

2024 PDDC Plant Disease Talks

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Fundamentals of Plant Diseases

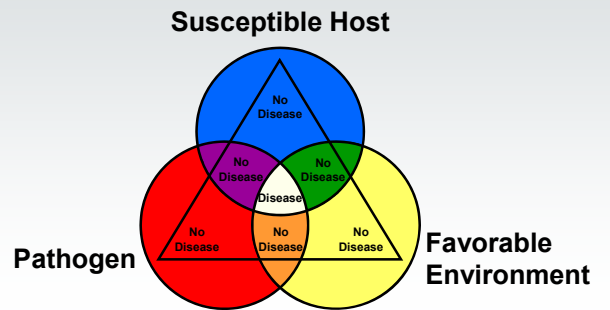
Brian D. Hudelson
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University of Wisconsin-
Madison/Extension



Fundamentals of Plant Diseases

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The Disease Triangle



Fundamentals of Plant Diseases

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Causes of Plant Diseases

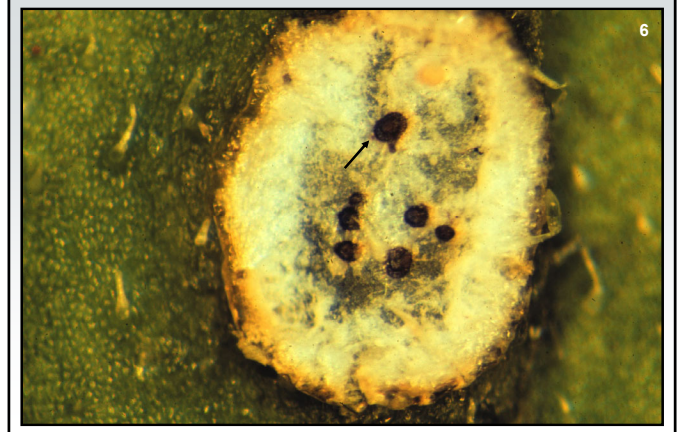
- Fungi/Fungi-Like Organisms
- Bacteria
- Viruses
- Nematodes
- Phytoplasmas
- Abiotic factors

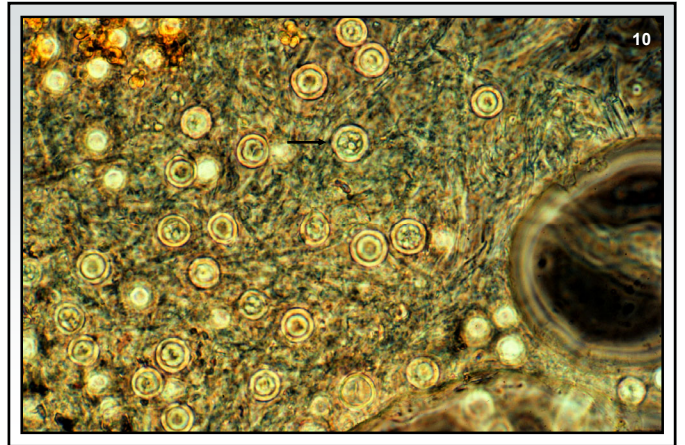
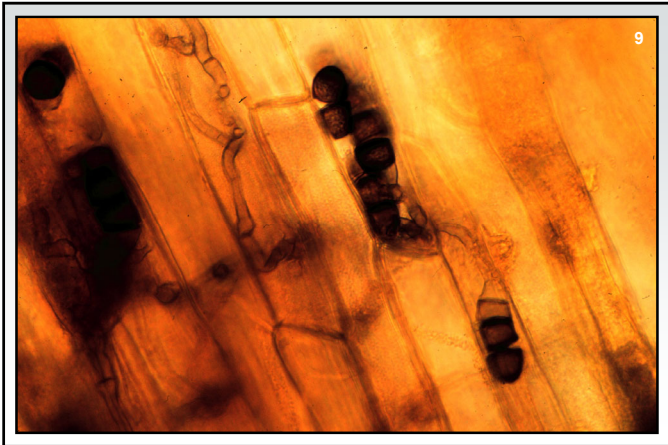
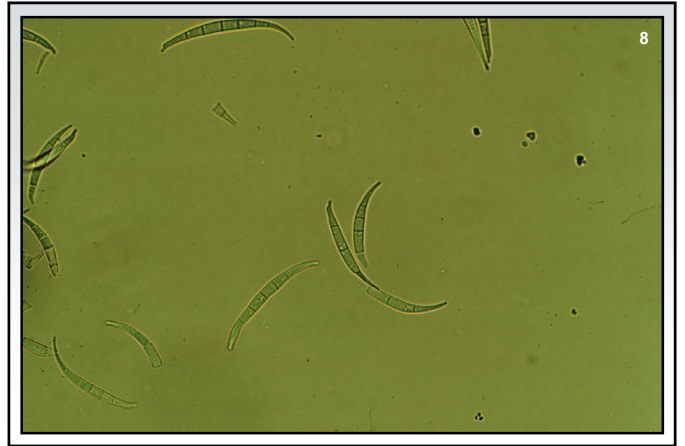
Fundamentals of Plant Diseases

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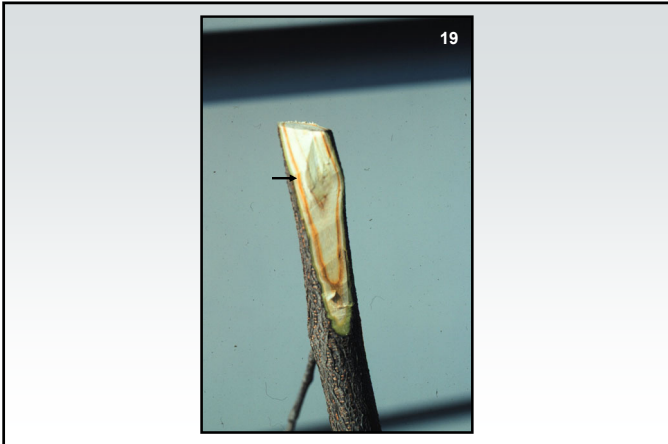
Fungi/Fungi-Like Organisms

- Largest pathogen group
- More than 8000 pathogenic species
- Can be seen with the naked eye
- Vegetative growth through production of multicellular fungal threads (hyphae)
- Reproduce via spores





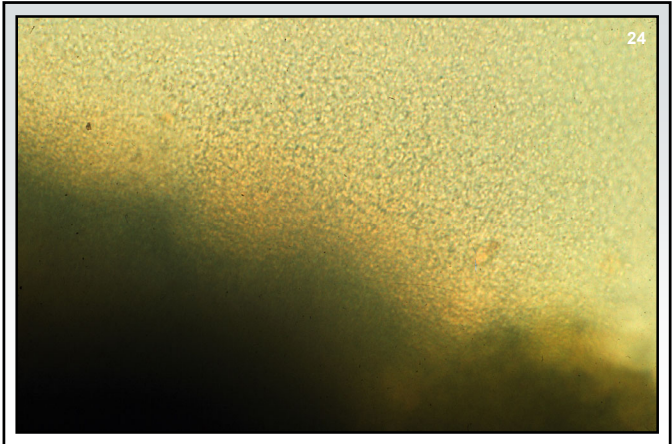
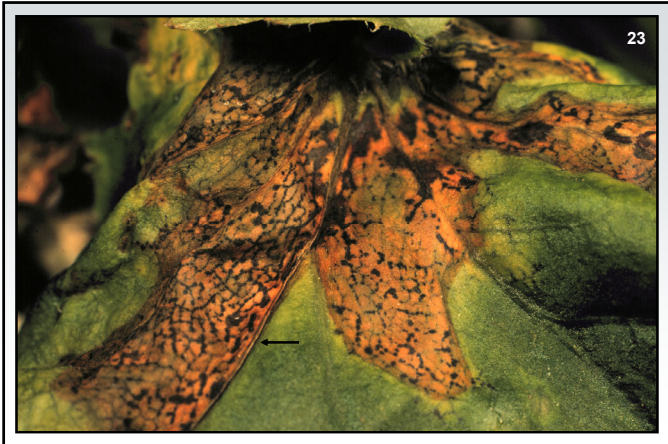
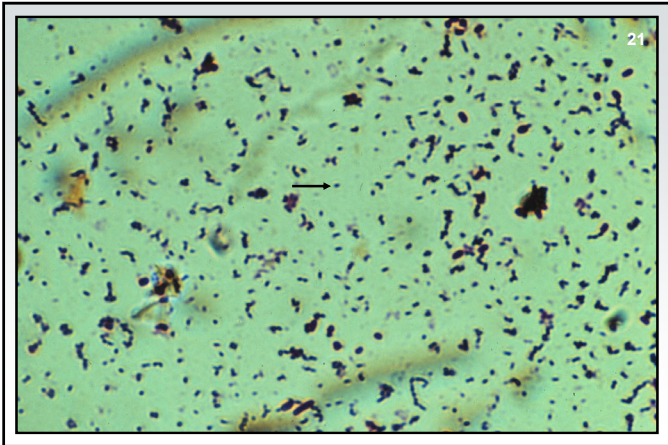


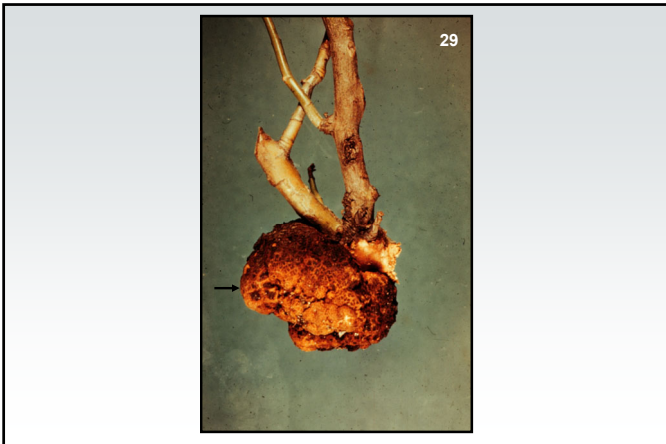
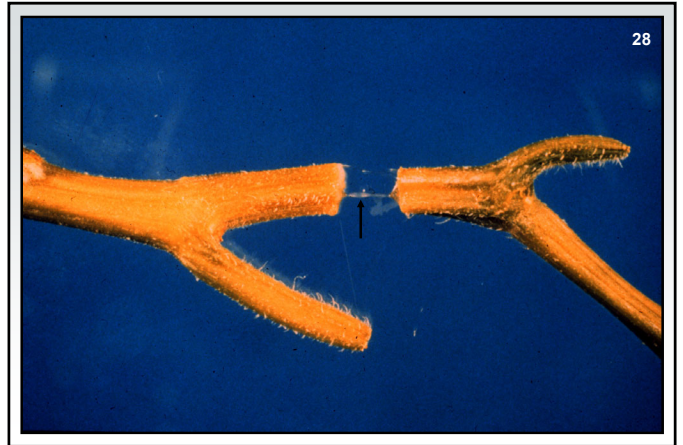
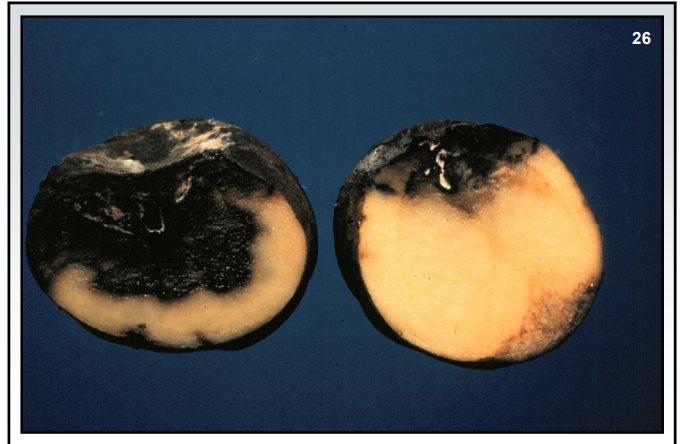


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Bacteria

- About 200 pathogenic species
- Can be seen with a light microscope
- Simple, unicellular
- Reproduce by binary fission

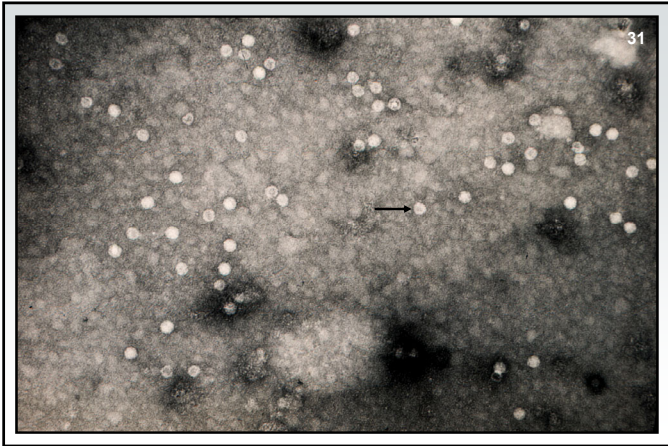




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Viruses

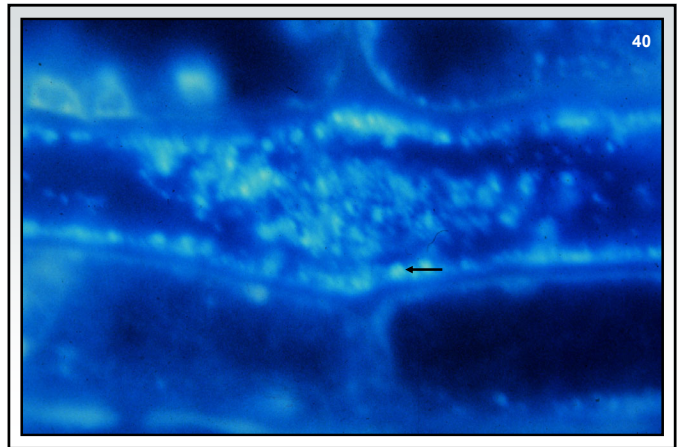
- Can only be seen using an electron microscope
- Extremely simple - nucleic acid with a protein coat
- Reproduce by taking over host reproductive machinery
- Often associated with insect vectors





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Phytoplasmas

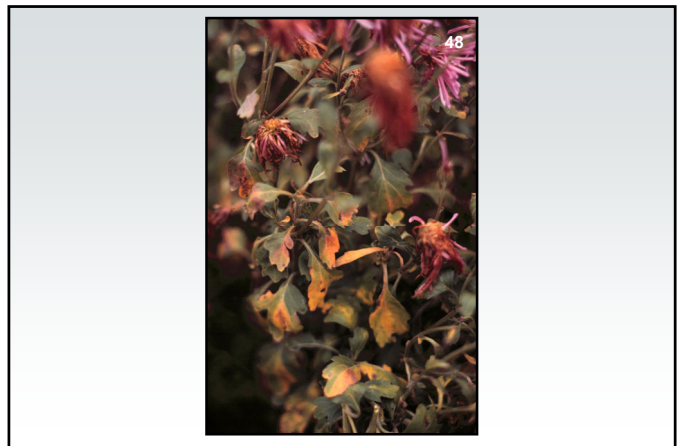
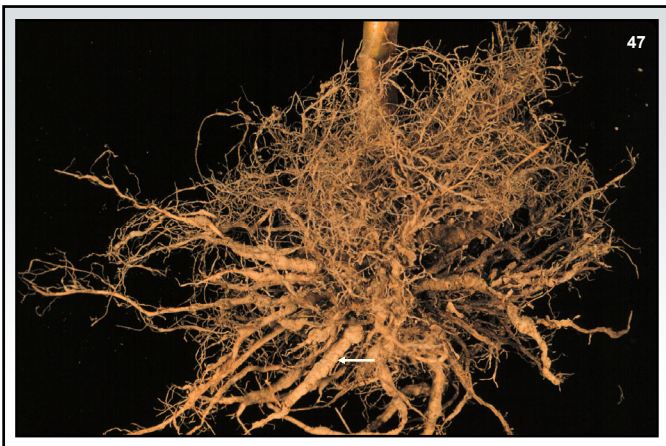
- Funky bacteria
- Small, wall-less
- Phloem limited
- Usually seen only with an electron microscope
- Reproduce by binary fission
- Transmitted by insects (leafhoppers)





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Nematodes

- Parasitic worms
- Very complex compared to other pathogens
- Usually seen only with a light microscope
- Reproduce by eggs

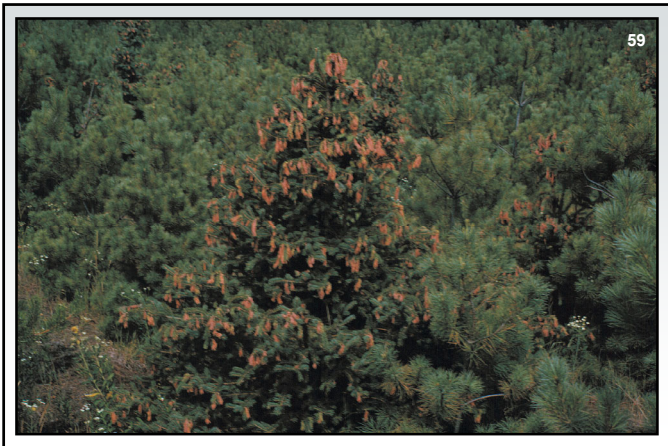
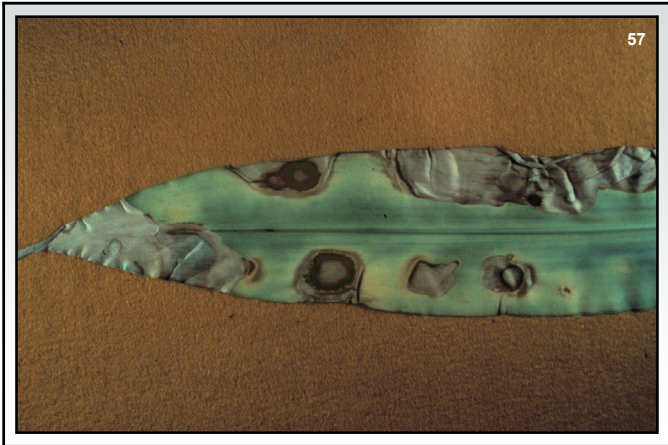


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Abiotic Factors

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- Nutritional abnormalities
- Pesticide exposure
- Environmental pollutants
- Adverse weather conditions







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Where to Go for Help

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**Plant Disease Diagnostics Clinic
Department of Plant Pathology
University of Wisconsin-Madison
1630 Linden Drive
Madison, WI 53706-1598
(608) 262-2863
pddc@wisc.edu
<https://pddc.wisc.edu>**

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Where to Go for Help

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**UW Soil and Forage Lab
4702 University Ave.
Madison, WI 53705
(608) 262-4364
<https://uwlab.soils.wisc.edu>**