Identifying Plant Diseases

By Valerie Jean Rose

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Elementary, my dear gardener

"It is a capital mistake to theorize before you have all the evidence. It biases the judgment." Sherlock Holmes, in "A Study in Scarlet"

Early on in my Master Gardener training, I made a mistake that underscored the importance of careful observation. Seeing dry, brown edges on the leaves of my potted bay laurel, I assumed it was doomed by insects or disease. I brought a few brittle leaves to the Plant Diagnostic Clinic at the WSU Skagit County Extension office, where a patient Master Gardener listened to my distress. How could I lose this plant I'd tended from a four-inch start to a four-foot shrub? "What kind of spray should I treat it with?" I implored. She said, "It doesn't look like insect or disease damage – was it exposed to harsh weather this winter?" Well yes, in fact I had left it on the patio all winter, where it was battered by the inevitable harsh winds. D'oh! Now that it spends winters indoors with my other container plants, the bay laurel is flourishing.

The important "takeaway" lessons from this experience:

1) Plant damage is often, but not always, caused by insects or disease. Exposure to adverse weather conditions, herbicides or mechanical damage (i.e. weed whackers) can harm plants. Don't jump to conclusions!
2) Our "quick-fix" culture trains us to expect fast resolutions from pills or sprays. Real remedies require patience and observation. When you discover plant damage, don't reach for a "Killz-All" treatment, which will also kill the very insects and soil life supporting healthy garden plants and ecosystems.

Disease is one potential suspect in tracing the cause of plant damage. Diseases are caused by living organisms such as bacteria, fungi or viruses. With over 50,000 plant diseases found in the United States alone, it's a challenge to identify them! Use this process to track clues and solve the mystery of the ailing plants.

Step One: What Kind of Plant?

To catch the culprit compromising your plant's health, don your Sherlock Holmes-style cape and deerstalker hat (or gardening hat and gloves) and use systematic observation and analysis. A detective's magnifying glass or similar device will help. If you don't have a Dr. Watson to chronicle your research, be prepared to take notes on your findings.

First, identify the plant in question. Sunset's Western Garden Book is very useful for our region. If you don't have this book at home, check your local library, or contact the WSU Skagit County Extension to peruse their copies. Examine pictures of healthy specimens during different seasons and stages of growth. Review the growing conditions your plant needs to thrive: do you have a shade plant in bright sunlight, or a moisture-lover in dry sand? These environmental problems can make a plant look sick without being diseased. Moving it to the right environment may resolve the problem.

Illustration by Valerie Rose

Ideally most plants should be dormant before transplanting (usually late fall or winter.) But if your shade-loving rhody is being scorched by sun, it will be much happier if you move it ASAP to a location on the east or north side of a fence or building, or shielded by trees.

Step Two: Observe the Surroundings

Sherlock Holmes often admonished his friend, saying, "My dear Watson, you look but you do not observe." Carefully observe the growth around your ailing plant. Does the problem occur on one plant, or several? Is only one species of plant affected, or are several species suffering? Diseases are plant-specific, so this is an important clue. Drought or accidental herbicide exposure would affect an entire area.

Now look at the pattern of damage: random or regular, blotchy areas of dead leaves, or a half-inch of dead tissue on every tip? Diseases tend to be more random, so this is an important clue. When did this first appear, overnight or over time? The course of illness may indicate a certain disease.

Step Three: Thoroughly Examine Your Ailing Plant

Not only was Sherlock Holmes a fictional detective, he was also a (fictional) scholarly writer. In the story "The Sign of the Four," Holmes reveals his authorship of several monographs, including 'Upon the Distinction between the Ashes of the Various Tobaccos'. Holmes lists and illustrates140 forms of cigar, cigarette, and pipe tobacco, all in the service of identifying criminals. Unfortunately Holmes does not write about tobacco mosaic virus or other plant diseases, so we must leave the fiction and turn to plant disease reference guides.

The pictorial key in Rodale's Complete Guide to Organic will help you sort through various symptoms and likely causes. Check your plant for clues matching these descriptions. Examine the entire plant, including roots, as root damage can show up as leaf symptoms. Have your Dr. Watson take notes on exactly what you see: oddly colored tissues, shrunken plant parts, swelling or galls, etc.

Don't reach for a pesticide yet! Does the plant suffer from environmental damage, pesticide or herbicide drift, or disease? Late frost damaged these newly emerging rhododendron leaves (top), leaving deformed tips on healthy leaves. Pesticide application would cause needless harm. Damage from apple scab virus appears randomly on leaves from an infected tree (bottom). Fungicide application may be useful. **Photos by Lindsey J. Dutoit/NWREC**

Turn over a leaf for more clues. Use your handy Sherlock magnifying glass and become an eye-witness. You're looking for evidence left by the culprit (which will probably not include cigar ashes, so Holmes' scholarship fails us here.) Watch for insect eggs, fungal spores or the oozing slime of bacteria. If you do find cigarette ashes, someone (not the plant) needs an ashtray. Be sure to keep smokers away from your tomatoes, which are particularly vulnerable to tobacco mosaic virus.

Step Four: Confirm Your Diagnosis, or Seek Help from the Experts

The fictional Sherlock Holmes called to himself as a Consulting Detective. Fortunately you have access to live consultants at the WSU Master Gardener Plant Diagnostic Clinics as well as non-fiction on-line or print reference tools. You can also attend the upcoming **Know and Grow Workshop** on ***Plant Diseases: A Basic Class in Plant Pathology***. You will learn to identify various categories of plant diseases and how to manage them. (See sidebar for details.) Bring samples of problem plants for identification.

By investigating plant problems systematically, you will identify the real culprits without making faulty assumptions and harming innocent bystanders. This will help determine whether the cause of spotty, wilting or yellowing leaves is disease, insects, or as simple and natural as fall leaf-drop. Keep records of your findings for future use, for, as Sherlock Holmes said at the conclusion of "The Gloria Scott'" "Those are the facts of the case, Doctor [Watson] and if they are of any use to your collection, I am sure that they are very heartily at your service."

Resources:

- Guide to Plant Disease, Oregon State University: http://plant-disease.ippc.orst.edu/intro.cfm
- Hortsense: Treatment Options, Washington State University http://pep.wsu.edu/hortsense/
- The Sherlock Holmes Scrapbook, Peter Haining, ed. Bramhall House, NY, 1974

Know and Grow Workshop

Topic:	**Plant Diseases: A Basic Class in Plant Pathology**. You will learn to identify various categories of plant diseases and how to manage them.
When:	Tuesday August 16,
Time:	1:00pm – 2:30pm
Where:	WSU Mount Vernon Northwestern Research and Extension Center 16650 State Route 536 (Memorial Highway), Mount Vernon.
Cost:	Free
Bring:	If you want, bring a sample from an unhealthy plant for identification.
More Info:	Call (360) 428-4270, extension 0 for more information.

Free WSU Master Gardener Plant Diagnostic Clinics:

- **Anacortes Plant Clinic:**
  When: Thursdays – 9 AM to 12 NOON, April through September
  Where: Anacortes Senior Center, 1701 – 22nd Street, Anacortes

- **Burlington Plant Clinic:**
  When: Wednesdays – 10 AM to 2 PM, April through October
  Where: WSU Skagit County Extension, 11768 Westar Lane, Suite A, Burlington
  (Located off of Peterson Road, near the Burlington airport)

For more information call:
WSU Skagit County Extension (360) 428-4270.
Dial "0" or press "228" to leave a message.

Sherlock Holmes on Bee Farming (from "His Last Bow"):

"But you had retired, Holmes [says Dr Watson]. We heard of you as living in a small farm upon the South Downs." "Exactly, Watson. Here is the fruit of my leisured ease, the magnum opus of my latter years." He picked up the volume from the table and read out the whole title, "'Practical Handbook of Bee Culture, with some Observations upon the Segregation of the Queen.' Alone I did it. Behold the fruit of pensive nights and laborious days, when I watched the little working gangs as once I watched the criminal world of London."