

# Scouting and Recognizing Plant Disease Symptoms to Optimize the Timing of Biopesticide Applications

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# Plant health terms of reference

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## **Abiotic factors (Environmental factors)**

- Soil and air temperature, soil/media type, pH, nutrient availability, soil moisture levels, rainfall, etc.

## **Biotic (living) factors**

- Plants, soil organisms, diseases

## **Disease**

- Plant pathogens or environmental factors that interfere with plant physiology

## **Symptoms**

- The visual expression of a disease, pest or environmental factor
- Diseases, pests or environmental factors will cause changes in plant appearance, yield and/or quality

**Scouting is about noticing these changes and being able to determine the cause**

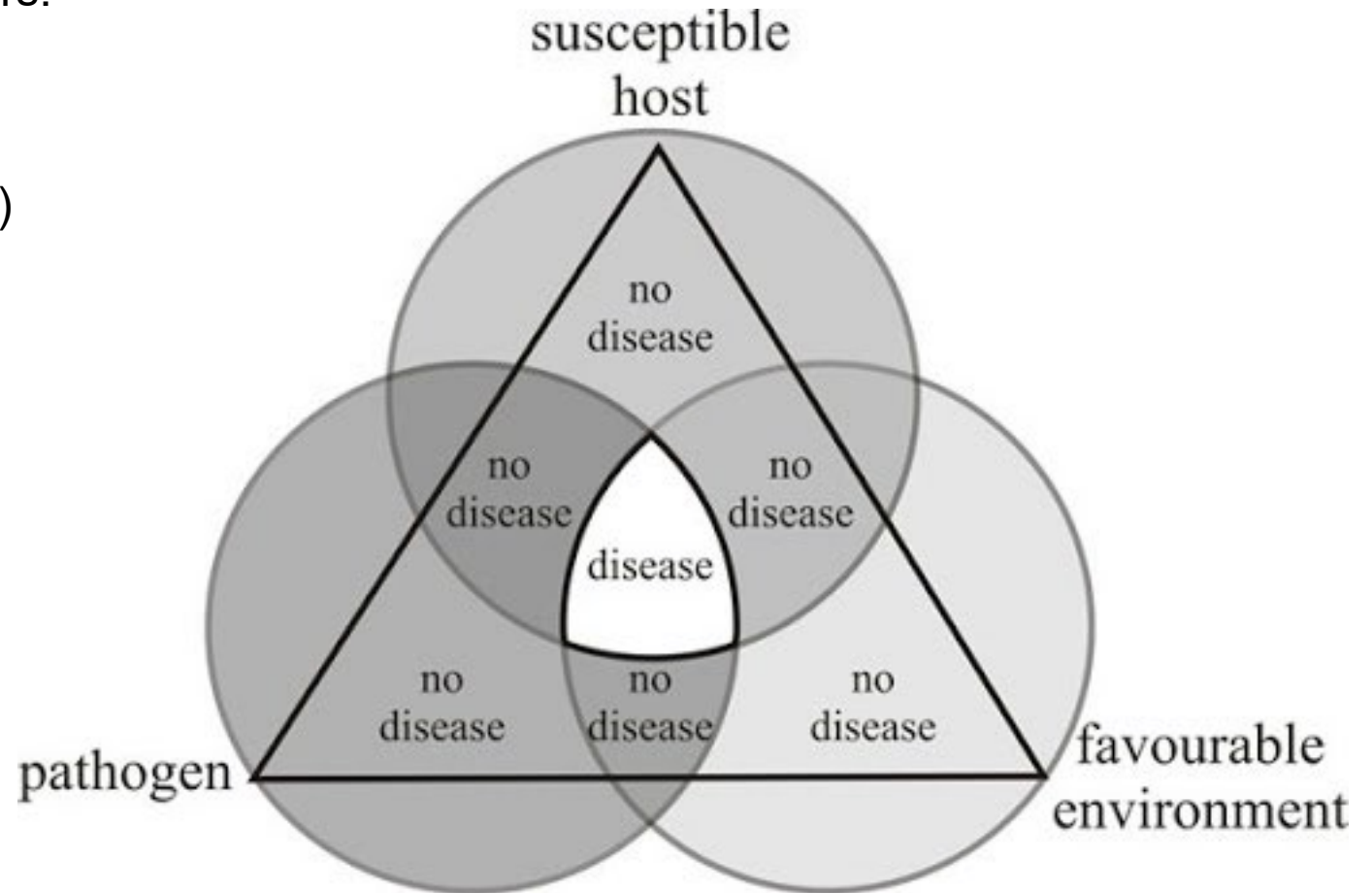
**Correct diagnosis is essential to effectively manage plant health problems**

# The infamous <sup>disease</sup> triangle

Plant infection depends on these three factors:

- Susceptible host
- Favorable environment for disease
- Disease causing organism (the pathogen)

Disease results **only** if all three occur simultaneously



## Essentials

- Make sure you have enough light to see the plant and any symptoms
- Turn leaves over
  - Many pests and diseases (NOT ALL) start life on the underside of leaves
- Check roots
  - Things may look great above-ground, but things below can tell a different story
- Be consistent
  - Take notes, take pictures
  - These provide records for review and are invaluable for future years

# Some typical symptoms

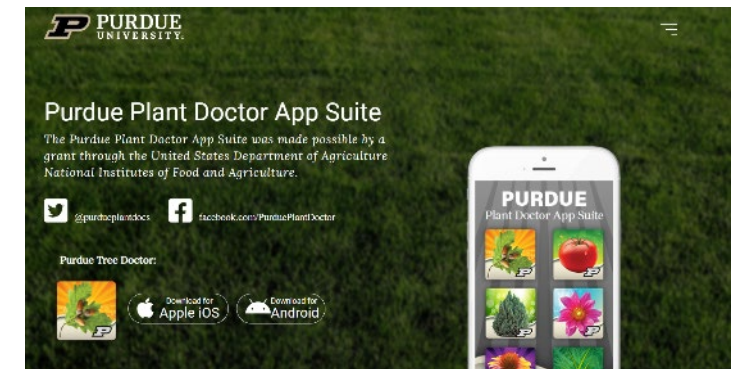
## Initially, similar to drought & starvation:

- Plants appear off-color
- Weakened and susceptible to attack
- Younger plants usually killed rapidly
- Older plants decline over time
- Wilting and dieback occur later
- Roots discolored, have brownish streaks



# Observations and diagnoses

- Making an accurate diagnosis depends on the disease having **unique symptoms**
  - Many diseases produce similar symptoms, e.g., ‘damping off’ in seedlings
  - May be caused by *Pythium*, *Fusarium*, *Rhizoctonia* (all fungi but...)
- Experience – has this been seen on-site in this crop previously?
- What resources are available to assist in the ID?
  - Extension specialists, publications
  - Phone apps, e.g., *Purdue Plant Doctor* <https://purdueplantdoctor.com/>
- What other factors support your diagnosis?
- Take pictures, document location, build your library for future reference



Commonly seen in poinsettia at propagation

- Frequently caused by the bacterial pathogen *Pectobacterium* (*Erwinia*)



# Common fungal diseases: Powdery mildew





# Common fungal diseases: Rusts



# Common fungal diseases: Downy mildew



# Common fungal diseases: Botrytis

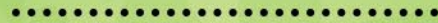


# Bacterial leaf spots vs Fungal leaf spots





# Questions ?



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