

Green Thumb Gardening

1

Fundamentals of Plant Diseases

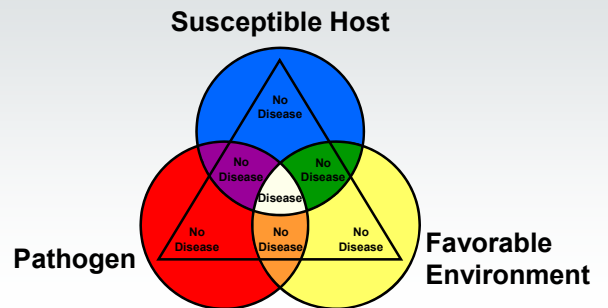
Brian D. Hudelson
Department of Plant Pathology
University of Wisconsin-
Madison/Extension



Fundamentals of Plant Diseases

2

The Disease Triangle



Fundamentals of Plant Diseases

Causes of Plant Diseases

3

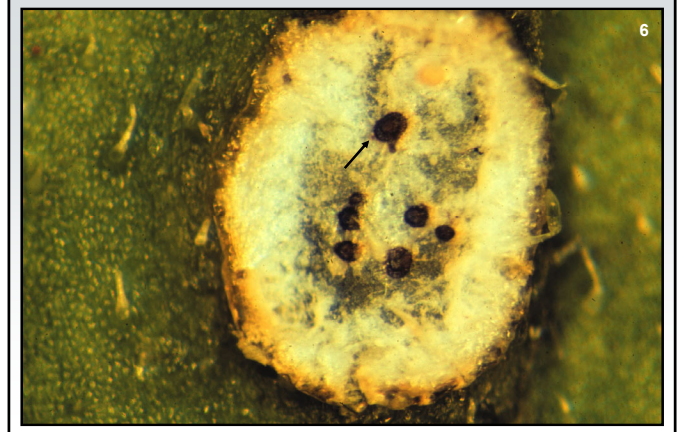
- Fungi/Fungi-Like Organisms
- Bacteria
- Viruses
- Nematodes
- Phytoplasmas
- Abiotic factors

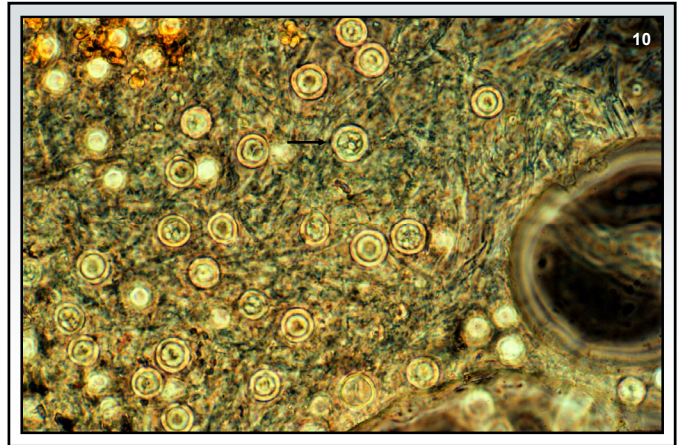
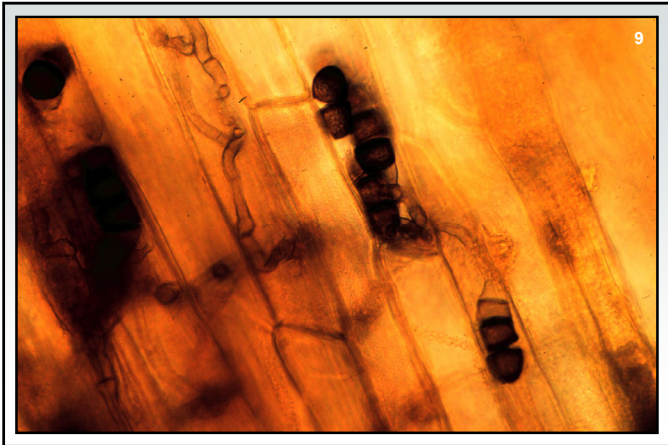
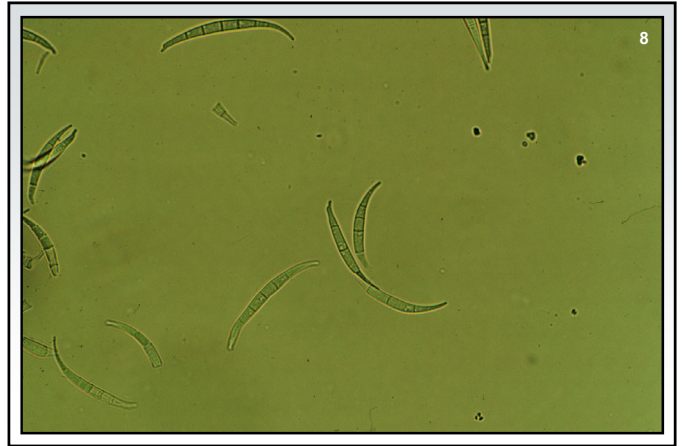
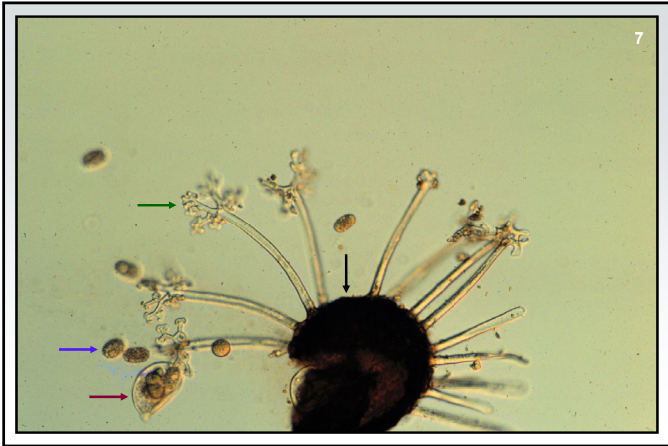
Fundamentals of Plant Diseases

Fungi/Fungi-Like Organisms

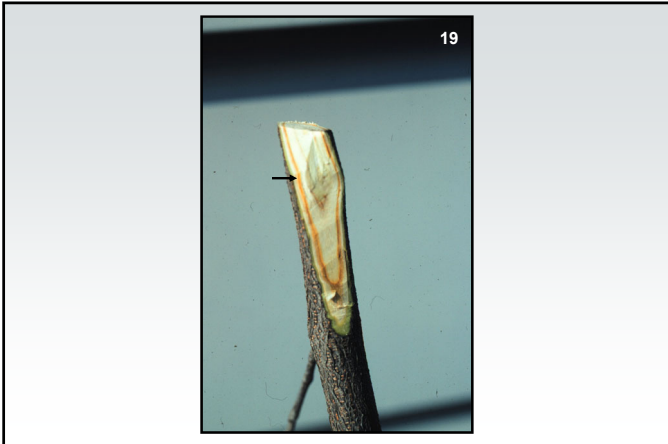
4

- 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





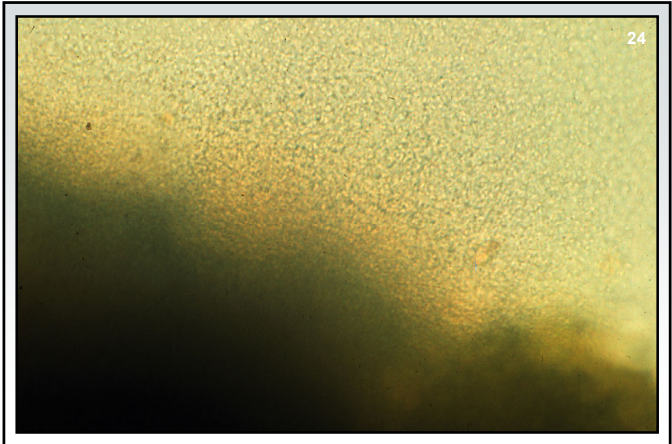
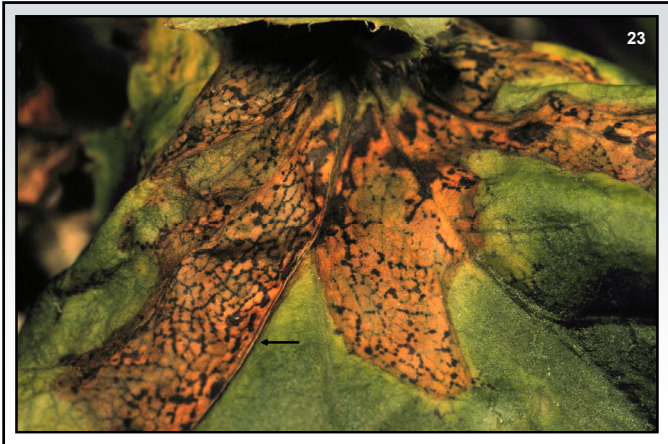
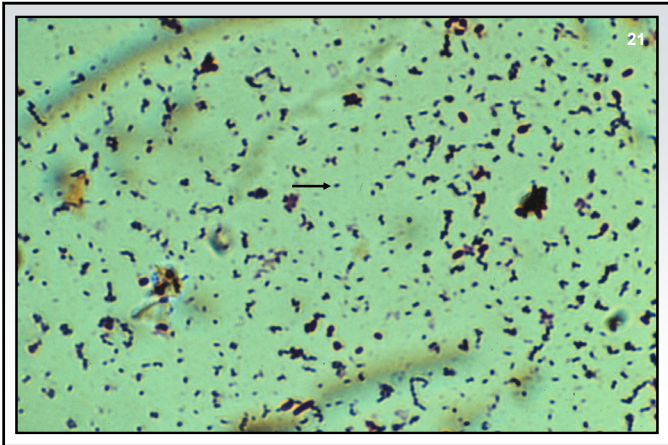


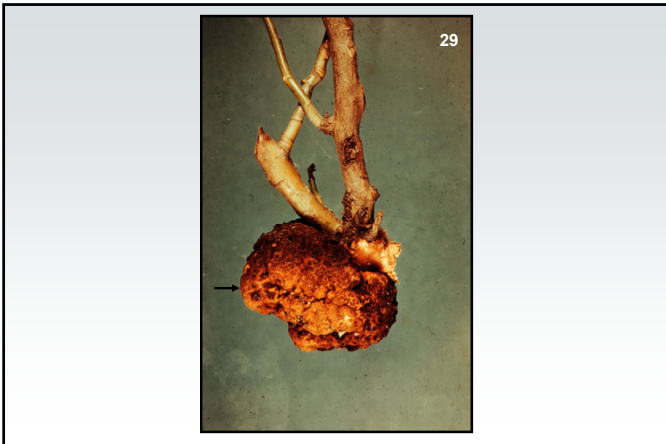
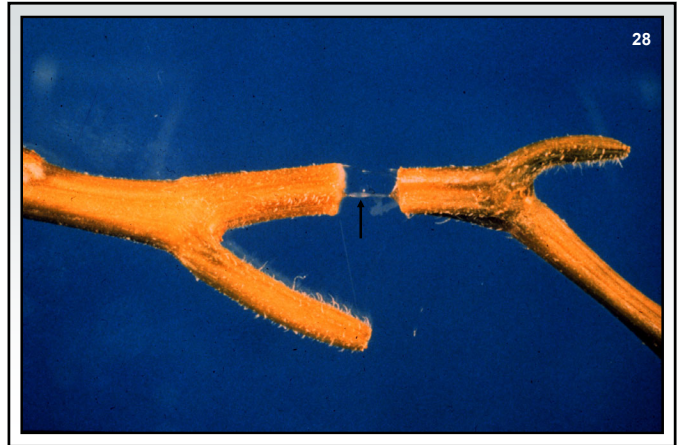
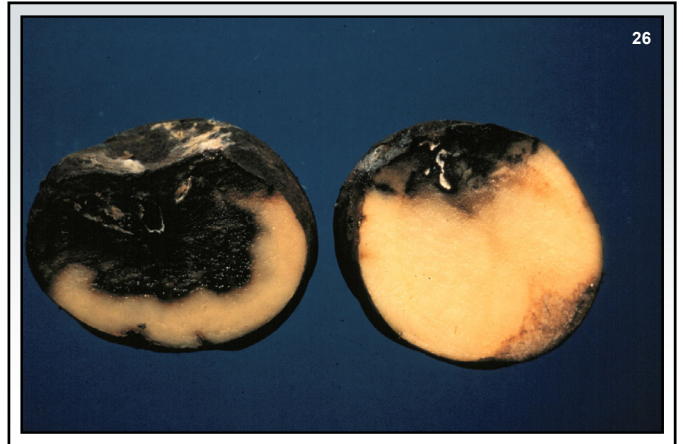


Fundamentals of Plant Diseases

Bacteria

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

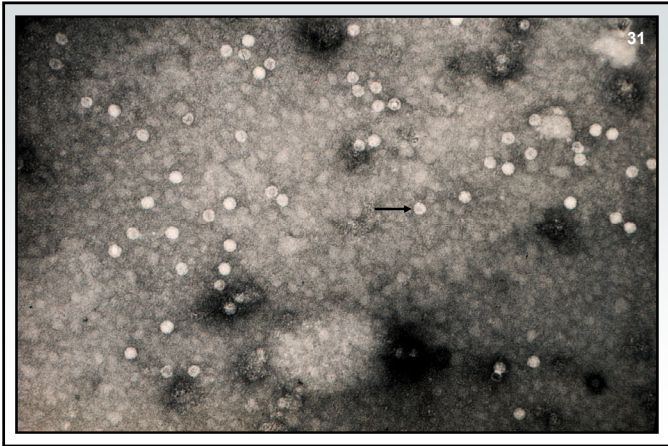


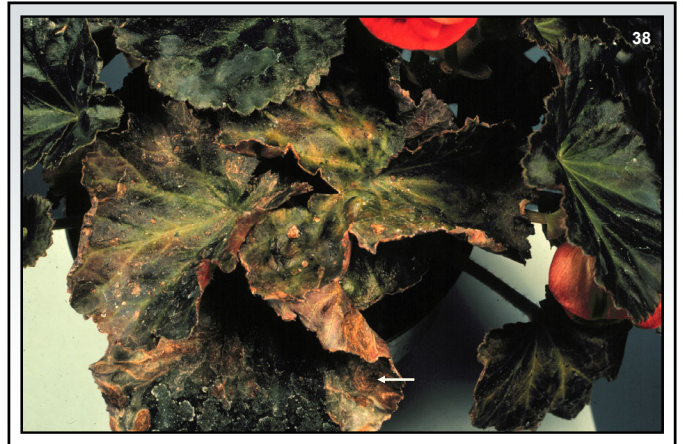


Fundamentals of Plant Diseases 30

Viruses

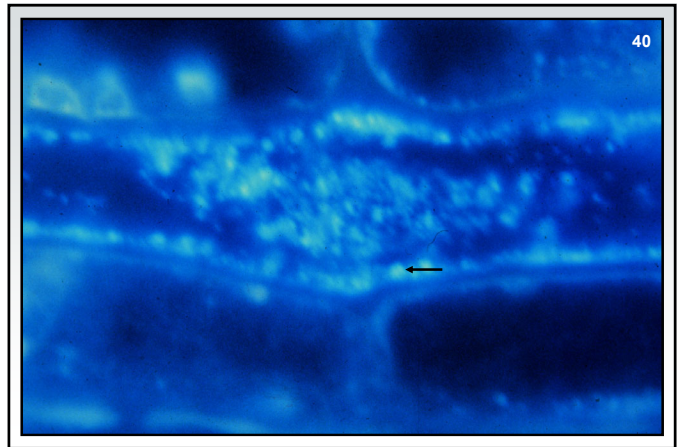
- Can only be seen using an electron microscope
- Extremely simple - nucleic acid with a protein coat
- Reproduce by taking over host reproductive machinery
- Often associated with insect vectors





Fundamentals of Plant Diseases 39
Phytoplasmas

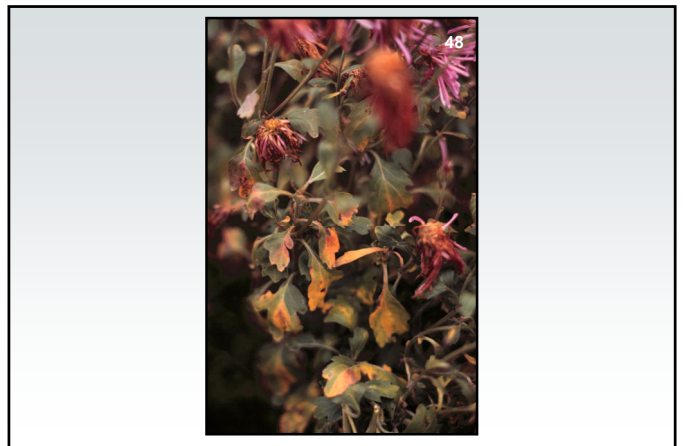
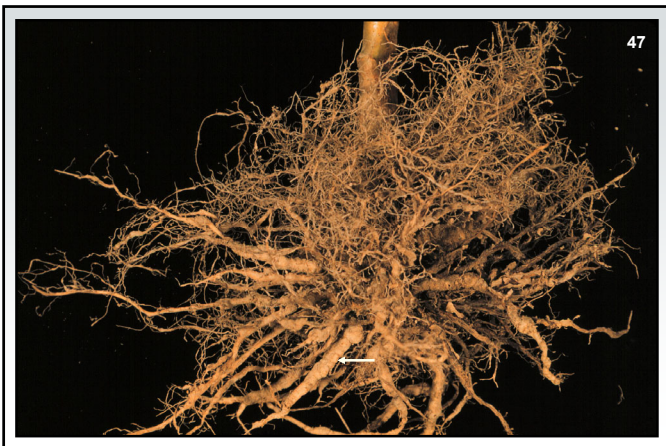
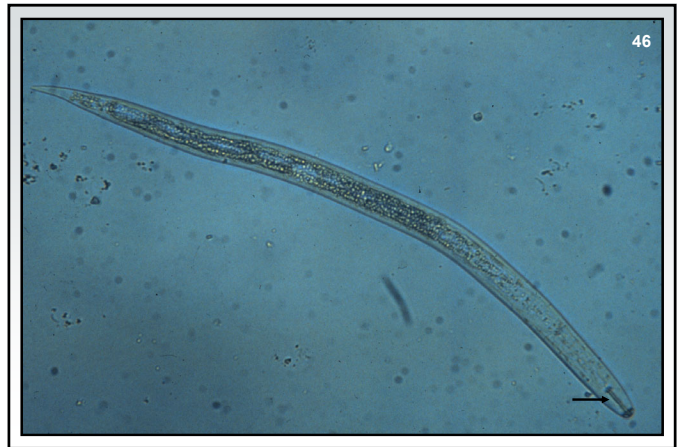
- Funky bacteria
- Small, wall-less
- Phloem limited
- Usually seen only with an electron microscope
- Reproduce by binary fission
- Transmitted by insects (leafhoppers)





Fundamentals of Plant Diseases 45
Nematodes

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

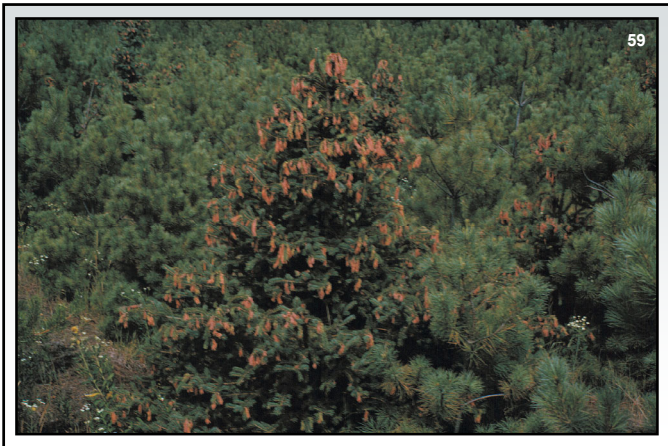
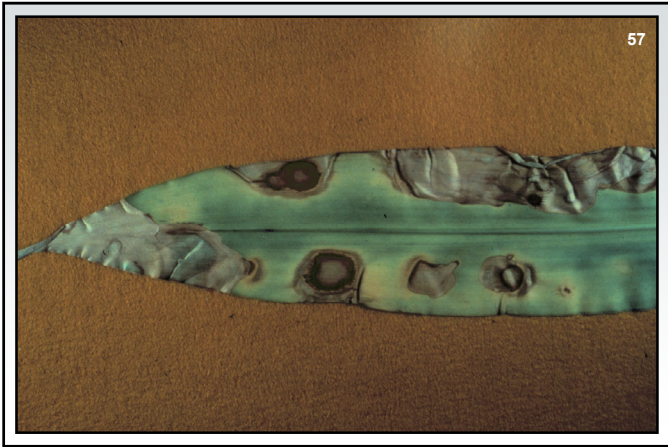


Fundamentals of Plant Diseases
Abiotic Factors

49

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







Fundamentals of Plant Diseases
Where to Go for Help

63

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>
Follow on Facebook and Twitter @UWPDDC
Subscribe to the PDDC Listserv: UWPDDCLearn

Fundamentals of Plant Diseases
Where to Go for Help

64

UW Soil and Forage Lab
2611 Yellowstone Drive
Marshfield, WI 54449
(715) 387-2523
<https://uwlab.soils.wisc.edu>