

December 2015

# Soil and Plant sampling

to detect parasitic nematodes  
AGNEMA, LLC



Soil depth

Number of samples

Soil volume

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## to detect parasitic nematodes

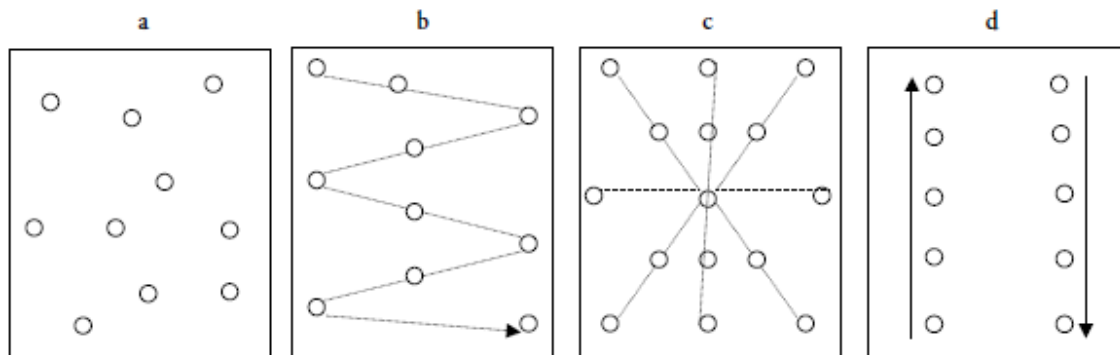
Plant parasitic nematodes are minute unsegmented worms that live in soil or plant parts that they infect. They are harmful to host plants and reduce the yield and/or damage the quality of crops. These pests have to be detected in the soil or in the plant parts before proper control actions are taken.

### How to sample soil?

Sampling techniques should have backing from diagnostic and identification laboratory to obtain quick and reliable nematode identification. Auger samplers are used to obtain soil cores for nematode population studies at different depths. The soil cores should be obtained from top first foot (12 inches) where most of soil inhabiting nematodes live. Some farmers make a second sample by obtaining soil core from as deep as second foot (24 inches) to ascertain that the deeper seated nematodes are also covered.

### How many soil sample should be collected?

Obtaining twenty soil cores per five acres will cover four core per acre is a scheme of sampling that is highly recommended. Various patterns to obtain soil samples is depicted below.



Sampling patterns for nematodes. (a) Random sampling; (b–d) systematic sampling.

## How much soil?

The soil cores are mixed in a bucket and **a pint of soil** placed in sampling bag (a paper bag lined with plastic) before the samples are shipped to [AGNEMA](#) diagnostic lab.

## How to preserve and ship samples?

The soil samples should be protected from extreme temperature, direct sun light, drying and freezing. Sample bags are made out of paper lined with plastic however plastic zip lock bag can be used as sample bag instead.

There are 4 main ways to send nematode samples to [AGNEMA](#) Lab:

- Bringing the samples to the lab location at:
  - [350 Hills St., Suite 103, Richland, WA 99354](#)
  - 8:00am to 5:00pm
- Using Drop-off Box in the [AGNEMA](#) address: available 24/7
- Using express post services like UPS and FedEx to the [AGNEMA](#) address
- Taking the nematode samples to the Soil Testing Laboratories in your area (Kuo Testing Labs in **Othello** and **Umatilla**, Cox Analytical in **Othello**, Soiltest Farm Consultants in **Moses Lake**, etc.) and ask them to send to [AGNEMA](#).

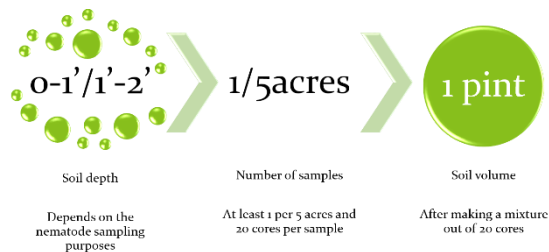
## How to label the samples?

Data like host, locality, Clint's name, and depth of sample should be written on soil bags as well as Testing Submission Form (<http://www.agnema.com/sampling/>) before shipping to [AGNEMA](#). Specialized nematode assay laboratory, [AGNEMA](#), will use half of the samples for nematode extraction, and will keep the rest of it for future reference(s).

## How to get Sample Submission Form?

Sample Submission Form is available on the [AGNEMA](http://www.agnema.com/sampling/) website at <http://www.agnema.com/sampling/>

The information on submitter/client/farmer is needed to send back analytical results and communicate. The sample data including sample ID, depth of sampling, host crop, etc. are also essential for sample analysis.



## Plant samples:

Some nematodes damage parts of crop plants, and reside inside the damaged parts. To evaluate the intensity of infection, and extent of damages, the farmer must obtain at least 10 samples per crop and submit them to [AGNEMA](#) Lab for detection of parasitic nematodes and evaluation of extent of damages.

The infected plant parts like potato tubers are sliced, decolorized, stained and prepared for microscopic observing.

The infected plant parts like garlic and onion bulbs, alfalfa crown, and fruit tree roots are immersed in water and incubated in plastic bags for at least 24 hours before nematodes are collected, enumerated and identified.

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### Disclaim

The farmers should realize that while the process of detection is systematic and well performed, however a negative result (Nematode Count=0) does not necessarily prove the absence of the pest in the soil, but only indicates that the particular nematode is below the detection level.