

## Wisconsin First Detector Network

### The Science (and Art) of Plant Disease Diagnosis

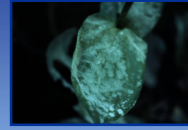
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## Disease Diagnosis “Easy Money Diseases”



Powdery Mildew



Brown Rot



Golden Canker



Cedar-Apple Rust



Plum Pockets



Black Knot

## Disease Diagnosis “The Rest . . .”

Sample



Diagnosis

## Disease Diagnosis Why Get a Professional Diagnosis?

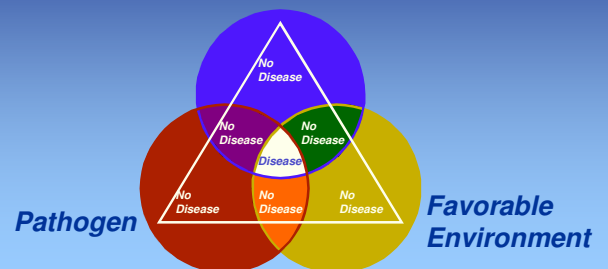
- *Diagnosis isn't necessarily easy*
- *Proper diagnosis of a disease provides the basis for successful management*
  - Resistance
  - Cultural control
  - Biological control
  - Chemical control

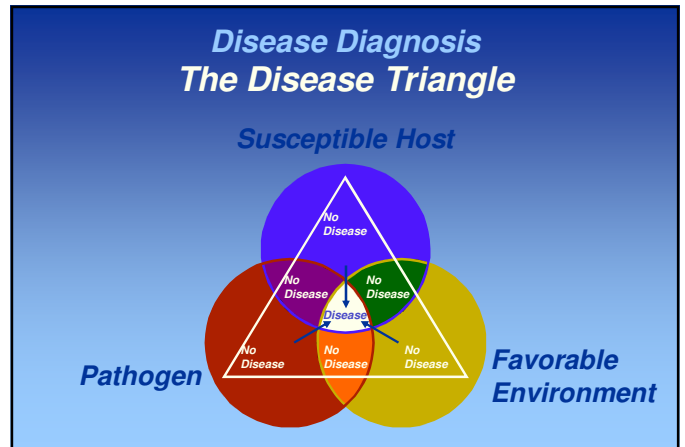
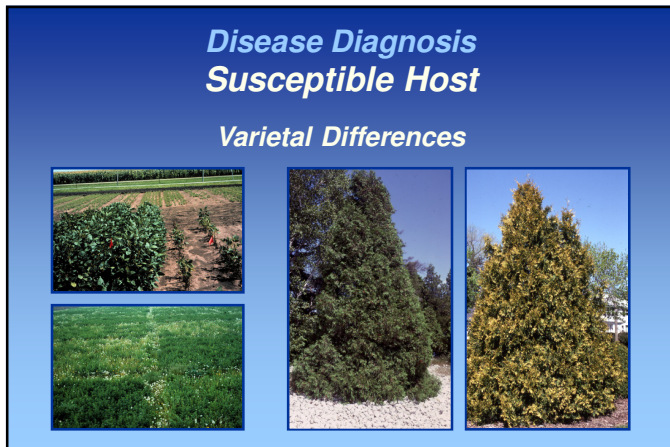
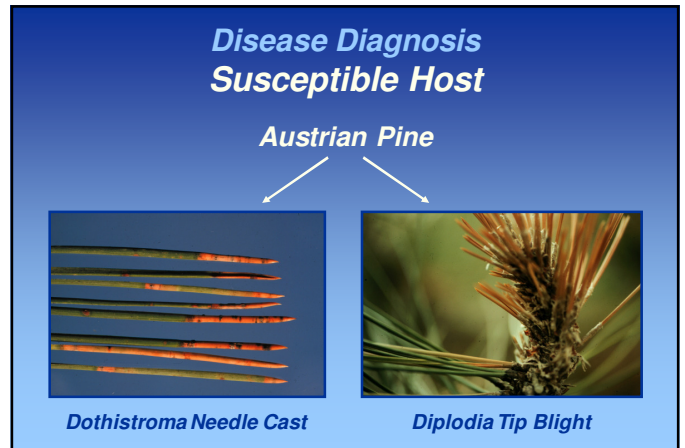
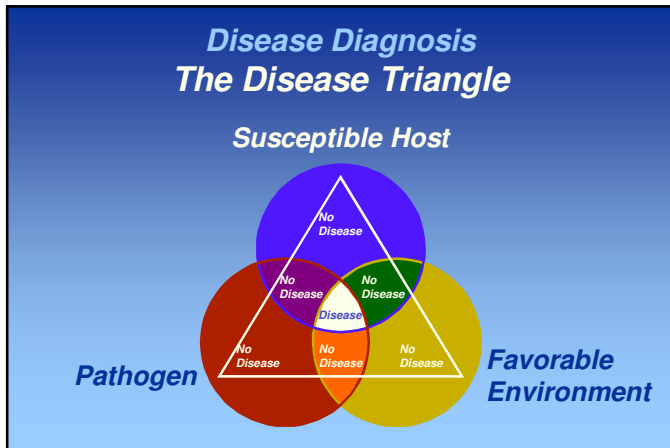
## Disease Diagnosis Why Get a Professional Diagnosis?

- *Misdiagnosis can be costly*
  - Wasted time, effort, money
  - Unsuccessful management
  - Negative effect on future disease management
  - Negative environmental impact

## Disease Diagnosis The Disease Triangle

Susceptible Host





## Disease Diagnosis Symptoms

### Discolorations



## Disease Diagnosis Symptoms

### Discolorations



## Disease Diagnosis Symptoms

### Overgrowth Symptoms



## Disease Diagnosis Symptoms

### Undergrowth Symptoms



## Disease Diagnosis Symptoms

### Wilt Symptoms



## Disease Diagnosis Symptoms

### Spatial Patterns



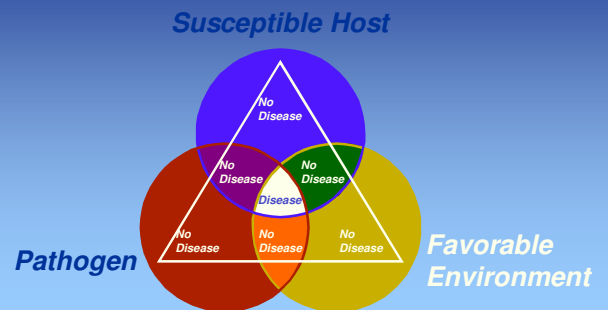


## Disease Diagnosis Symptoms

### Temporal Patterns



## Disease Diagnosis The Disease Triangle



## Disease Diagnosis Favorable Environment

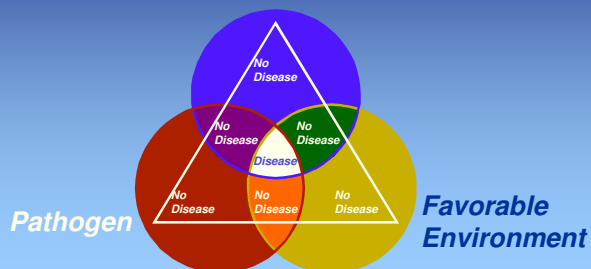
- **Weather environment**
  - Summer conditions
    - Moisture (rainfall and humidity)
    - Temperature
    - Severe weather
  - Winter conditions
    - Fall/winter transitions
    - Snow and ice cover
    - Freezing and thawing

## Disease Diagnosis Favorable Environment

- **Soil environment**
  - Type (clay vs. sandy)
  - Drainage
  - Fertility and pH
- **Chemical environment**
  - Fertilizers, pesticides and herbicides
  - Industrial air pollutants
  - Heating system contaminants

## Disease Diagnosis The Disease Triangle

### Susceptible Host



## Disease Diagnosis Pathogens in the Field

### Macroscopic Examination



## Disease Diagnosis Pathogens in the Lab



Microscopic Exam



Incubation



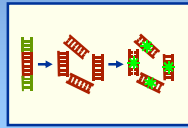
Serological Tests



Bioassay



Isolation



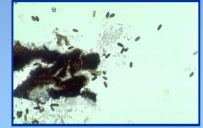
DNA-Based Tests

## Disease Diagnosis Putting It All Together



Drought

Diplodia Tip Blight



## Disease Diagnosis Non-Diseases: Abiotic Disorders



Chlorosis



Impetis Injury



Salt Damage



Blossom End Rot



2,4-D Injury



Urine Damage

## Disease Diagnosis Non-Diseases: Abiotic Disorders



Cold Injury



Winter Injury



Heat Injury



Drought Stress

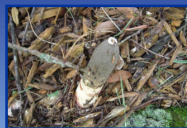


Improper Planting

## Disease Diagnosis Non-Diseases: Other



Maple Eyespot Gall



Stink Horns



Broad Mite Injury



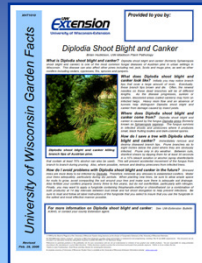
Slime Mold

## Disease Diagnosis Submitting a Sample



- Sample Collection
- Sample Storage/Packaging
- Supplemental Information
- Drop off/Shipping
- Pricing

## Disease Diagnosis Submitting a Sample



## Disease Diagnosis Where to Go for Help

**Plant Disease Diagnostics Clinic**  
**Department of Plant Pathology**  
**University of Wisconsin-Madison**  
**1630 Linden Drive**  
**Madison, WI 53706-1598**  
**(608) 262-2863**  
**[pddc@plantpath.wisc.edu](mailto:pddc@plantpath.wisc.edu)**  
**<http://pddc.wisc.edu>**  
**Follow the clinic on Twitter @UWPDDC**