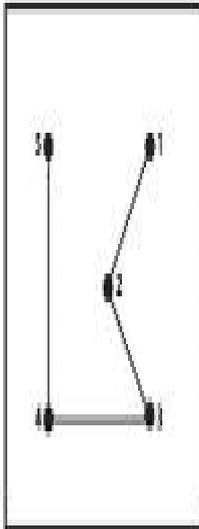
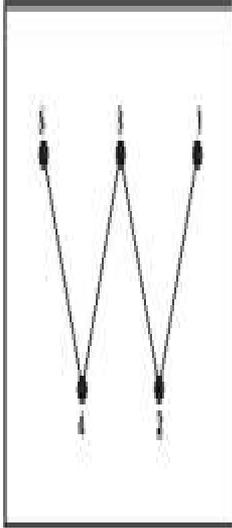


Diagnosing Crop Problems in the Field

Ann Hazelrigg
Commercial Pesticide Applicator
March 25, 2021

EASIER TO FIX SOMETHING WHEN YOU FIND IT EARLY!



Look at the ROOTS







E Ernest





RULE OUT INSECTS/other causes!





- Often you will see the actual insect
- Cast skins
- Frass



ID by type of damage: Chewing mouthparts

Chewing, holes, cut off stems: Beetles, beetle larvae, caterpillars, sawflies, slugs

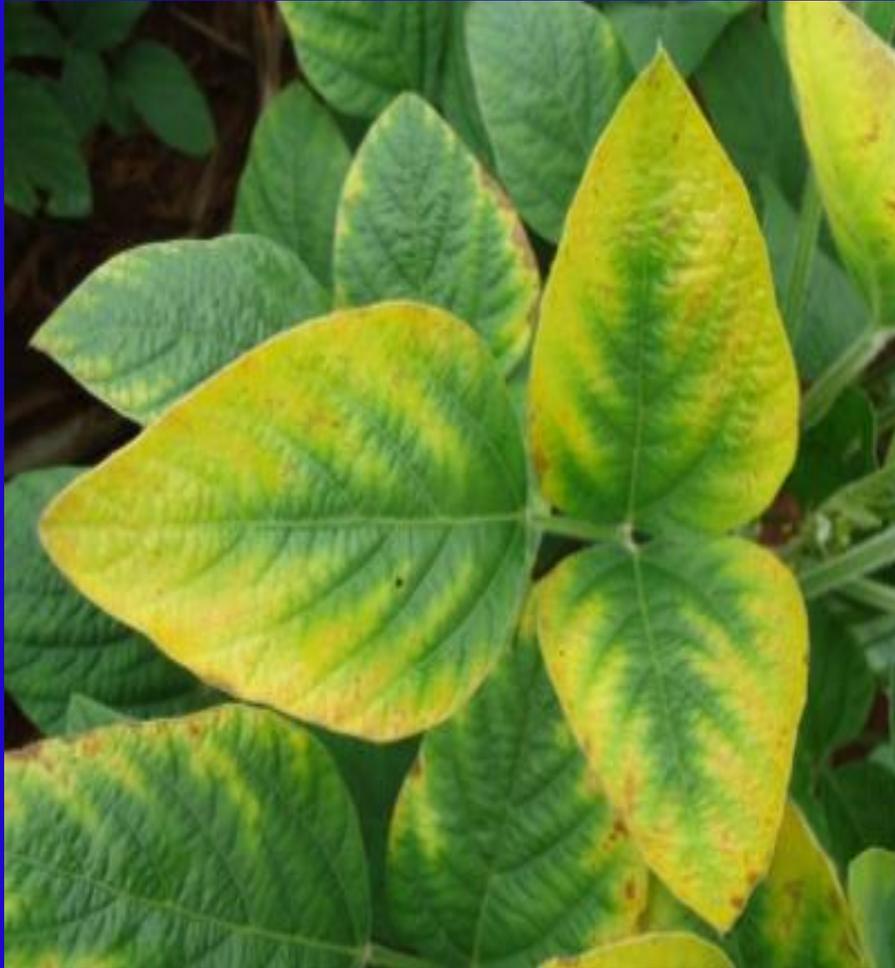


Piercing sucking mouthparts- stippling, leaf edge dieback, curling-leafhopper, aphids, mites. May see cast skins, webbing, frass.



Two kinds of “diseases”

ABIOTIC-non-infectious



**Weather, nutrients, stress,
drought, compaction**

BIOTIC-infectious



Fungi, bacteria, virus, nematodes

Abiotic

- Often a pattern (non-random)
- Timing-overnight/over the winter
- Often one age of tissue affected
- Does not progress
- Gradient of injury
- More than one species
- Should grow out of the damage
- No cure

Pattern-Scattered or whole field?



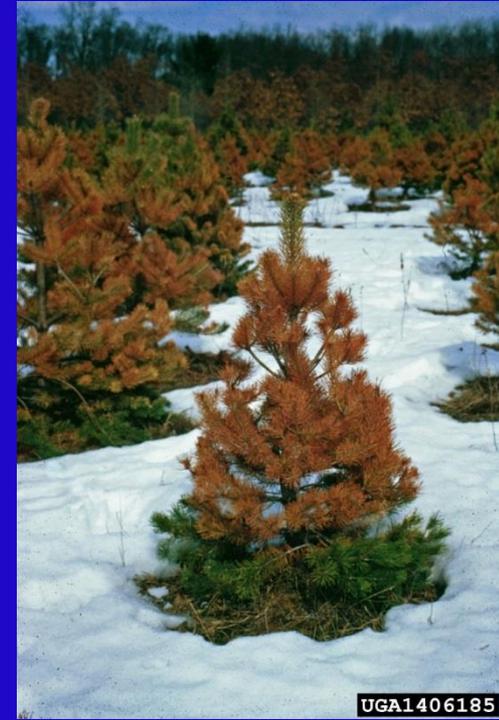
Whole field vs scattered

Rye with purple tips-wet cold soil and phosphorus availability



Look for a **pattern**-living organisms do not work in straight lines!

Look at the population/planting



UGA1406185



UGA5025082

Pattern



Timing? Did it occur overnight?



Timing-did it occur “overnight”? Look at the area that is affected..does not progress



Is only **one** age of tissue affected?





Is there a gradient of damage?



Are more than ONE species of plant affected?



BIOTIC-fungi, bacteria, virus, nematodes

- living**
- random**
- slow moving**
- spreads from host to host**
- very host specific**
- Often has a “sign”-presence of the pathogen-spores, mycelium, fruiting bodies**

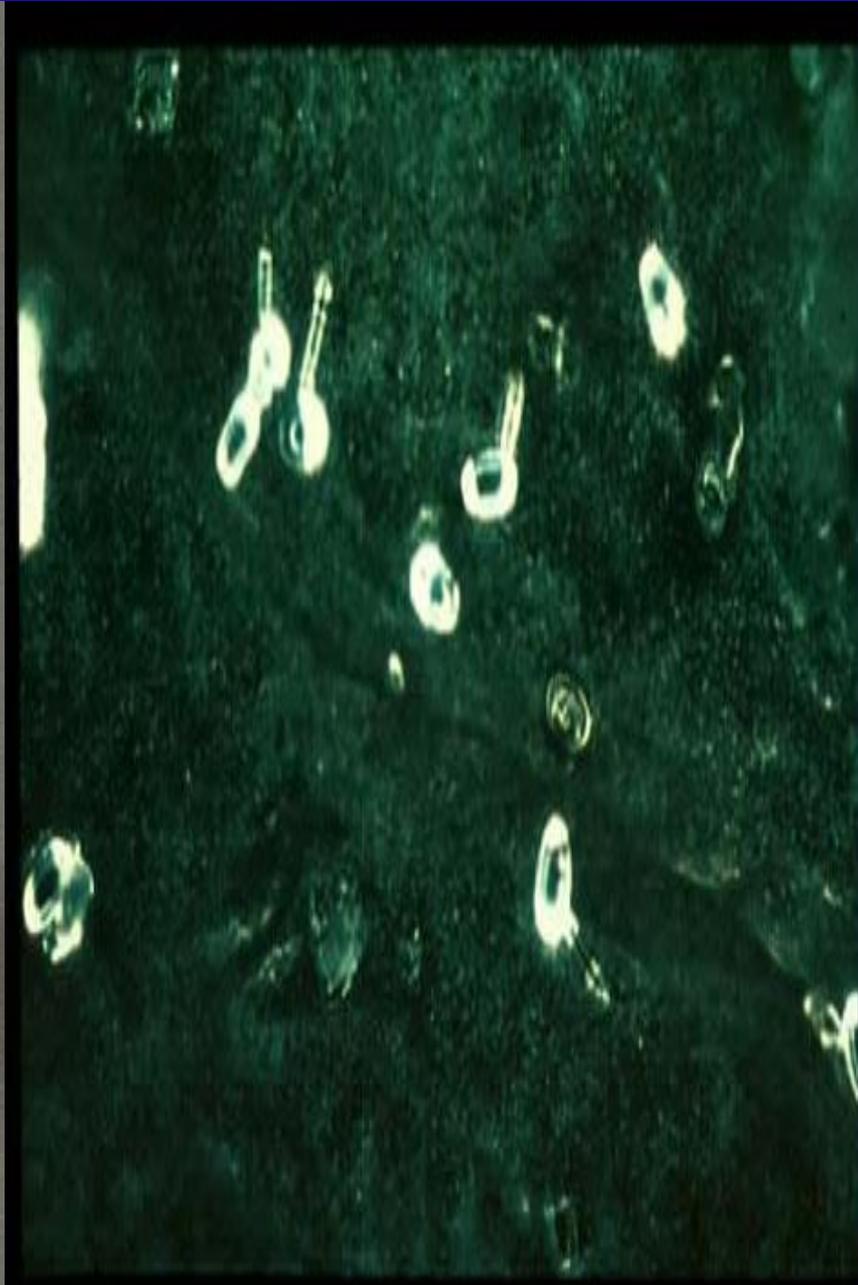
The Disease Triangle



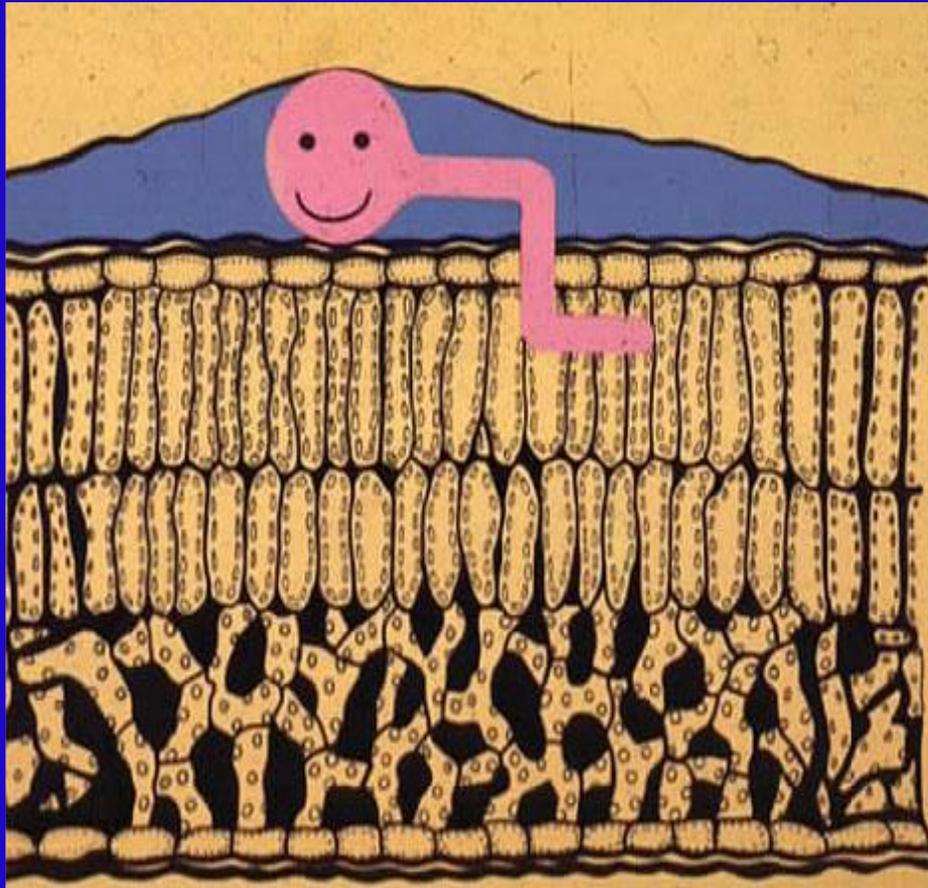
BIOTIC DISEASES-fungi, bacteria, virus, nematodes

Northern corn leaf blight-cool wet conditions, cigar-shaped lesions 1-7 inches, can be confused with drought, N burn





6-8 hrs leaf/needle wetness or high rh > 85%

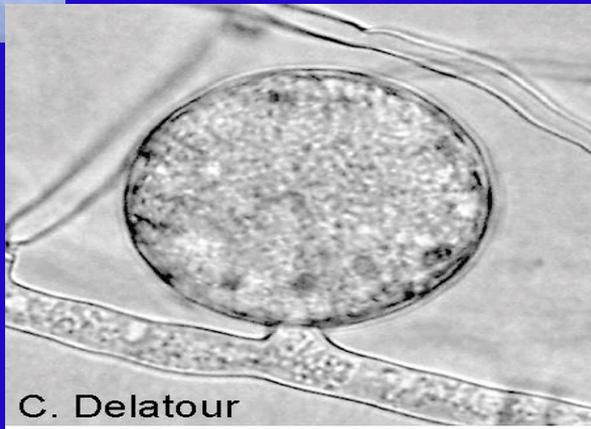




Most fungi overwinter on refuse



Some fungi have long term OW structures



Biotic organisms-often see a sign or actual presence of the organism.

SIGN- Physical evidence of the pathogen

For fungi:

- Spores
- Mycelium, hyphae, rhizomorphs
- Fruiting bodies
- Long term overwintering structures



Sign=Spores/Fruiting bodies



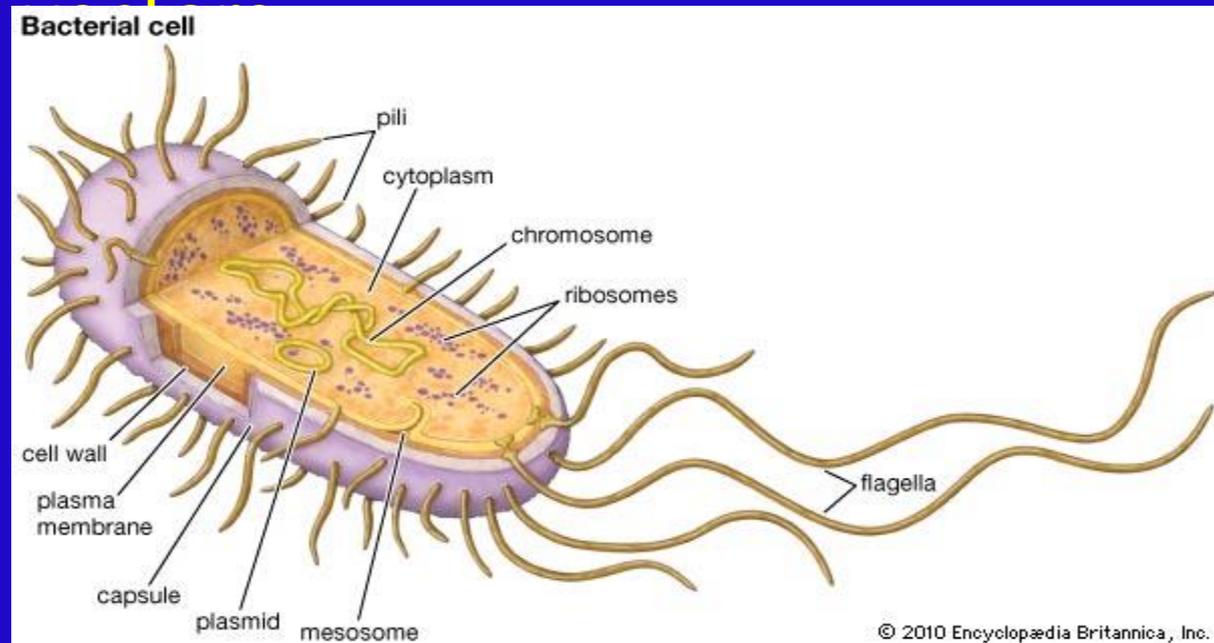


MYCELIUM or HYPHAE and RHIZOMORPHS- SIGN of FUNGUS



Bacteria-how do they differ?

- Much smaller than fungi
 - No long term overwintering structures
 - Can't get into plant tissues on their own-need wound, natural opening
- Can be introduced through seed, wounding, ie suckering, pruning,



Bacterial Wilt Cucurbits

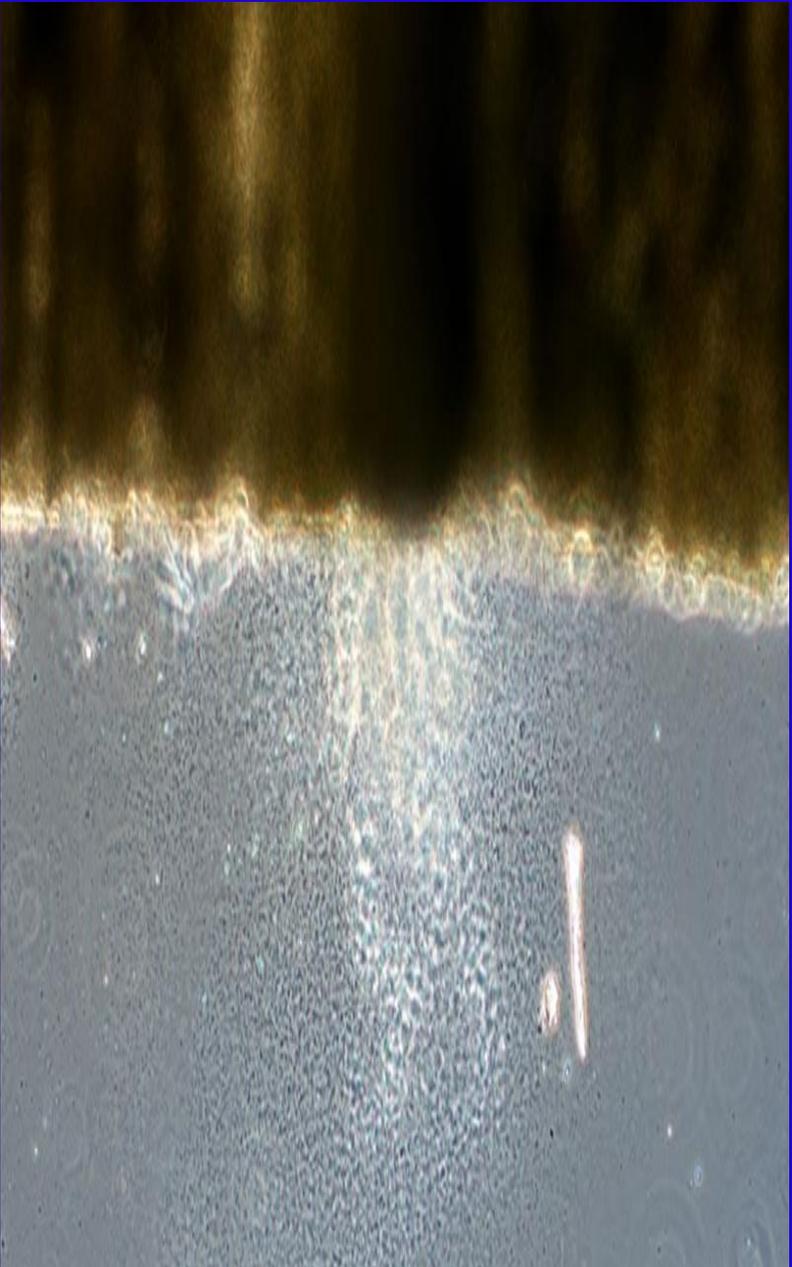


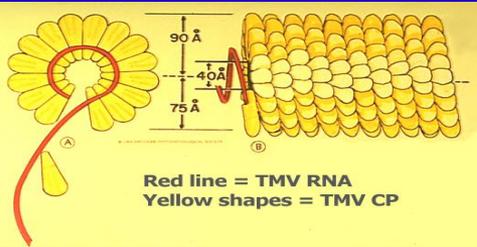


Stewarts wilt



Bacterial streaming under the microscope-“sign” of bacterial pathogen





Viruses

- About 200 plant diseases
- Submicroscopic- Can only see with electron microscope-ID by symptoms-stunting, mottle, mosaic-no “signs”
- Single strand RNA/DNA and protein coat
- Requires vector/wound
- Management-rogueing (get rid of it!)



Rapid assay kits



Disease can be tricky!

UVM PLANT DIAGNOSTIC CLINIC SPECIMEN FORM

PLANT & WEED IDENTIFICATION ONLY

(See second sheet for instructions on how to collect and ship specimens)

GROWER NAME: _____ DATE SENT: _____
STREET: _____ SUBMITTED BY: _____
CITY: _____ CROP OR PLANT: _____
STATE: _____ VARIETY: _____
ZIP CODE: _____
COUNTY: _____
TELEPHONE #: _____

OFFICE USE ONLY

Ref #:

Date Recd:

\$15 Service Fee Paid: yes no

CHECK ONE: Commercial Grower
 Home Gardener

PROBLEM DESCRIPTION: Check all that apply

Plant Part Affected

- roots
- stem or branch
- leaves
- flower
- fruit/seed
- other _____

General Appearance

- wilted
- discolored
- stunted
- abnormal growth
- leaf spot/blight
- leaf mottling
- other _____

Distribution

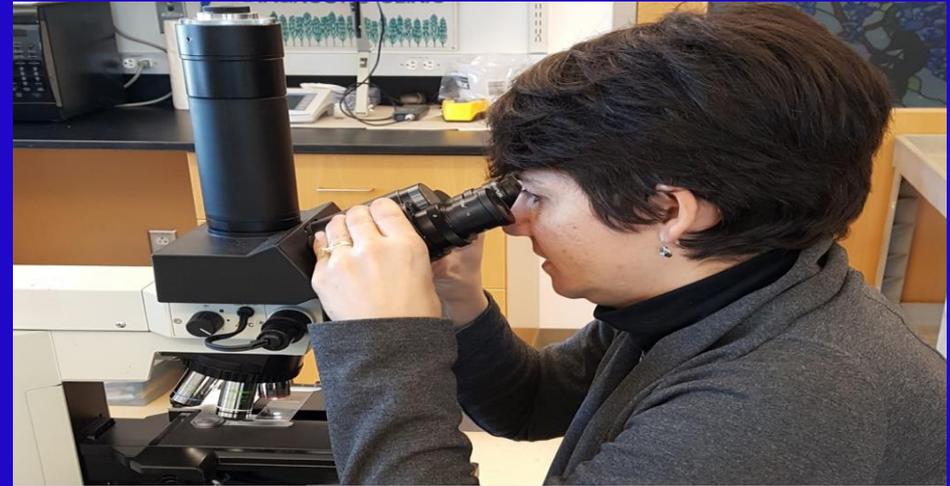
- throughout field
- scattered plants
- in spots
- certain variety
- in low areas
- upland areas
- other _____

Location

- field
- garden
- landscape
- lawn
- nursery
- greenhouse
- orchard
- forest
- other _____

Briefly state the problem and ask the specific question you want answered:

GROWTH CONDITIONS:



<https://www.uvm.edu/extension/pdc>