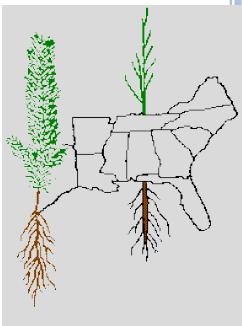
Soil, tissue and nematode sampling …..

Back to the basics

Tom Starkey

Southern Forest Nursery Management Cooperative



Outline

- Laboratories we use
- Sampling for foliage
- Sampling for soil
- Sampling for nematodes
- Sending seedlings to the Nursery Cooperative

Laboratories for analysis

A&L Labs – Memphis, TN

A & L Laboratories
The One Source

- 2790 Whitten Road
  Memphis, TN 38133
  800-264-4522
  901-213-2400
  Fax: 901-213-2440
  www.allabs.com

Waters Lab – Cairo, GA

Waters Agricultural Laboratories, Inc.
Since 1976

- P.O. Box 382
  257 Newton Highway
  Camilla, GA 31730
  229 -336 -7216
  Fax: 229 -336-7967

info@watersag.com

Laboratories for analysis

A&L Labs – Memphis, TN

Waters Lab – Cairo, GA

- Full soil test *
- Greenhouse media test
- Water analysis
- Tissue analysis *
- Nematode assay
- Pesticide residue

* Be sure your ask for the test and method of analysis you want.

Soil Samples

http://t1.gstatic.com/images

Soil Sampling

- **Goal:** To collect a soil sample that is representative of a field or portion of a field
- Plan far enough ahead of when you need results.
- Clean all equipment.
- Only sample top 6" of soil profile
- Use plastic bucket to collect soil. Do not use brass, bronze or galvanized tools/buckets.
- Stratify area if soil types are different.
- Zig-Zag across field taking 15 -20 samples
- Remove any plant debris from surface.
- If sample is wet, air dry before mailing
- Thoroughly mix samples from each field/unit
- Put sample (~ 1 pint) in bag or box provided by lab
- Code each sample

Sampling Foliage for nutritional Problems

http://t3.gstatic.com/images

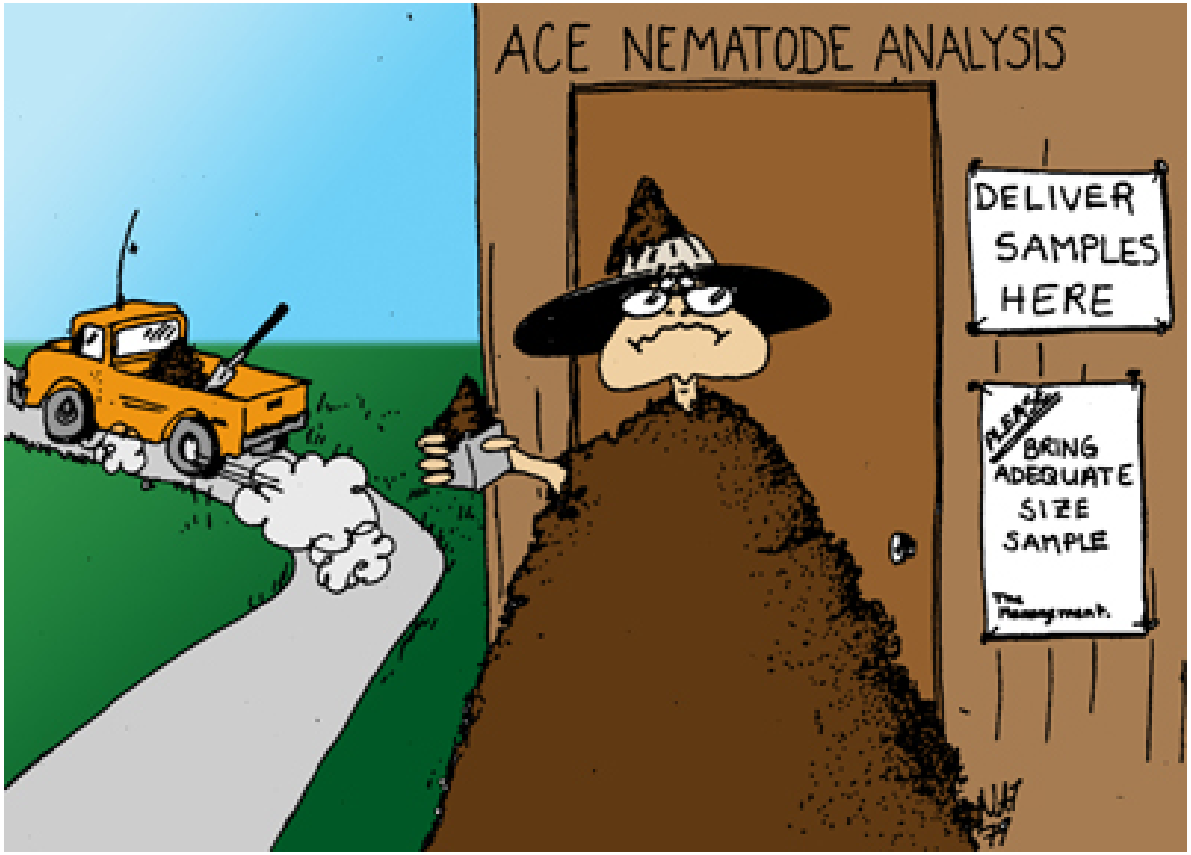
Tissue Sampling for Nutrient Deficiency

- Don't sample in the heat of the day, i.e. when plants are moisture stressed.
- Avoid sample contamination from dust, fertilizers, chemical sprays as well as perspiration and sunscreen from hands.
- Rinse foliage with distilled or deionized water and let dry. Do you want what is on the foliage or inside?
- Place washed, dry needles in paper bag and send immediately to lab. Never send fresh samples in plastic bags.
- Sample the portion of the seedling which is showing the problem. Grouping healthy and diseased foliage together will "dilute" results.

Tissue Sampling for Nutrient Deficiency

- Send a healthy sample for comparison
- Take samples from both “good” and “bad” areas. Comparison between the two samples helps pinpoint the limiting element.
- A soil sample may help to complete the evaluation.
- Avoid combining healthy plant parts with unhealthy plant parts.
- Label bags
- Refrigerate or dry if samples can’t be sent to the laboratory immediately, to arrive before the week-end.

Sampling for Nematodes



http://extension.entm.purdue.edu/pestcrop/2010/issue22/graphic/NematodeSampling.jpg

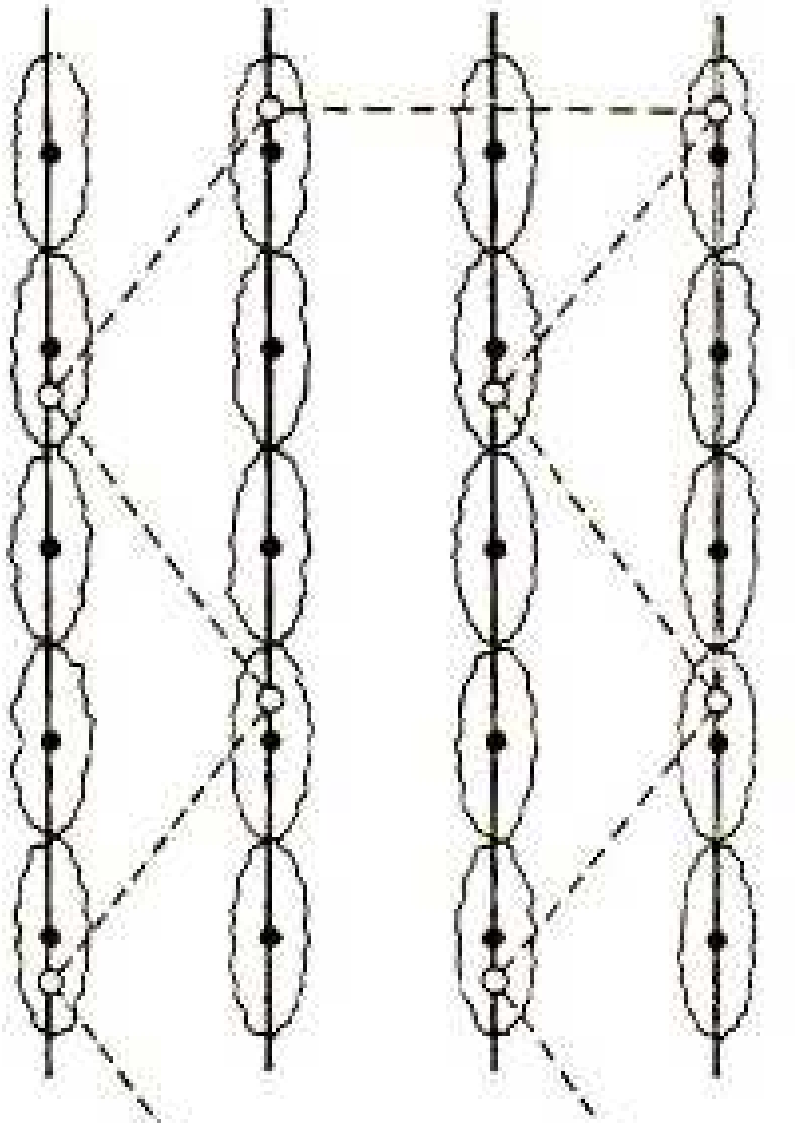
http://informedfarmers.com/wp-content/uploads/2011/05/nematodes-1.jpg

Sampling for Nematodes

- Population densities of plant parasitic nematodes vary greatly in time and space.
- Although the objective of detection seems simple, a negative result does not necessarily prove absence of the pest, but only indicates that a nematode population where you sampled is below the detection level.
- Sampling should be done before any treatment or management decision is made and before sowing.
- Sampling should occur when nematodes are active and at high populations. (Fall)
- Soil should be moist but not excessively wet or frozen.

Sampling for Nematodes

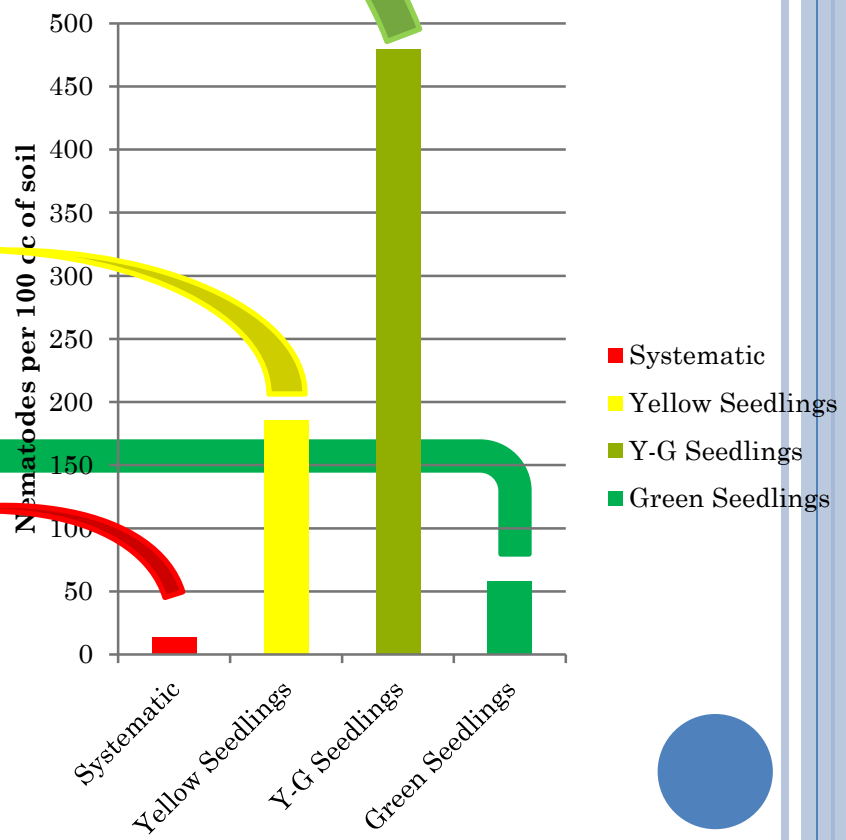
- The precision of the nematode estimates can be improved by increasing the number of soil cores in the sample. This is also less expensive than increasing the actual number of samples sent to the lab.
- Soil samples should be taken from the plant root zone.
- Even the most carefully taken samples may yield inferior results if not stored and delivered properly. Keep the sample *cool, ideally at 50 to* 55 F. Do not leave the sample in direct sunlight, car trunk or other areas that may heat excessively. An insulated cooler is convenient for sample protection. Deliver or mail the sample immediately to the processing laboratory. Use First Class, or express delivery and pack well in a sturdy cardboard box or coffee can



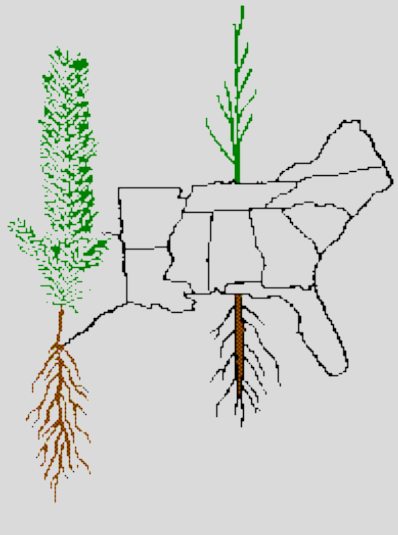
http://www.uiweb.uidaho.edu/sugarbeet/nmtds/fgr1.htm


2008

The variability in nematode sampling



Sending Seedlings to the Nursery Cooperative Plant Clinic @ Auburn University



Seedlings from outplanting

- Do not send seedlings wrapped in wet paper towels. Place is between dry paper towels and then into zip lock bags
- Collect seedlings that are healthy, dying and nearly dead. <u>If you can't peel bark with thumb nail – too dry!</u>
- At least 10 of each group
- Provide background information (minimum)
  - When lifted
  - When and where planted
  - Soil conditions – wet, dry, bedded, etc
  - If available – site prep data

Seedlings from nursery

- Do not send seedlings wrapped in wet paper towels. Place is between dry paper towels and then into zip lock bags
- Seedlings that are healthy, dying and nearly dead.
- At least 10 of each group
- Cultural information
  - Date of sowing
  - Pesticide usage information since sowing
  - Fertilization since sowing
- Send via express delivery so they are not sitting in a truck or warehouse/depot over a weekend!

Address to send seedlings:

Tom Starkey
School of Forestry & Wildlife
602 Duncan Dr
Auburn University, Al 36849

Phone: 334-844-8069
Tom.Starkey@auburn.edu