Diagnosing Plant Problems – A schematic approach

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“Treatment without diagnosis, as in medicine, is malpractice” – Alan Siewert
Why do we need to diagnose?

- Adapt proper treatment – Incorrect diagnosis leads to incorrect treatment
- Rejuvenate its life or its health back to normal
- To prevent further spread of the infestation
How to diagnose?

- Some plant problems are obvious. Example – presence of insect pest like Japanese beetle
- A schematic approach of gathering facts and info should be followed
- Analyze the facts
- Follow up with client
1) Collect contact information from the client
   - Date
   - First name
   - Phone number

2) Home owner or commercial landscaper?
3) What plant is it?

Mountain Ash
(Sorbus americana)

Green Ash
(Fraxinus pennsylvanica)

Photo credit: New York Invasive species
Resources for Plant I.D.

- Websites –
  - http://www.co.brown.wi.us/departments/page_22f218f48a7c/?department=68d3c3d55278&subdepartment=15770af543fd

- Books

- Specialists – County Agents, Dr. Laura Jull, Dr. Mark Renz
  - http://www.uwex.edu/ces/ag/plantdoc/
4) What is normal for the plant?

Skyline Honeylocust

Baldcypress fall color

Manual of Woody Landscape Plants – Michael Dirr
Normal or Abnormal?

Arborvitae
Normal or Abnormal?

Red Maple

Harlequin Norway Maple
5) What are the common problems associated with the plant?

http://greenindustry.uwex.edu/
6) What exactly do you see that looks abnormal?

- Abnormalities – signs and symptoms
- Signs – actual agent/pathogen
- Symptoms – the result of the pathogen on the plant; or what the pathogen does to the plant
Sign or symptom?

Symptom
Symptom Complex

Sign: Stem Girdling Root

Symptoms
7) When did the symptoms first appear?

- Spring
- Summer
- Fall
- A week ago? A month ago? Or years ago?
8) How much of the plant is affected?

- Entire plant
- One side of the plant
- Sporadic
- Lower portion of the plant
- Upper portion of the plant
9) What do you see on other plants?
10) What is the site condition?

- Soil pH?
- Sun or shade?
- Exposure to wind, salt spray?
- Upland or lowland?
- Lack of moisture (too much mulch)
- Construction (past 4-5 years ago)
- Soil fertility
- Exposure to deer, rabbits?
11) What is the maintenance history of the plant?

- When was it planted/transplanted? Or how old is the plant?
- How often is it watered?
- How often is it fertilized?
- Any pruning operation?
- Any pesticide spray?
12) What’s the environment history?

- Is it cold hardy to our region?
- Any abnormal winter (fluctuating winter temperatures)?
- Freezing injury in spring?
- Severe drought or too much moisture?
- Any micro-environmental condition?
13) What does the client think the problem is?
14) What additional samples/pictures are needed to examine the case?

- Examine the roots, shoot/canopy, trunk, overall landscape layout
- Important to bring digital pictures and live portion of the infected specimen
B) Analyze the facts
15) What is the diagnosis?

- Determine if it is biotic (insects, diseases) or abiotic (human or nature like heat, soil pH, herbicide drift)
## Abiotic vs. Biotic

### Insect & Diseases (Biotic)

1. Random occurrence on the plants
2. Spreads gradually over time
3. Symptoms are confined to same plant species in that location

### Environmental (Abiotic)

1. More defined pattern
2. Relatively short period of time to infect
3. Symptoms can be seen in several other plants in the same location
16) Couldn’t figure out or need more time?

- Don’t hesitate to let the client know that we need more time to do research
- Approach County Agent/State Specialist for guidance; Send samples and pictures

- Brian Hudelson – UW Plant Pathology Extension and Director of Plant Disease Clinic
- Phil Pelletier – UW Entomologist
- Paul Koch – Turf Diagnostic Lab
- Doug Soldat – Soils
- Mark Renz – Weed ID
- Laura Jull – Woody Ornamental Specialist
- AJ Bussan – Vegetable Production Specialist
- Brian Smith – Small Fruit Crops
C) Follow Up
16) Follow up with client

- **Significance of the problem**
  - Cosmetic pest and diseases will not affect the plant health
  - Detrimental issues that can impact plant health
16) Follow Up with Client?

Treatment Recommendation
Always refer to University Extension information
- hort.uwex.edu
- learningstore.uwex.edu

1) If no info available through UWEX, refer to UMN, MSUE, or Univ of IL Extension

- Give priority to cultural and mechanical means of control
- Don’t recommend homemade pesticides unless stated in Extension fact sheets
D) Documentation
17) Document Your Diagnosis

- Digital Photographs
- Specimen collections
- Herbarium

Plum Curculio Damage Symptom
Common Missteps
Jumping in to Quick Conclusion
Common Missteps

- Jumping to a quick conclusion
- Not gathering enough information
  - Leading questions
  - Not listening carefully or clarifying
- Using incorrect resources
- Not saying “I’ll research it and get back to you.”
Practice – What would you ask?

1. I used to get lots of raspberries every year but now I hardly get any.
2. My evergreen is turning brown.
3. What is eating my flowers?
4. Potato leaves have brown edges and spots.
5. My shoes are turning rusty brown when I walk in the lawn? What’s going on with the lawn?