

FOLLOW ME ON 

VEGETABLE CROP UPDATE

TOMATO & PEPPER EDITION

Janice LeBoeuf, OMAFRA Vegetable Crop Specialist

APRIL

5

2012

- Counting nematodes? Proper sampling and handling is key! (Part 2)

Counting nematodes? Proper sampling and handling is key! (Part 2)

In part 1 of this article, we outlined a project in which OMAFRA staff tested some nematode sampling and handling scenarios in the spring of 2011 to look at some of the ways nematode soil samples can go wrong and find out what impact to expect.

Part 1 covered the impacts of sampling: proper depth, proper mixing, size of sample area. Here in part 2, we will find out if there's any point in sending the lab a nematode soil sample that for one reason or another didn't end up being stored properly or delivered right away.

Four sites that were in a processing tomato rotation and were known to be infested with plant parasitic nematodes were selected. The recommended sampling and handling treatment was based on OMAFRA Factsheet 06-099, [Sampling Soil and Roots for Plant Parasitic Nematodes](#) and discussions with experienced laboratory personnel. Treatments followed the recommended protocols, except for the differences listed.

Recommended protocol – key points:

- Sample approximately 8" deep, and discard the top 1-2" of the soil core.
- For row crops, sample in the row, so that samples contain feeder roots.
- Take 10-20 soil cores per acre. Ideally each sample should represent no more than about 6 acres.
- Mix the soil cores thoroughly, but gently.
- Place soil samples in a cooler with ice. Keep cool (not frozen) until delivery. Samples should not be subjected to sudden temperature changes.
- Deliver samples to the lab as soon as possible -- no longer than 3-4 days.

Handling

Part 1 of this article focussed on the impacts of sampling. This article, part 2, will focus on what we found when we handled the samples improperly.

Treatments:

1. Recommended protocol. Stored in cooler or refrigerator. Delivered to lab within 1 day.
2. Recommended protocol except samples left in vehicle. Delivered to lab within 1 day.
3. Recommended protocol except samples left in office. Delivered to lab within 1 day.
4. Recommended protocol except samples stored in refrigerator and delivered after 1 week.
5. Recommended protocol except samples stored in freezer for 2 days before delivery to lab.

Results:

Results are shown as percentages, where the average count (4 sites) from the recommended protocol is shown as 100% and the average count (4 sites) of each treatment is shown as a percent of the recommended count.

	<u>Root lesion</u>	<u>Cyst</u>	<u>Spiral</u>	<u>Root Knot</u>
Recommended	100%	100%	100%	100%
Left in vehicle overnight	61%	13%	100%	130%
Left in office overnight	43%	46%	38%	53%
Left in fridge 1 wk	62%	6%	22%	75%
Left in freezer 2 days	0%	27%	13%	91%

Nematode numbers are extremely variable within a field, and even thorough mixing of a sample before taking subsamples for each treatment would not give identical samples. However, the results indicate that indeed, handling does have an influence on nematode counts. It would also appear that some species are more sensitive to improper handling than others.

We can see that root-knot counts were less affected by improper handling than the other three species. Although it appears that leaving a sample in the vehicle (in full June sunlight) for part of two days is not as detrimental as a week in the refrigerator or two days in the freezer, sample variability must be taken into account. I don't think anyone wants to take the chance that their nematodes will like the environment in their vehicle as much as my root knot nematodes found my vehicle a comfortable place to stay.

The other species of nematodes reported here showed dramatic impacts from improper storage or late delivery.

The point? Nematodes may be very hard to kill in your field, but they are very easy to kill in a sample. Labs can only count the nematodes that they extract from the sample and to be extracted the nematodes need to be alive and moving. Do you want to base management decisions on a count that represents the population in the field or the number of nematodes that managed to survive your sampling and storage?

By the way, after you have made the effort of proper sampling, sample handling, and lightning-fast delivery, you will want to ensure that the lab refrigerates your samples and starts to process them as soon as possible. When delivering the samples, make sure to let the reception staff know that they are nematode samples and need to be refrigerated and processed right away. Don't be afraid to quiz the lab on their sample handling protocols and on when they will start to process them. Not only is your time and money invested in the samples, but the management decisions you make based on the lab report (eg. to plant a susceptible crop in that field, to fumigate or not, to purchase or rent a new piece of ground) likely have significant financial implications.

Questions? Comments?

Give me a call at (519) 674-1699 or email janice.leboeuf@ontario.ca.

See the update online at <http://onvegetables.com/> 

Visit the OMAFRA Vegetable Web Pages: ontario.ca/crops - click *Field Vegetables*

Follow [ontariotomato](#) on Twitter