

A QUICK GUIDE TO SAMPLING FOR NEMATODES

Nematodes can parasitize virtually all crops and ornamental plants and can cause significant economic damage by reducing both yield and quality. Properly taken samples from small field units can reduce production costs by allowing the grower to eliminate nematode control practices where they are not needed and implement control practices where they are needed. Improper sampling or handling of samples can lead to poor recommendations and economic losses which could have been avoided.

HOW AND WHEN TO SAMPLE:

The timing of collection of nematode samples is important because nematode populations fluctuate throughout the year. Nematodes may be undetectable during the winter and early spring but increase to a very high number before harvest; following harvest the population may decline precipitously. Sampling when the population density is high decreases the risk of failing to detect a damaging species. The best time to collect samples is when living roots are present and the nematode population is high. For most crops, this is generally near harvest.

The optimum time to take samples for nematode assay from various Georgia crops are given below:

CROP	WHEN TO SAMPLE	COMMON NEMATODES
Cotton	Oct, Nov	Root-knot, Lance, Reniform
Fruit Orchards (except peaches)	Sep, Oct	Root-knot
Peaches	Sep, Oct (for Root-knot) Feb, Mar, Apr (for Ring)	Root-knot, Ring
Peanuts	Sep, Oct	Root-knot
Soybeans	Sep (group IV) Oct (groups V, VI) Nov (group VII)	Root-knot, Lance, Reniform, Soybean Cyst
Tobacco	Jul	Root-knot
Turfgrass Warm season; Cool season	Jun, Jul, Aug; Sep, Oct, Apr	Root-knot, Lance, Sting, Ring
Vegetables	Aug, Sep	Root-knot

From roughly December through March, most Georgia soils are too cold to support active root growth of warm-season crops and only nematode eggs primarily are found. Unfortunately, typical laboratory assays do not detect nematode eggs, so samples collected in the winter frequently fail to detect nematodes when there are actually many nematode eggs present. Failure to detect a species does not necessarily mean that it is not present because the species may be present in low number that the random sample missed or it may be present only as eggs which the assay cannot detect. Because of these limitations, samples should not be collected during the winter. Soil moisture should be about right for good seed germination when nematode samples are taken.

TAKING THE SAMPLE:

It is very important that the soil sample be truly representative of the area sampled. The only way to ensure this is to collect the sample from many spots around the field rather than from only one or two spots. Even if a small problem area is being sampled, soil should still be collected from multiple spots within the area being sampled. Ideally, one soil sample should be taken for every four to five acres, but practically, one sample may have to represent a much larger area of a field. The sample may represent a section that has homogeneous soil type and conditions and is farmed uniformly. The shape of a field may influence the number of acres that a sample represents. If a very large area is sampled, high-population density areas will be diluted by low-population density areas so that areas with nematode problems will be more difficult to identify.

Take 20-30 soil cores from random locations throughout a 4-5 acre section of the field. If a problem area is being sampled, collect soil from the margin of the affected area. Collect soil to a depth of 8 inches (20 cm) in the root zone of living plants. Sampling depth may be different with certain crops, such as turf. Thoroughly mix the collected soil and put about 1 pint of soil into a plastic bag. Carefully label plastic bags on the outside with a permanent marker. Do not take samples from extremely dry soil. **DO NOT ALLOW SAMPLES TO GET HOT OR DRY!** Storing samples in an insulated cooler protects them well. Allowing samples to sit in direct sunlight or in a hot vehicle for even a short time can kill the nematodes in the sample. Nematodes must be alive for the extraction procedure to work. Killing the nematodes in the sample may result in failure to detect nematodes when they are actually present. Send samples early in the week so that they do not spend the weekend in transit. Fill out a "NEMATODE ASSAY FORM" for each sample. For the recommendation to be provided to be useful to you, supply all information requested. List present, past, and future crop to assist in identifying nematode problems and making management recommendations. Also list variety grown. Variety information is critical for soybeans and tobacco.

SHIPPING SOIL SAMPLES FOR NEMATODE ASSAY:

Samples for nematode assay should be submitted through your local county Extension office. Your county Extension office will send the samples to the Extension Nematology Laboratory.

WHEN YOU OBTAIN THE RESULTS:

The results of the assay and management recommendations will be returned to you through your county Extension office. Keep a record of which nematodes are found in which fields.

OTHER RESOURCES:

The following information is available at: <http://www.plant.uga.edu/Extension/Clinics/PDC.htm>

- Information about specific nematodes
- Nematode Summary Report

CHARGES AND FEES: (effective July 1, 2004)

\$8.00

All nematode samples submitted through the County Extension Office of sample origin that are not for problem diagnostics. Samples for problem diagnostics will be analyzed at no-charge. However, each county may submit 25 samples per calendar year for analysis at no-charge that are not for problem diagnostics. The county is expected to keep an accurate tally of samples submitted for analysis.

\$12.00

Samples from UGA research or demonstration projects. This charge will be handled by internal billing to UGA accounts. If a research or demonstration project is directed at optimizing grower inputs (e.g. crop rotations, pesticide evaluations, or resistant varieties), but funding is insufficient to cover the full cost of analyzing all the samples, a portion of the samples analyzed may be charged to Plant Pathology. A written request to analyze such samples must be approved prior to submission.

\$15.00

All root-knot nematode speciation (PhastSystem or greenhouse grow-out). Request for root-knot nematode speciation must be made by either County or State UGA faculty to the Extension Nematologist prior to sample submission.

\$25.00

All nematode samples submitted from in state, but NOT submitted through the County Extension Office of sample origin.

\$25.00

All nematode samples submitted from out of state.

Payment (or UGA account number to be billed) must accompany all samples.

The Sender is responsible for all shipping expenses.



**Plant Nematology Laboratory
Department of Plant Pathology
College of Agricultural & Environmental Sciences
University of Georgia**

July 2004