

# Preparing Samples for Extension Diagnostic Labs



# Lab Services from VCE

- ❖ Soil
- ❖ Plant pathogens
- ❖ Weed identification
- ❖ Insect identification
- ❖ Nematode counts
- ❖ Well water testing
- ❖ More advanced lab work is typically sent to private labs for chemical analysis, forage nutrient analysis, veterinary lab work





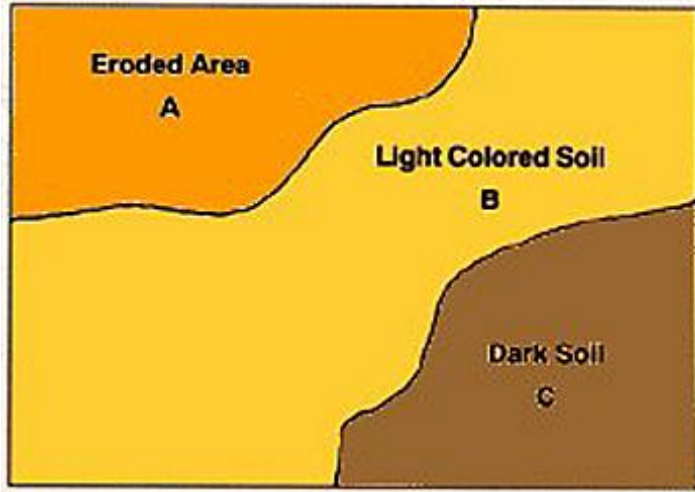
# Soil Testing

- ❖ Perhaps the most widely used is the soil testing lab. Soil samples can be sent for home lawns and gardens. There is a \$10 fee per sample for basic nutrient (N-P-K) recommendations for various plants.
- ❖ Any time of year (fall ideal)
  - avoid when extremely wet

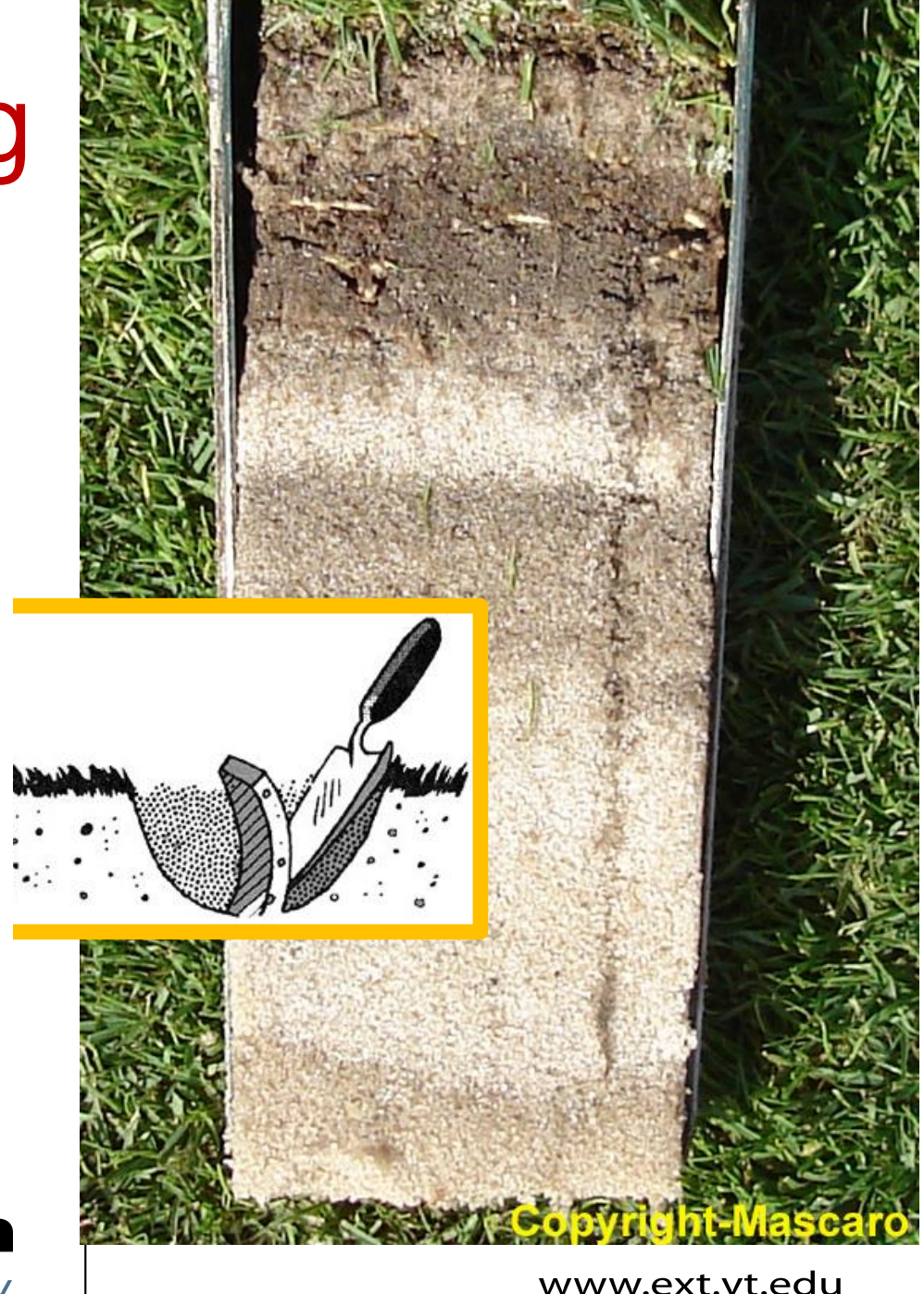
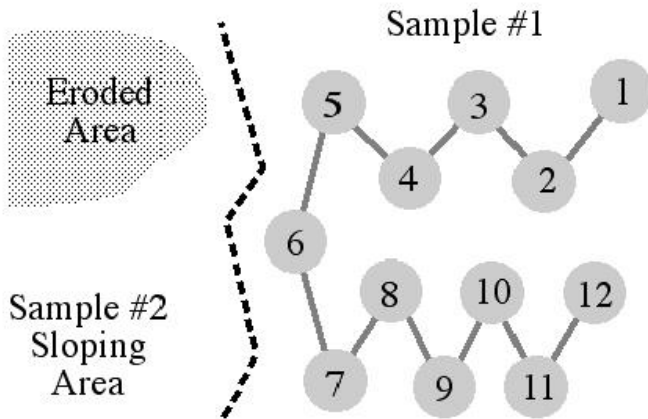




# Soil Testing



- ❖ Representative sample (multiple cores in uniform areas – different sample in different areas)
- ❖ Need root zone of desired crop – remove top 1” and any plant/root materials



# Plant Samples

- ❖ All plant samples should be submitted to the Plant Disease Clinic through your local Virginia Cooperative Extension (VCE) office. This reduces expenses on your part in the cases of sending things not requiring lab sampling, or to prevent insufficient samples.
- ❖ Plant Disease Diagnostic Form (Pub #450-097)





If you're not sure which office serves your area, use our search at the top of the page.

- » [Accomack](#)
- » [Albemarle / Charlottesville](#)
- » [Alexandria](#)
- » [Alleghany](#)
- » [Amelia](#)
- » [Amherst](#)
- » [Appomattox](#)
- » [Arlington](#)
- » [Augusta](#)
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- » [Botetourt](#)
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- » [Reynolds Homestead](#)
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### District Offices

- » [Central District Office](#)
- » [Northern District Office](#)
- » [Southeast District Office](#)
- » [Southwest District Office](#)

# Plant Samples

- ❖ Fresh Sample – Mail on Monday !
- ❖ If not, depending on what it is, plastic bag it in fridge until mailing.
- ❖ But if hot, then paper not plastic. Won't last long this way.
- ❖ Stems and leaves should be placed between two paper towels or newspaper (\*\*Not WET paper towels\*\*)
- ❖ Sturdy Container/Box to prevent crushing in transit



# Plant Samples

- ❖ If whole plant symptom, including roots and at least one pint of moist soil.
- ❖ Sample Normal and Abnormal Areas









# Accurate Description – Timing – Factors important !

- ❖ An accurate DESCRIPTION of the issue/problem is frequently just as important as the sample itself
- ❖ The complete description of the area, its history of cultural or chemical practices, and other facts pertinent to the disease occurrence must be supplied in order to facilitate complete diagnosis of the cause



4. Do you want a control recommendation for:

- Home lawn/garden     Commercial production     Lawn/landscape management     other

*Plant Part*

Affected

- roots
- crown
- stem or branch
- leaves
- flower
- fruit
- seeds

*General*

Appearance

- wilted
- yellowed
- stunted
- stained/streaked
- leaf spot/blight
- leaf mottle
- other \_\_\_\_\_

*Disease*

Distribution

- general
- scattered plants
- in spots or groups
- certain cultivar
- in low areas
- upland areas
- other \_\_\_\_\_

*Location*

- field/farm
- garden
- landscape
- nursery
- greenhouse
- athletic field
- other \_\_\_\_\_
- golf course
- sod farm
- Christmas tree farm
- vineyard
- orchard
- forest
- indoor plant





5. Size of total planting: Acres  or square feet  or number of plants

Percent of crop affected  or number of plants affected

Last year's crop 20  Crop planned for next year 20

Symptoms first noticed, date  Occurrence in previous years:  No  Yes  Unknown

6. Past weather conditions:  normal  rainy  dry  hot  cold  other

Have plants been irrigated?  yes  no how much?

7. SOIL:

Type	Terrain	Drainage	Soil-less	Mulch
<input type="checkbox"/> sandy	<input type="checkbox"/> sloped	<input type="checkbox"/> good	<input type="checkbox"/> pinebark	<input type="checkbox"/> bark chips
<input type="checkbox"/> clay	<input type="checkbox"/> level	<input type="checkbox"/> moderate	<input type="checkbox"/> peat moss	<input type="checkbox"/> plastic
<input type="checkbox"/> loam	<input type="checkbox"/> low	<input type="checkbox"/> poor	<input type="checkbox"/> other <input type="text"/>	<input type="checkbox"/> other <input type="text"/>

no till  conventional till  minimal till



9. Chemicals and/or pesticides applied, **including method of application, rate and date:**

Growth regulator	<input type="text"/>	<input type="checkbox"/> none	<input type="checkbox"/> unknown
Fertilizer	<input type="text"/>	<input type="checkbox"/> none	<input type="checkbox"/> unknown
Fungicide	<input type="text"/>	<input type="checkbox"/> none	<input type="checkbox"/> unknown
Insecticide	<input type="text"/>	<input type="checkbox"/> none	<input type="checkbox"/> unknown
Herbicide	<input type="text"/>	<input type="checkbox"/> none	<input type="checkbox"/> unknown
Herbicide previous year	<input type="text"/>	<input type="checkbox"/> none	<input type="checkbox"/> unknown
Nematicide	<input type="text"/>	<input type="checkbox"/> none	<input type="checkbox"/> unknown
Nematicide previous year	<input type="text"/>	<input type="checkbox"/> none	<input type="checkbox"/> unknown



10. **WOODY PLANTS ONLY**

**Fruit trees and grapes:** root stock   fruit bearing age  nonbearing age

**Trees, shrubs, fruit trees, and vines:** approximate age  height  stem diameter

**Canopy:**  few or no dead limbs  20-50% dead limbs  50% or more dead limbs

**Number of years in present site:**  less than 2  less than 4  less than 10  greater than 10

**Exposure:**  full sun  partial sun  full shade  windy  protected

**Condition of trunk:**

healthy  light damage  heavy damage Describe:

**Root damage or soil disturbance from any of the following:** sidewalks, driveways, trenches, retaining walls, compaction, or other construction activities.

Describe:





## Stem and Whole Plant Symptoms (Crown rot, damping off, roots, stunting, wilt, and vascular discoloration ) by Pathogen Groups and Other Causes.

### Bacterial

- [Canker](#)
- [Speck](#)
- [Spot](#)
- [Pith necrosis](#)
- [Stem rot](#)
- [Crown gall](#)
- [Bacterial wilt](#)

### Fungal

- Alternaria stem canker
- [Early blight](#)
- [Damping off](#)
- [Fusarium crown and root rot](#)
- [Fusarium wilt](#)
- [Gray leaf spot](#)
- [Gray mold](#)
- Leaf mold
- Powdery mildew (*Leveillula*)
- [Powdery mildew \(\*Oidium\*\)](#)
- [Septoria leaf spot](#)
- [Southern blight](#)
- [White mold](#)
- [White mold minor](#)
- [Target spot](#)
- [Verticillium wilt](#)

### Oomycetes

- [Damping off](#)
- Buckeye rot
- [Late blight](#)

### Viruses

- [Alfalfa mosaic](#)
- [Cucumber mosaic](#)
- [Curly top](#)
- [Potato leafroll](#)
- [Potato virus Y](#)
- [Pseudo curly top](#)
- [Tobacco etch](#)
- [Tobacco \(tomato\) mosaic](#)
- [Tobacco mosaic & potato virus X](#)
- [Tomato yellow leaf curl](#)
- [Tomato spotted wilt](#)

### Viroids

- [Tomato bunchy top](#)
- [Tomato apical stunt](#)
- [Tomato planta macho](#)

### Phytoplasma

- [Big bud](#)

### Nematodes

- Northern root-knot
- Southern root-knot

### Parasitic plants

- [Dodder \(\*Cuscuta\* spp.\)](#)

### Damage From Herbicides

- [2,4-D \(Phenoxy\)](#)
- [Banvel](#)
- [Treflan](#)
- [Roundup](#)

### Damage From Insecticides

- [Malathion](#)
- [Thiodan](#)

### Damage From Insects

- [Broad mite](#)
- [Hornworm](#)



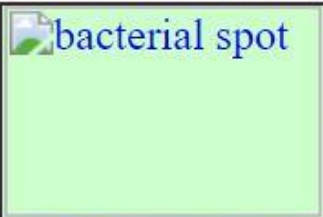


### Physiological/Weather

- [Physiological leafroll](#)
- [Walnut wilt](#)
- [Hail damage](#)
- [Lightning damage](#)

### Nutritional Disorders






- Nitrogen
- [Phosphorous](#)
- [Magnesium](#)
- Manganese
- Iron



Bacterial		Plant Part Affected				Other parts affected
		Stem	Whole Plant	Roots	Characteristic Symptoms	
	<a href="#">Canker</a>	X	X	X	browning of vascular tissue and browning and mealy appearance of pith at crown and above; external discoloration, enlargement of nodes and stem cracking sometimes occurs; yellow and necrosis of plant associated with plant wilt; foliage characteristically remains attached to plant	leaves, fruit
	<a href="#">Speck</a>	X	X		tiny, dark brown to black spots with surrounding yellow halo; may result in leaf and plant stunting	leaves, fruit
	<a href="#">Spot</a>	X	X		dark brown, oval to elongated spots; coalesce to streaks; considerable loss of lower leaf foliage can occur	leaves, fruit
	<a href="#">Pith necrosis</a>	X	X	X	yellowing and wilting of leaves, blacking and enlarging of petioles and nodes, and progressing to top of plant; yellowing and wilt of entire plant	leaves
	<a href="#">Stem rot</a>	X	X		outward blacking of stem and leaf tissue; blackened pith tissue	leaves

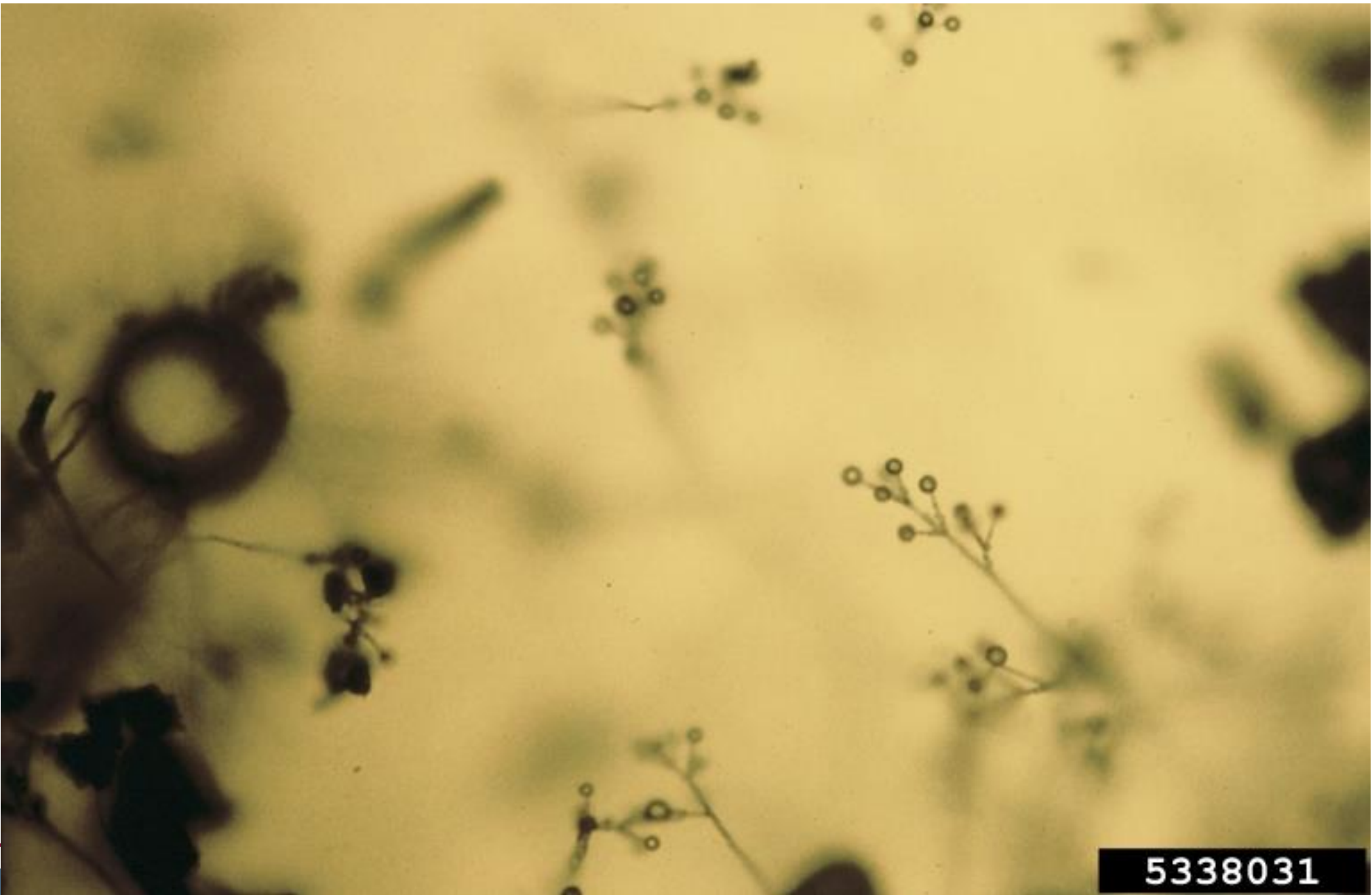




Viruses					Characteristic Symptoms	Other parts affected
		Stem	Whole Plant	Roots		
	<a href="#">Alfalfa mosaic</a>	X	X	X	yellowing and bronzing with necrosis of leaves; leaves stop growing and curl downward; longitudinal cut of stem reveals brown streaking of phloem and pith; also noted in roots; frequently occurs when tomatoes are planted next to alfalfa (illustrated) or red clover infected fields	fruit, leaves
	<a href="#">Cucumber mosaic</a>	X	X		plant stunting and malformation of foliage is common especially if plants are infected at an early age	fruit, leaves
	<a href="#">Curly top</a>	X	X		plants have an erect growth habit, are stunted and leaves are curled upward	fruit, leaves
	<a href="#">Potato leafroll</a>	X	X		plants are stunted and have yellowing leafroll symptoms especially if infected at an early age	fruit, leaves
	<a href="#">Potato virus Y</a>	X	X		plants are stunted and have downward curling leaves with mottle, veinbanding and possible necrosis depending on the strain involved	fruit, leaves

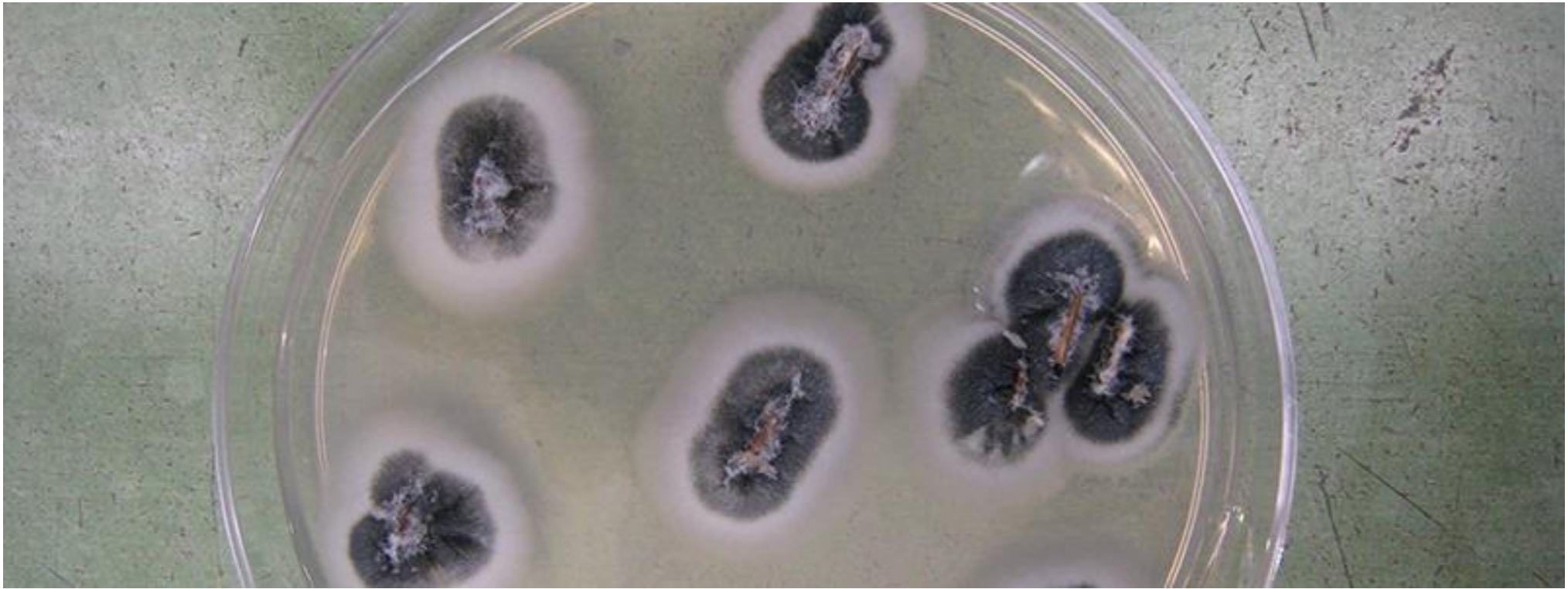






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# Nematodes

- ❖ tree dripline, at a depth where feeder roots present
- ❖ pint of soil in one container, handful of feeder roots in a separate container



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# Nematodes

## Disease Symptoms:

### Above Ground:

- Yellowing     Necrosis  
 Stunting     Wilting

### Below Ground:

- Galls     Excessive Branching  
 Rot     Reduced Growth

## Prevalence of Symptoms:

- Entire Planting  
 Localized Areas  
 Scattered Plants

## Cropping History:

Future Crop:   
Present Crop:   
Past Crop:

Acreage:   
Nematicides Applied:

## Location:

- Field     Orchard     Vineyard     Nursery     Greenhouse     Sod Farm  
 Golf Course     Lawn     Garden     Landscape

Extension Agent:  Phone:  E-mail:



# Questions

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