

SPECIES, THRESHOLDS, AND MANAGEMENT OF CORN NEMATODES

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The nematodes found most often associated with corn are root lesion, *Pratylenchus* spp., and spiral, *Helicotylenchus* spp, nematodes. All but two corn samples submitted to the UW Plant Disease Clinic for nematode diagnosis in 2002 were positive for root lesion nematodes. Three species were most common: *P. penetrans*, *P. scribneri*, and *P. neglectus*. We use a damage threshold of 200 root lesion nematodes per 100 cm³ soil at the time of planting for making recommendations to growers. When samples are submitted in the fall prior to planting corn it is necessary to adjust the counts to account for overwinter mortality. Spiral nematodes, *Helicotylenchus* spp., are found in almost every corn field in Wisconsin. Spiral nematodes are less pathogenic to corn than root lesion and are considered pests only when population densities exceed 800 per 100 cm³ soil. Both root lesion and spiral nematodes occur in every soil type and have a sufficiently broad host range to be a threat in any rotation scheme. Most of the samples submitted to the UW Plant Disease Clinic represent problem fields and testing for nematodes is often the last resort. The fact that root lesion and spiral nematodes cause very nonspecific symptoms such as slow growth rate or stunted root systems makes diagnosis in the field impossible. For an accurate diagnosis, it is essential to collect a soil sample that represents the affected area.. Since nematodes are likely to be present, and their pest status estimated only by the numbers recovered, several iterations of sampling may be necessary to conclude they are the cause of the problem.

The corn needle nematode, *Longidorus breviannulatus*, is a very serious nematode pest of corn, but occurs only in sandy soils. The limited distribution of this nematode is because it is very large (for a nematode!) and requires large pore spaces to move. Damage due to corn needle nematodes is evident on root tips and is most severe during June. Damage is exacerbated by irrigation or rainfall because nematodes have greater mobility in soil pores and can move to root tips quickly and efficiently. Plants are often severely stunted and the damaged areas commonly show a patchy distribution in infested fields. Sampling after July may compromise the diagnosis because, unlike root lesion and spiral nematodes, corn needle nematodes move to greater depths in the soil profile during the heat of the summer.

Management goals for pest nematodes are to reduce the number of nematodes present at planting and to maintain plant tolerance of nematode damage by reducing stress due to water, fertility, and herbicide issues. A moderately effective, but expensive, tactic is chemical control. Cultural tactics such as reduced tillage, cover crops, and nematode-suppressive crops show some potential, but have not been tested enough to develop general recommendations.

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