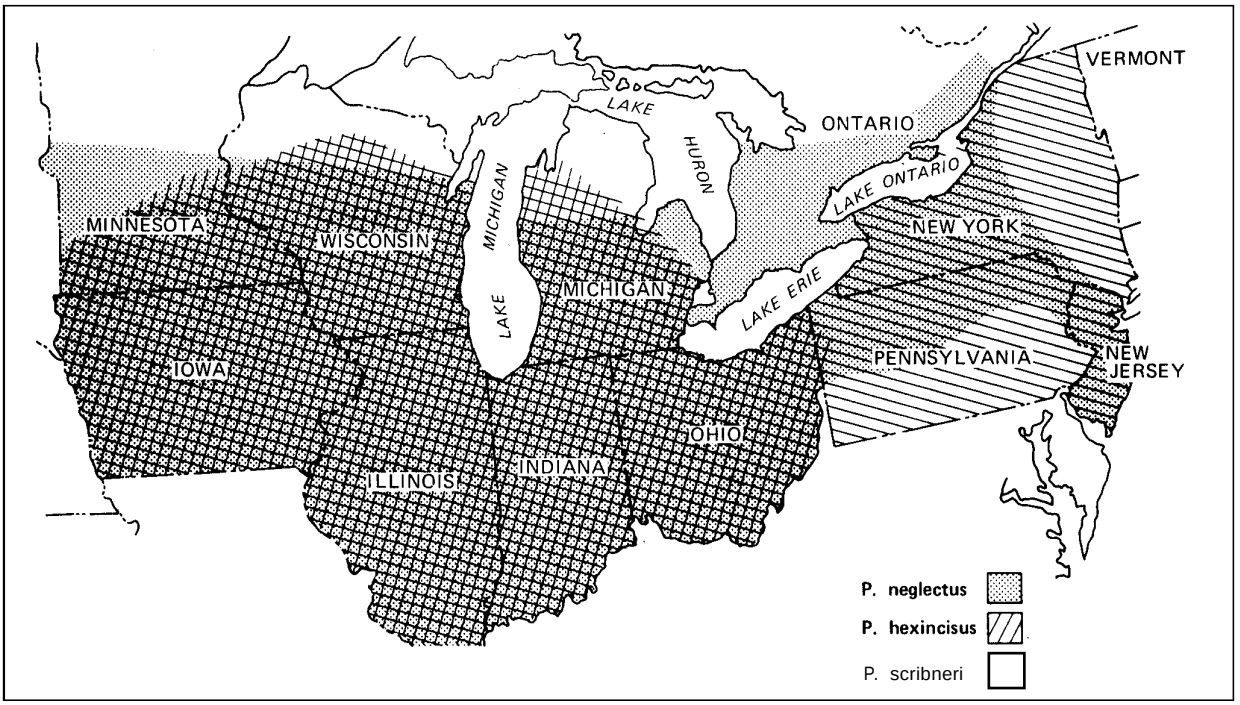

Figure 2. Distribution of ***Pratylenchus neglectus, P. scribneri,*** and P. ***hexincisus*** in northeastern North America. The shading is not intended to imply that a nematode species is uniformly distributed throughout a state or province.

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