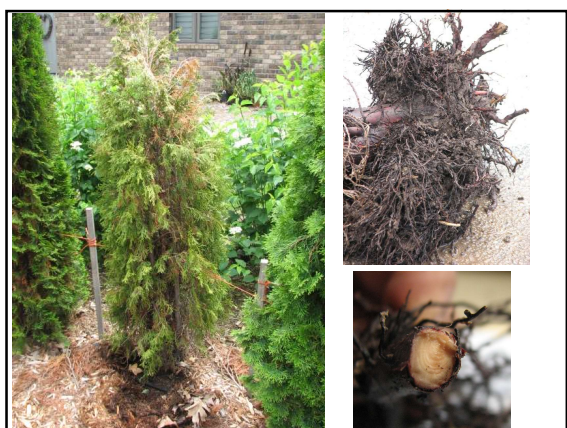



Why proper diagnosis?

- Proper treatment/ Health management
- Rejuvenate growth and prolong its life
- Save time and investment
- Prevent spread of infection

Green Ash (*Fraxinus pennsylvanica*) Mountain Ash (*Sorbus americana*)

Challenges in plant diagnosis?

- Identifying the plant correctly – Ash vs Ash



Challenges in plant diagnosis?

- Obvious vs Obscure plant problems



Challenges in plant diagnosis?


- Need more samples



Challenges in plant diagnosis?

- Takes time to diagnose some cases
- Need our state specialist help


How & Where?



- Identify plant, weed
- Identify insects
- Identify diseases
- Identify abiotic signs

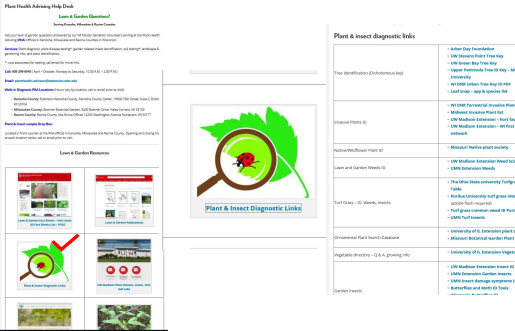
Schematic Approach

Step 1. Identify the plant



- Multiple leaves (healthy condition) in a twig/branch
- Fall coloration
- Flowers (bloom time, color, pattern), fruits
- Bud shape
- Bark color & pattern
- Where it is found?
- Any other features?

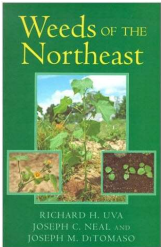
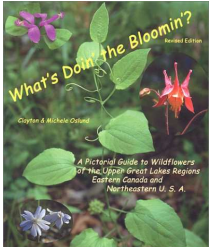
go.wisc.edu/planthealthadvising



Plant & Insect diagnostic links

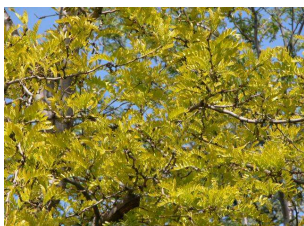
<ul style="list-style-type: none"> • The University of Wisconsin-Madison • The University of Wisconsin-Stevens Point • The University of Wisconsin-Eau Claire • The University of Wisconsin-La Crosse • The University of Wisconsin-Oshkosh • The University of Wisconsin-River Falls • The University of Wisconsin-Superior • The University of Wisconsin-Tulsa • The University of Wisconsin-Whitewater 	<ul style="list-style-type: none"> • The University of Wisconsin-Madison • The University of Wisconsin-Stevens Point • The University of Wisconsin-Eau Claire • The University of Wisconsin-La Crosse • The University of Wisconsin-Oshkosh • The University of Wisconsin-River Falls • The University of Wisconsin-Superior • The University of Wisconsin-Tulsa • The University of Wisconsin-Whitewater
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Resource Books





Step 2: What's normal?

- Get to know the species and its cultivar characteristics




Skyline Honeylocust



Baldcypress fall color


Reference
guide




**Common
Sense
Moment!**

- Manual of Woody Landscape Plants – Michael Dirr
- Fruit cultivars of Southern Wisconsin – UW Madison Extension publication
- Vegetables – Seed catalogs
- Plant & insect diagnostic link (go.wisc.edu/planthealthadvising)

Normal or Abnormal?




Red Maple




Harlequin Norway Maple

Normal or abnormal?



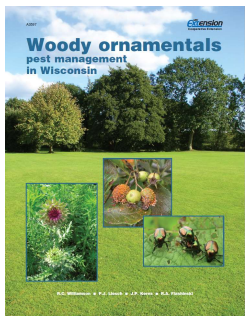
Vanderwolf pyramidal pine



Freeman maple

Step 3. Common problems with woody plants ?

learningstore.extension.wisc.edu



Key pesticide considerations. Several insecticides listed for use on woody ornamentals have warning labels that restrict their use to certain species of plants. It is important to read the label carefully and use only the insecticide and use it in the manner specified. Insecticides such as cyfluthrin, permethrin, bifenthrin, deltamethrin, and lambda-cyhalothrin are labeled for use on a wide range of plants. For more information on pesticide use, visit the University of Wisconsin Extension website at www.wisc.edu/extension.

Species	Year planted	Insecticide	Remarks
Red maple	1st year	cyfluthrin	Apply to the top of the tree in late May/early June.
	2nd year	cyfluthrin	Apply to the top of the tree in late May/early June.
	3rd year	cyfluthrin	Apply to the top of the tree in late May/early June.
	4th year	cyfluthrin	Apply to the top of the tree in late May/early June.
Harlequin Norway maple	1st year	cyfluthrin	Apply to the top of the tree in late May/early June.
	2nd year	cyfluthrin	Apply to the top of the tree in late May/early June.
	3rd year	cyfluthrin	Apply to the top of the tree in late May/early June.
	4th year	cyfluthrin	Apply to the top of the tree in late May/early June.

Step 3: Common problems with vegetable crops

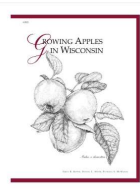







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Step 3: Common problems with fruit crops






Diagnosing Apple Problems During Fall Harvest Season

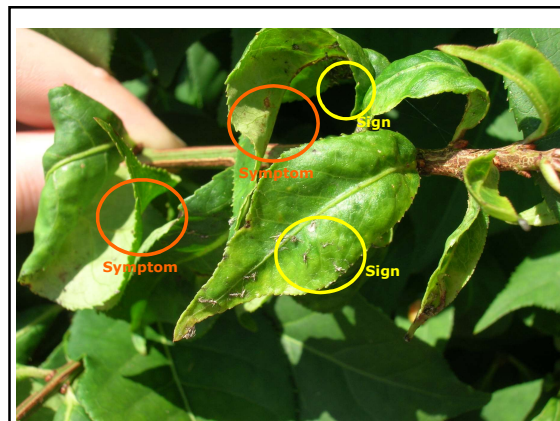
As the fall harvest season approaches, it is important to identify and diagnose any problems that may be affecting your apple crop. This publication provides information on common apple problems and their causes. It also provides information on how to diagnose and manage these problems. For more information, visit the University of Wisconsin Extension website at www.wisc.edu/extension.



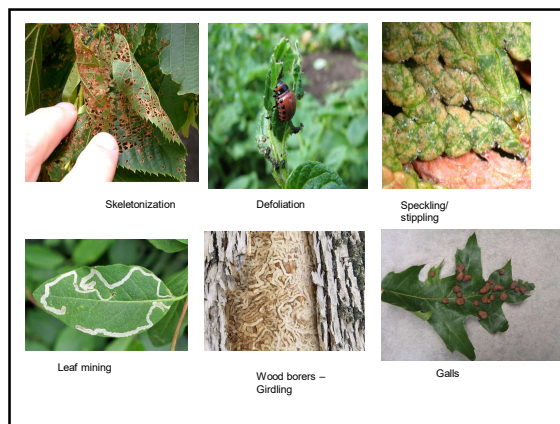


Step 4: Looks for signs and symptoms

- Signs – actual agent/pathogen
- Symptoms – the result of the pest/pathogen on the plant; or what the pathogen does to the plant




Common signs and symptoms of pest and diseases?



Signs of diseases

- Physical evidence of the pathogen



White powder




Rust pustules




Bacterial ooze

Fungal Spots & Lesions




Spots – small & rough circular dead areas




Lesions – large and more irregularly shaped

Bacterial Leaf Spots & Lesions




Yellow halo




Limited within veins & have water soaked lesions

Necrotic Blights




Fungal blight



Bacterial blight

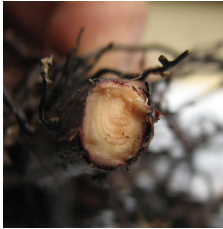
Necrotic Cankers



Sunken, discolored areas

Rots

- Rots – total destruction of the plant tissue
- Bacterial rot (soft rot) – disintegrates to slimy and watery
- Fungal rot (dry rot) – disintegrates to dry



Wart

Caused by virus, bump-like growth on fruit








Photo Credit: Iowa State University

Wilting

- Entire plant droops – blocks water conducting tissue (Xylem) – vascular wilt
- Fungi vascular wilt – Dutch elm disease, oak wilt, verticillium wilt




Other Symptoms



- Witches broom symptom caused by Phytoplasma

Step 5: Asses the entire plant for any other signs and symptoms



Symptom Complex – Girdling Root

Sign: Stem Girdling Root


Symptoms

Step 6: When did the symptoms/sign first noticed?

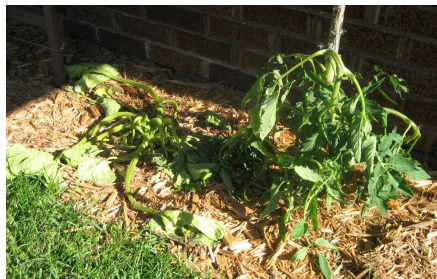
- Spring
- Summer
- Fall
- A week ago? A month ago? Or years ago?

Step 7: 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



Step 8: What about adjacent plants?



Step 9: What is the site condition?

- Soil pH ?
- Soil texture, compaction?
- Close to roads?
- Next to a drain spout?
- Low lying area?
- Next to a building/ side walk/ driveway
- Any new construction?
- Black walnut tree with in 50'?
- Too much shade? Any neighboring large trees?



Step 10: What is the maintenance history of the plant?

- When was is planted/transplanted? Or how old is the plant?
- How often it is watered?
- How often it is fertilized?
- Any pruning operation?
- Any pesticide spray?

Step 11: What's the weather condition?

- Any abnormal winter (fluctuating winter temperatures)?
- Freezing injury in spring?
- Severe drought or too much moisture?
- Any micro-environment (over crowding leading to humid conditions)?

Step 12: What You (client) think the problem is?



Diagnostic Inquiry Questions (go.wisc.edu/planthealthadvising) click online training hub

Trees & Shrubs Date: _____ Time: _____


Name: _____
 Address: _____
 City: _____ Zip: _____
 Phone: _____
 Email: _____
 Check one: Homeowner/renter Com

1. What kind of tree or shrub is this? _____
2. Is the trouble mostly in the _____ sun _____ shade _____ both
3. How many plants are affected? _____ just one _____ most to all _____ scattered
4. How much of the plant is affected? _____ just one _____ some branches _____ less than 1/3 _____ more than 1/3
5. When is your trouble on your property? _____
6. How tall is the trouble? _____ When was it planted? _____
7. What is diameter of tree trunk? _____ If sample is from a shrub, tree or _____
8. What pesticides, fertilizers, etc. have been applied? _____
9. When did symptoms first appear? _____
10. What was weather conditions prior to this? _____
11. What do the leaves/needles look like? _____ yellow _____ (dark) _____ (blackened) _____ dropping _____ look is _____ other _____
12. What do the stems/bark look like? _____ _____ (striped) _____ (normal) _____ (other) _____
13. What does the trunk look like? _____ (cracked) _____ (bark) _____ (dark/depressed area) _____ (other) _____
14. Other comments: _____

For office use only - Diagnosis
 Diagnosed by: _____

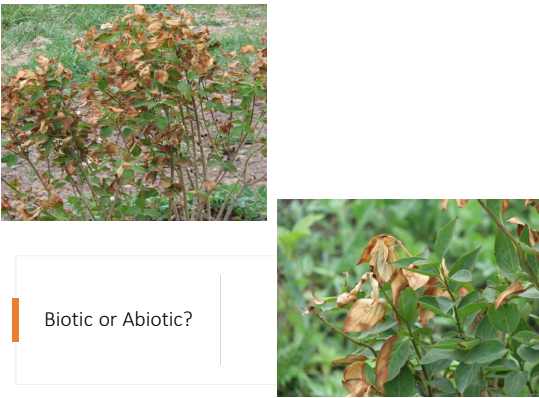
Part 2:
Analysis

- Determine if it is biotic (insects, diseases) or abiotic (human or environmental condition like heat/cold, wet/dry, soil pH, herbicide drift)




Biotic or Abiotic?



Photo credit: Dr. Paul Koch, UW Madison, Turfgrass specialist UNIVERSITY OF WISCONSIN



Biotic or Abiotic?

Abiotic vs. Biotic

<p>Insect & Diseases (Biotic)</p> <ol style="list-style-type: none"> 1) Random occurrence on the plants 2) Spreads gradually over time 3) Symptoms are confined to same plant species in that location 	<p>Environmental (Abiotic)</p> <ol style="list-style-type: none"> 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
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Couldn't figure out or need more time?

- Don't hesitate to let the client know that you need more time to do analysis
- Approach County Educator for guidance

Follow up with client

- Significance of the problem
 - Cosmetic Issue
 - Detrimental issue to plant's health



16) Follow Up with Client

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 IPM (cultural, mechanical, biological) means of control

▶ Don't recommend homemade pesticides unless stated in Extension fact sheets

▶ Don't recommend any service companies, retail centers

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."