



MASTER GARDENER
COLORADO STATE UNIVERSITY
EXTENSION

CMG GardenNotes #333

Worksheet: Plant Pathology

Instructors/coordinators: Please note that answers may vary if samples change.

Activity 1: Symptoms vs. Signs

Lilac Leaves (if available in your county)

Mrs. Johnson hires ABC Landscape Company to take care of her lawn. They mow and spray for weeds. On a recent visit in August, ABC applied a weed killer to the lawn. A week later, Ms. Johnson notices the leaves on her lilac or _____ are turning white. She is certain that the weed killer ABC sprayed on the lawn must have caused this damage because the problem appeared so soon after the treatment.

She brings in a sample of the leaves for you to look at to verify her assumption. Given the information we have covered so far in class:

A. What will you look for first? Describe them.

(Hint: chlorosis, necrosis, wilting and stunting are examples)

Symptoms: white or gray strands or fluff; leaf color may be grayish; leaves may have white patches on them.

B. What will you look for next? Describe them if found.

(Hint: spores and fruiting structures are examples)

Signs: mycelium (the strands described above); also small black or tan colored bead-like structures (cleistothecia – fruiting structures)

Activity 2: Symptoms vs. Signs

Currant or Hawthorn leaves (if available in your county)

Mrs. Johnson has another sample to show you. She is still certain that ABC Landscape must have damaged plants in her landscape. Now she shows you some _____ (currant, hawthorn or other) leaves.

The leaves developed these spots about the same time the lilac problem appeared.

Given the information we have covered so far in class:

A. What will you look for first? **Symptoms**
(Hint: *chlorosis, necrosis, wilting and stunting are examples*)

B. What will you look for next? **Signs**
(Hint: *spores and fruiting structures are examples*)

C. Describe the symptoms:

The **currant's** symptoms are circular, brown spots or lesions on the leaves. Depending on sample, centers may be lighter brown.

The **hawthorn's** symptoms may be described as yellow, red, orange or brown leaf spots, or some combination of the colors.

If you used different samples, note the symptoms:

D. Are there signs present? Describe them if you find them.

Currant signs are present and are the black bead-like fruiting structures embedded in the center of the necrotic spots.

Hawthorn signs are present and may appear as sea urchin like structures, hairs or tubes on the leaf undersides.

If you used different samples, note the signs:

Activity 3: Identifying Plant Disease

Note: Use a twig sample available in your county and/or photos

Carrie purchased a home this summer. As leaves began to drop in the fall, she noticed the strange growths on a Canada red cherry [or insert other sample] _____. They are scattered throughout the tree (see picture). She cut off a small branch and brought you the sample.

1. Describe the symptoms.

Rough, brown or black growths on branches.

2. Describe signs if you see them.

Actually the “knots” (brown/black rough growths) are a sign as well as a symptom. They are called stroma. When the fungus infects the plant tissue, fungal hormones stimulate the production of callus tissue, which the fungi then colonize. The fruiting structures are embedded within the stroma and spores are released under moist to wet spring conditions.

3. What is your diagnosis?

Black knot of cherry, chokecherry and plum

4. How can she manage the problem?

Prune out affected branches at least 10 cm (4 inches) beyond gall.

Remove branches from site.

Activity 4: Abiotic vs. Biotic

Aspen or Linden leaves (if available in your county)

Note: Use the provided sample or photos.

The next client is Mr. Roberts. He has an aspen/linden [*or other*] _____ tree. All of a sudden many of its leaves began turning brown and dropping off. He wants to know if this problem is caused by a disease or something else. He is in a hurry, so he leaves the sample with you.

- A. What do you notice about the *distribution* of the necrosis on the Roberts tree?

The damage is confined to the outer edges of the leaves. All the samples show the same similar damage.

- B. How does the distribution of the necrosis on Mr. Roberts' tree compare with the distribution of the damage on Mrs. Johnson's plant?

The distribution of the necrosis on the Roberts sample is uniform, along the leaf edges, while the damage on the Johnson sample is random, with the spots scattered.

Activity 5: Abiotic vs. Biotic

Given the information we have covered so far in class and your examination of the leaf samples:

Determine if the damage on the samples is abiotic or biotic and state *why*.

<u>Plant</u>	<u>Abiotic or Biotic?</u>
<u>Johnson: Lilac/Other</u>	Biotic, found signs: fruiting structures, mycelium and random damage
<u>Johnson: Currant/Hawthorn/Other</u>	Biotic, found signs: fruiting structures, random damage
<u>Roberts: Linden/Aspen/Other</u>	Abiotic, no signs found, uniform damage