

IDENTIFYING TREE AND SHRUB PROBLEMS

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Maintaining the visual appeal of the landscape is the primary objective of the landscape management profession. Keen observation, a knowledge of plant growth and development, and experience form the basis of identifying problems which may have a negative influence on visual appeal and, consequently, its impact on the property owners. The landscape is a dynamic system. Several biological and environmental factors can influence plant performance. Problem diagnosis rests on an ability to identify subtle changes in plant performance as they relate to causal factors, whether they are primary or secondary in origin.

Plant problem diagnosis is both an art and a science. We certainly must base our diagnostic technique on scientific principles, however, we must also understand the intricate relationships between plant species, plant and pest, as well as the plant and its environment. As a consequence, in one situation the causal agent may be identified based on a single scientific factor. However, in another, the causal agent may be a complex decided upon by the artful integration of biology, environment, and experience.

Fortunately, plant diagnostics can be organized into a series of steps. An orderly progression through these steps will either expose the cause or aid to eliminate what it is not.

Step 1. Identify the plant.

It is important to know your patient. Knowing the host plant can reduce the possibilities. Certain plants are known for their susceptibility or seasonal association with disorders, for example, pin oak and iron chlorosis or premature fall color in euonymus and soil stress.

Step 2. Evaluate the appearance of the tree or shrub.

Deviations from the normal appearance will be the first indication of a problem. Signs and symptoms can be useful in categorizing the problem as insect, disease or environmental in origin. A sign is the actual visible presence of the causal agent. A symptom is the plant response to changes in the plant

initiated by the presence of the agent. Example: Leaf spots are a sign of a disease; honeydew is a sign of insects; wilting of foliage is a symptom of water stress.

Remember that one of the critical factors in evaluating the appearance is knowing what a healthy plant looks like. The evaluation then proceeds systematically from top to bottom.

Leaves are often the first general indicator of plant problems. Discoloration may be a symptom of nutrient deficiency or related to a pest. Premature fall color is usually a symptom of stress which may be environmental or soil related. Diagnosis solely on leaf coloration is usually difficult, but it leads to a further detailed examination of other plant parts.

Leaf disfiguration or leaves with holes or shredded margins may indicate insect or disease problems. If a biological pest is suspected, look for direct signs of the pest, such as cankers, fungal fruiting bodies, insect feeding damage or excrement. Twisted or malformed leaves may be associated with chemical injury from a herbicide or pesticide. Sudden changes in leaf coloration to brown or black usually indicate a change in temperature. High or low temperature extremes can cause rapid decline in foliage appearance.

Trunk and branches are next in the inspection. We are looking for obvious damage to the bark. Bark damage may be in the form of holes from insect or bird injury, cracks or fissures from environmental fluctuations, mechanical damage from lawn mower or weed whips, and girdling from rabbits or other rodents.

Bleeding bark, or slime flux, is a symptom of internal wood injury. This disorder is caused by a bacterium. The "slime" is sticky, foul smelling, and often stains the outer bark. Wounds exuding slime flux need to be drained of the fermented fluids.

Roots are the most difficult, thus most overlooked, part of the tree in diagnosis. Root injury due to construction or compaction will result in symptoms appearing in the upper portions of the plant. Root injury interferes with water and mineral uptake. As a result, this injury is expressed in the plant part farthest from the roots. Leaf scorch or dieback is the typical symptom of root-related problems. Keep in mind that symptoms of root injury are the same among a wide variety of causal factors. Symptoms are usually a result of poor uptake. Flooding, drought, or mechanical root damage will all reduce root uptake. If you suspect root injury, "dig deeper" in the investigation.

Step 3. Survey the surrounding landscape.

It is important to determine the extent of the problem. Is it isolated on a single plant, a single species, in a single area, or is it existing on several species throughout the surrounding area? Isolated problems are usually related to a specific event and could be mechanical or chemical. Insects or diseases will usually be on plants of the same genera in the surrounding area. Environmental problems related to temperature, water or wind will usually influence broader community areas.

Step 4. Review the plant history.

The first basic question is how long has the plant been in its present location. The objective is to consider or rule out any problems related to newly established plant materials. Transplant shock or site limitations during establishment may influence plant performance for several years following installation. Plant history should also include information on recent or routine cultural practice. Some plant problems may develop over time and the visual change in appearance may not occur until the following growing season. Asking detailed questions will aid in the confirmation of a cause and the eventual corrective recommendation.

Plant problems in the landscape can be categorized into four basic groups: Cultural, Environmental, Insects, and Infectious Disorders. Diagnostics begin with the orderly progression through the four steps. If the causal agent or condition cannot be pinpointed, the last step in the process is to solicit the assistance of experts. Whether through the Cooperative Extension Service at the state's land-grant university, the state department of agriculture or a private consultant, diagnostic laboratories may have the equipment and

expertise to investigate the problem on a more basic level. Remember: keen observation, a knowledge of plant growth and development, and experience will be the keys to solving many of your plant problems.