

Sampling Corn Fields In Autumn For Nematodes

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Nematodes are microscopic roundworms that attack roots of corn and other plants (Fig 1.). In corn, nematodes affect yield by damaging the root system. They become more important when there are other root-related stresses in the same field, such as moisture shortage, root damage from insects, or compaction.

There is increasing interest in nematodes that attack corn, for several reasons:

1. In the past, soil-directed organophosphate and carbamate insecticides gave some secondary suppression of nematodes. Currently, more selective insecticides, and Bt corn for corn rootworm control, don't provide secondary suppression of nematodes.

2. The increase of no-till production can favor certain nematodes that are sensitive to tillage (needle and dagger nematodes).

3. More corn-following-corn also favors the needle and dagger nematodes.

Although there is increasing interest in nematodes as potential yield-limiting factors, the threat these pose varies greatly from one field to the next. The best way to determine whether nematodes may be affecting yield is to sample for nematodes. While winter temperatures will cause some nematode mortality, sampling in the autumn after crop maturity gives a producer time to react to findings, by obtaining seed treated with Avicta® seed treatment or considering an alternative crop.

For sampling in the autumn, use a soil probe and sample within the row – that's right, within the row. This is different from sampling for soil fertility. Sampling within the row allows you to get a

count of destructive endoparasitic nematodes (lesion and lance nematodes), because many of those adults leave the root as the crop dries down and the roots die. Sample when the soil is moist but not wet. Walk a zig-zag pattern, and take 20 cores to a depth of 12 inches. Gently mix these cores in a container. Don't let them dry out or be subjected to temperature extremes before mailing as soon as feasible to a nematode laboratory.

Laboratories that can analyze nematodes in soil samples collected at this time of year include:

• Purdue University, <http://extension.entm.purdue.edu/nematology/cv/submitform.pdf>

• Mississippi State University, <http://msucares.com/pubs/misc/m1230.pdf>

• University of Florida, <http://edis.ifas.ufl.edu/sr011>

• Iowa State University, <http://www.extension.iastate.edu/Publications/PD32.pdf>. Δ

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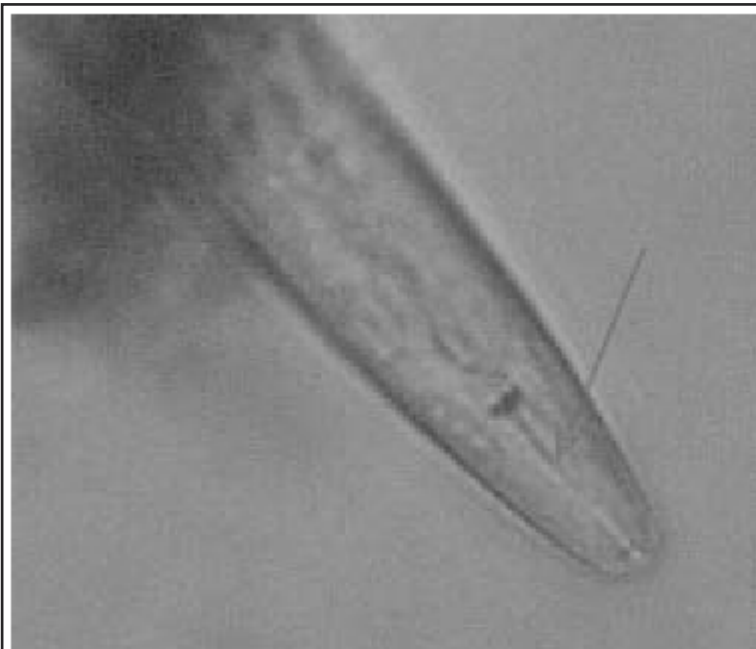


Figure 1. "Head" of nematode, showing the spear-like stylet (arrow) that it uses to puncture plant cells.

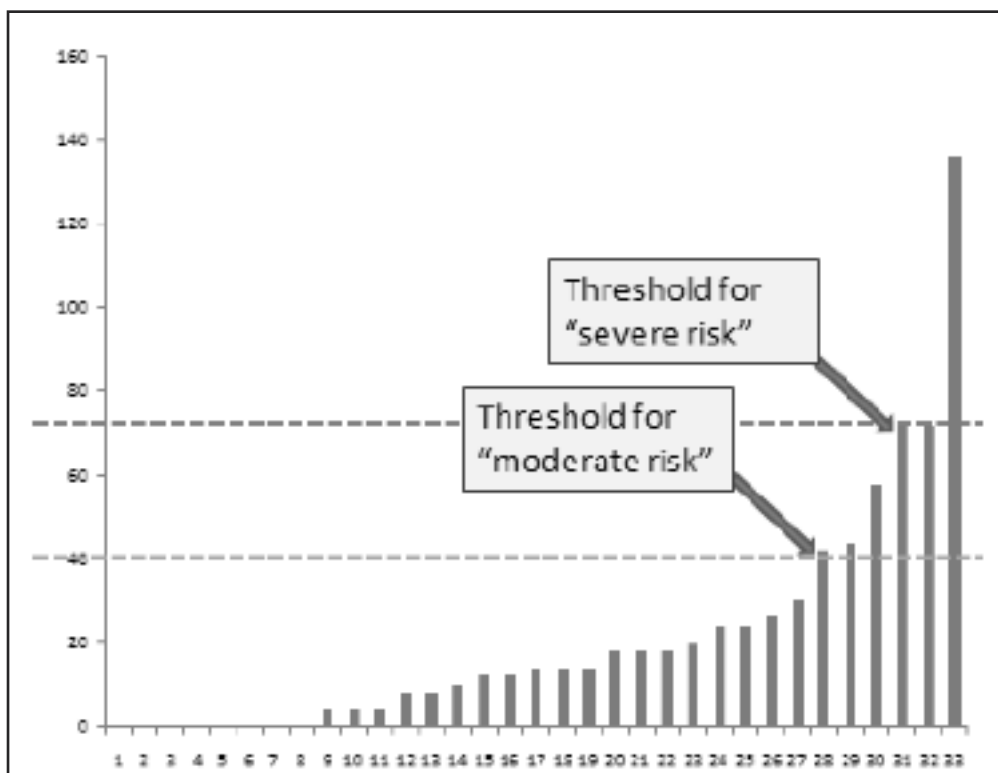


Figure 2. Range of populations of lance nematode in 33 Kentucky corn fields sampled in 2009.