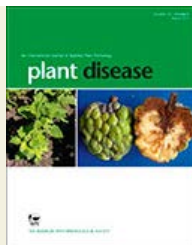


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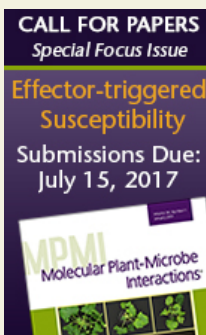
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DISEASE NOTES

First Report of the New Root-Lesion Nematode *Pratylenchus* sp. on Soybean in North Dakota

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[Citation](#)

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ABSTRACT

Root-lesion nematodes (RLN; *Pratylenchus* spp.) are important pests on soybean (*Glycine max* (L.) Merr.). In May 2015 and 2016, six soil samples were collected from a soybean field in Walcott, Richland County, ND. Nematodes were extracted from soil using sugar centrifugal flotation. All the samples contained RLN from 125 to 2,000 per kg soil. One soil sample with 350 RLN per kg was planted with soybean cultivar Barnes in four replicates each in a pot (6.4 cm × 25.4 cm) with 500 g soil. After 15 weeks of growth at 22°C in a greenhouse, the RLN population increased greatly. The final population density in soil was 1,518 ± 541 RLN per kg soil. Soybean roots were rinsed with water and brown lesions were observed. The clean roots were cut into 1-cm segments for nematode extraction using Whitehead tray. After 48 h, RLN were recovered from the root tissues with 25 ± 20 per g of fresh roots. The reproductive factor was 5.02, indicating that this nematode infects and reproduces well on this soybean cultivar. Morphological measurements of adult females ($n = 22$) included body length (mean = 484.5 μm, range = 390.0 to 555.0 μm), stylet (17.5, 16.0 to 18.0), body width (21.9, 20.8 to 29.8), head end to posterior end of esophageal glands (118.8, 110.0 to 140.0), anal body width (13.0, 10.0 to 16.0), tail (24.4, 20.0 to 30.0), a (23.4, 20.8 to 29.8), b (4.0, 3.2 to 4.8), c (20.2, 16.8 to 24.1), c' (1.9, 1.4 to 2.4), and V (80.2%, 78.0 to 83.0).

Morphological measurements of adult males ($n = 7$) were body length (445.7, 355.0 to 502.0), stylet (16.0, 15.5 to 16.5), body width (18.9, 17.0 to 21.0), head end to posterior end of esophageal glands (109.3, 101.0 to 115.0), anal body width (10.9, 10.0 to 12.0), tail (23.1, 20.0 to 25.0), a (23.7, 20.8 to 25.2), b (4.1, 3.2 to 4.8), c (20.0, 16.7 to 21.3), c' (2.1, 1.9 to 2.4), spicule (17.5, 16.0 to 18.5), and gubernaculum (4.5, 4.0 to 5.0). Two genomic regions were characterized by sequencing 28S D2-D3 ([Subbotin et al. 2008](#)) and

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ITS rDNA (Yan and Smiley 2010). DNA was extracted from single nematodes ($n = 8$) from soil and roots (Kumari and Subbotin 2012). The consensus sequence (GenBank accession KX889989, 702 bp) from the 28S had less than 86% similarity with three morphologically closely related *Pratylenchus* spp. including *P. convallariae*, *P. pratensis*, and *P. fallax*. Sequence (KX889990, 1,226 bp) from the ITS had less than 82% similarity with *P. convallariae* and *P. fallax*. No ITS sequence of *P. pratensis* is available in GenBank. The sequence data didn't support this RLN as *P. convallariae*, *P. pratensis*, or *P. fallax*. Another morphologically closely related species is *P. flakkensis* for which there is no sequence in GenBank. However, this nematode differs from *P. flakkensis* in several morphological characters such as having a high head, three head annules, slightly longer stylet in females, higher vulva %, and longer spicule in males. The nematode described here is distinct in both morphology and DNA sequences from another new *Pratylenchus* sp. recently reported from a soybean field in Hankinson, ND (Yan et al. 2017). To our knowledge, the North Dakota isolate on soybean represents a new RLN species. This represents a new record of this *Pratylenchus* sp. in the literature. The resistance levels of soybean cultivars to this nematode and its impact on soybean growth and yield will be evaluated.

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Section: ▾

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