

Diagnosing Plant problems

Master Gardener Training, 2023



1

What are we covering today?



WHERE DO WE DIAGNOSE PLANT PROBLEMS



WHAT RESOURCES ARE AVAILABLE?



DIAGNOSTIC TERMINOLOGY



PRACTICE LOOKING AT ISSUES

2

The Master Gardener Help Desk



We provide home gardening advice in the Extension office, by phone, email, or walk-ins

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Requests for information from the public are usually:

1. Plant identification
 - > Ornamentals
 - > Weeds
 - > Apple/pear/plum variety
2. Insect Identification
3. Pests in the home
 - > ants (carpenter, sugar)
 - > termites
 - > pests of stored products
 - > spiders!

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4. Critter problems
 - > Deer control
 - > voles
 - > moles
 - > gophers
5. Requests for cultural information
 - > Tree fruit
 - > Small fruit
 - > Ornamentals
 - > Lawns
 - > Pruning
 - > propagation
6. Help with plant problems
 - > Cultural
 - > Disease
 - > Insect pest
 - > Herbicide damage

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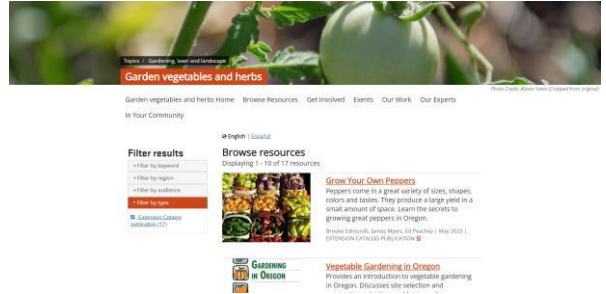
Where do we find our information?

- OSU Extension website
- PNW Management Handbooks
- [Solve Pest Problems](#)
- Reference books
- Internet searches
 - add site:.edu to your search
 - Example: apple pruning site:.edu



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catalog.extension.oregonstate.edu



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You don't have to do it all by yourself!



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OSU Extension can use other faculty and clinics...

Insects (and spiders):
 • [OSU Insect ID clinic](#)



Plant Disease:
 • [OSU Plant Disease Clinic \(\\$\)](#)



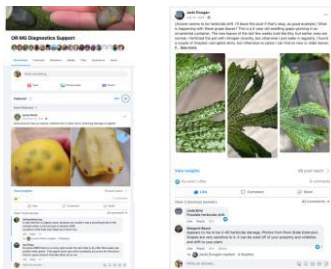
Plant ID:
 • [OSU Herbarium](#)



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Request to join:

www.facebook.com/groups/OSUMGDiagnosics/



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Inquiries to avoid:

1. Commercial operations...
 - Size of operation
 - Is product being sold?



Refer these to your MG coordinator (Me!)

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Inquiries to avoid

- 2. Human health issues
 - Poisonous plants
 - Medical plants



- 3. Legal disputes
- 4. Mushroom ID
- 5. Marijuana questions

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What don't we do?



- Water Testing
- House calls

EM 8677: Laboratories serving Oregon
 EC 628: Soil sampling for home gardens and small acreages

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Requests for information that we help with:

1. Plant ID
2. Insect ID
3. Pests in the home
4. Critter problems
5. How-to-grow information
6. **Help with plant problems**
 - Cultural
 - Biotic disease
 - Insect pest
 - Herbicide damage

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Practice Diagnosing A Plant Problem



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17



18



19

What's wrong with my tomatoes???



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21

c



22

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B



23

B



24

Factors that affect ability to diagnose problems:



1. The perception of the client of the problem

25

Keep assessments of "damage" in proportion



Zucchini (*Cucurbita pepo*)

26



Zucchini (*Cucurbita pepo*)

27



2. The client's ability to describe the problem accurately

28

3. Your own perceptions of the problem



"Bring in a sample"

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Better, much better...



Encourage clients to send or bring pictures!



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Photos give you an even better "picture"!



Encourage clients to send or bring pictures

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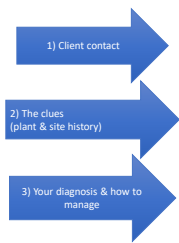
Follow the Basic Diagnostic Process

1. Properly identify the plant.
2. Is there a real problem?
3. What is the population of the affected plants?
4. Describe the pattern of damage
5. Is the problem spreading, improving or constant?
6. Describe the symptoms and signs you are seeing.



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Use an intake form or take notes to assist:



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Steps in diagnosing plant problems...

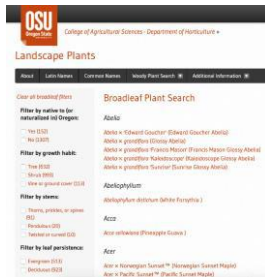
Step 1. What is the identity of the affected plant?



Euonymus spp. Powdery mildew

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Use resources to help (i.e. OSU plant ID website: <https://landscapeplants.oregonstate.edu>)



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Step 2. Determine that a "real" problem exists

-What is normal?



Japanese Cedar (*Cryptomeria japonica*) with Incense Cedar (*Calocedrus decurrens*) in winter

36



Pinus contorta 'Chief Joseph' in winter

37

Pinus sp. in midsummer



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Double file Viburnum (*Viburnum tomentosum*)

39



Double file Viburnum (*Viburnum tomentosum*)

40



(*Brassica oleracea*)-Black Leg (Phoma Stem Canker)

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Step 3. Is there a "population" of the plants? How many are affected?



Arborvitae (*Thuja occidentalis*)

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Boxwood (*Buxus sempervirens*), with Hebe (*Hebe* sp.)

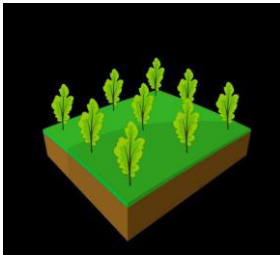
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Azalea cultivars (*Rhododendron* spp.): Powdery mildew (*Erysiphe azaleae*)

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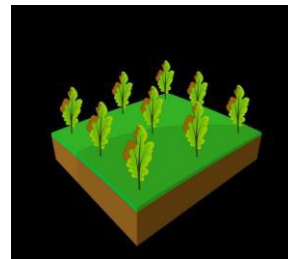
Step 4. If there is more than one plant:
Describe the pattern of damage within the population



Normal

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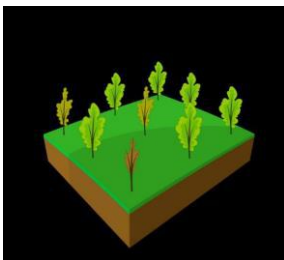
Uniform pattern=abiotic factors (non-living)
Same part of entire population affected



Abnormal

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Random pattern=biotic factors (diseases/pests)



Abnormal

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Uniform pattern

Usually the result of non-living, environmental causes
Occurs over the entire population of plants, or discrete groups



Periwinkle (*Vinca minor*)

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Arborvitae (*Thuja occidentalis*)

49



Foliar browning on *Pinus*, *Rhododendron* and *Euonymus*

50

Random pattern

> Occurs because of progressive spread of a living organism



Oriental Arborvitae (*Platycladus orientalis*): Berckmann's Blight

51



Turf: Cranefly (*Tipula* sp.) damage

52



Arborvitae (*Thuja occidentalis*): spider mites

53



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Don't overanalyze "uniform" versus "random"



Arborvitae (*Thuja occidentalis*) near La Grande, OR

55



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4a. What part or parts of the plant are affected?



Apple (*Malus* sp.):
Scab (*Venturia inaequalis*)

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Individual stems dying back entirely?



Japanese Maple (*Acer palmatum*):
Verticillium wilt (*Verticillium dahliae*)

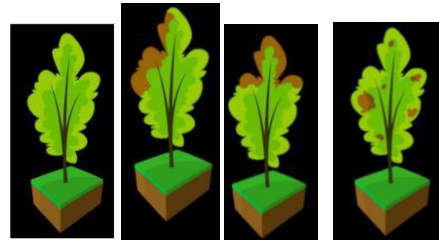
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Red Maple (*Acer rubrum*): Phytophthora Canker (*Phytophthora* sp.)

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Look for the pattern of damage on an individual plant

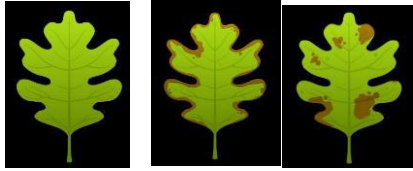


Uniform

Random

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Look for damage patterns on plant parts



Normal

A

B

61



Dwarf Alberta Spruce
(*Picea glauca* 'Conica'); sunburn

62



Noble Fir (*Abies nobilis*)

63



Rhododendron: Root Rot (*Phytophthora* sp.)

64



Hosta: drought stress

65



Rhododendron (*Rhododendron* sp.):
Powdery mildew (*Erysiphe azaleae*)

66



Tomato (*Solanum lycopersicum*): blossom-end rot

67



Beets (*Beta vulgaris*): Leafminer (*Pegomya* sp.)

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Step 5. Ask the client: When did the symptoms appear?



Peach (*Prunus persica*): Leaf Curl (*Taphrina deformans*)

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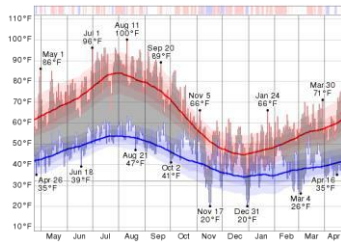
Some symptoms appear at specific times of the year



Viburnum tinus-sunburn

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Be familiar with historic weather events



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Step 5a. Ask the client: Is the problem spreading, improving or constant?



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Step 6. Take notes on the symptoms & signs

- Think of these as more clues
- Can be 'tells' of specific problems
- Have to know the language
 - We'll do an activity in a little bit
- Symptom vs sign?
 - Ways to describe the damage

73

Symptoms are how the plant reacts.
Physical characteristics of a problem expressed by the plant.



Cucumber (*Cucumis sativus*): wilt

74

Signs are evidence of the actual causal agent
(the disease, insect, vertebrate, etc.)



Goldenchain tree (*Laburnum x watereri*): aphids

75

Exercise: Symptoms & Signs

Directions:

- Look at numbered photos
- Use the glossary from Sustainable Garden to pick the best term to describe what you are seeing
- We'll discuss answers as a group

76



On apple roots



On oak leaf



On trunk (unknown sp.)

77



Aspen

78

#3



Pepper

79

#4



Rhododendron

80

#5



Tomatoes



Strawberry

81

#6



Soybean

82

#7



Apple

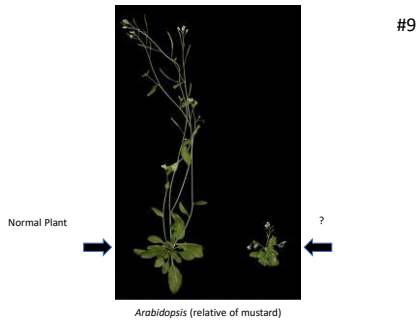
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#8



Quince

84



#9

85



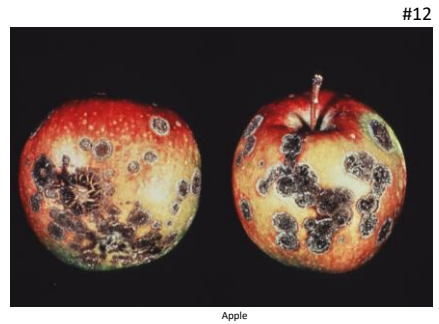
#10

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#11

87



#12

88



#13

89



#14

90

Black "stuff" on Morning Glory leaves

#15



Rhododendron

91

#16



Roots of a pea plant

92

#17



Actual size 1.5-5mm; lives in the soil and feeds on roots

93

#18



94

#19



On a fallen oak leaf

95

#20



Oak

96



Trunk of Butternut

#21



Apple

97



Apple

#22

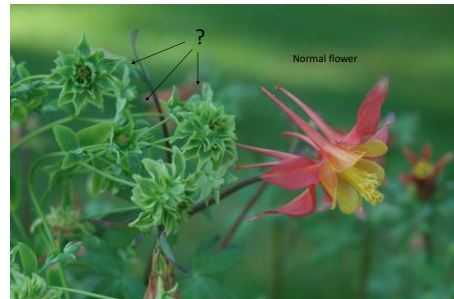
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Underside of a strawberry leaf

#23

99



#24

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Bonus question: This isn't on your list, but might show up in mulch-what is it?

#25



101



#26

What is the shiny stuff on this leaf?

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Activity #2: Problem Scenario

Instructions:

- View photos and listen to the scenario
- Use the “Basic Diagnostic Process” we’ve described to help answer each question
- I will answer questions as the client

Photinia x fraseri (Fraser Photinia)
Broadleaf evergreen shrub

A



healthy

130

131



A

132



A

133



A

134



135

B

Thuja occidentalis,
(Common Arborvitae or
Eastern/American
Arborvitae)

Healthy



136



B

137



B

138

What's wrong with my potatoes?!



B

139

What's wrong with my tomatoes???



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Resource List

Sustainable Gardening: Chapter 16

Other references:

- PNW Disease Management Handbook
 - <https://pnwhandbooks.org/plantdisease/diagnosis-testing/disease-diagnosis-control>
- <http://plant-clinic.bpp.oregonstate.edu/year>
- [Pest Management guides for crops](#)

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How do we communicate with the public?

- Through the Plant Clinic (Wear your badge!)
- OSU Facebook Posts
- MG Facebook posts
- Other socials? Want to get involved?

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home & family

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ASK A MASTER GARDENER

Fighting powdery mildew



Q I'm having trouble with my plants. They seem to be getting powdery mildew. Can you help?

A Powdery mildew is a common fungal disease that affects many plants. It is caused by a fungus that grows on the surface of leaves and stems. The fungus produces a white, powdery growth that can be seen on the underside of leaves. The growth can spread to other parts of the plant, including the stems and roots. The disease can be fatal if left untreated.

To prevent powdery mildew, it is important to keep your plants healthy. This means watering them properly, fertilizing them, and pruning them. You should also avoid overhead watering, as this can create a humid environment that is favorable to the fungus. If you notice powdery mildew on your plants, you should act quickly. There are several treatments available, including fungicides and natural remedies like neem oil.



The powdery mildew growth that spread to cover the top of the leaves had only been spread by thorough watering.

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