Sample For Nematodes 4-6 Weeks After Planting

DR. PAUL VINCELLI

LEXINGTON, KY.

Nematodes are microscopic roundworms that attack roots of corn and other plants. In corn, nematodes affect yield by damaging the root system and interacting with opportunistic root-rotting fungi. 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.

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.

When to Sample

The window at 4-6 weeks after planting is probably the easiest time to sample, since the nematodes will be in the root zone and the soil is often moist enough to be able to insert a soil probe. Plus, sampling early in the growing season will give an idea as to whether nematodes are likely to affect crop productivity. Summer sampling is less than ideal. During summer, certain nematodes (like the sting nematode and needle nematode) move downward in the soil, where the moisture is. Also, pulling samples from dry soil is difficult. After harvest, sampling gives a look at certain nematode populations, especially endoparasites (lance nematode and root-lesion nematode, which burrow within the corn root), as well as the nematodes that go deep into the soil during summer.

How to sample

The most important thing to realize is that sampling for corn nematodes is different than sampling for soybean cyst nematode. For corn, sampling guidelines are as follows:

• Instead of sampling at random, in a zig-zag pattern, sample parts of the field where yield losses or symptoms (stunting, yellowing in elongated areas of the field) are not explained by other factors, such as soil compaction, soil type, etc. Corn nematode populations can be extremely variable (see Figure 1), so focus sampling on potentially problem areas of the field. However, for severely affected areas of the field, sample from the edge of the damaged areas rather than in the worst areas. (This is because corn nematodes require live roots to feed on, and if plants are severely damaged or dead, the nematode numbers will be low.)

• Make sure to sample within the row–that's right, within the row. This is different from sampling for soil fertility. Take 20-25 samples.

• Sampling for nematodes in corn requires a depth of at least 12 inches. This is much deeper than for soybean cyst nematode. If sampling in summer or fall, one may need to go as deep as 24-36 inches in order to detect sting nematode or needle nematode (although these two nematodes are usually found only in sandy soils).

• Put all 20-25 soil cores in a Ziploc bag. Don't break the soil cores, since some nematodes like stubby root nematode are extremely sensitive to soil disturbance. Label the bag with a permanent marker (not a magic marker, which comes off in water). Store samples in a cool, dry place until shipment.

Where to send samples

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

• University of Illinois, http://plantclinic.cropsci.illinois.edu/submit.html#nematode

• Purdue University, http://extension.entm.purdue.edu/nematology/cv/submissionform.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

DR. PAUL VINCELLI: Extension Plant Pathologist, University of Kentucky