

## Diagnosing Plant Problems - An Analytical Approach

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This article is the first of a five-part series of articles on diagnosing plant problems. The goal of these articles is to provide you with some guidelines for determining the causes of plant problems. This information will mainly apply to landscape plants, but it should also be useful for indoor plants. Some of the information in this series of articles has been adapted from extension publications written by Oregon State and Washington State Universities. In this first article, two categories of plant stress will be discussed. In later articles, causes of plant problems will be presented and the five steps involved in the diagnostic process will be discussed. Plant problems due to construction damage, environmental extremes, nutrient deficiencies and chemical toxicities will also be covered in later articles.

### Overview:

How many times have you faced this problem? A customer brings you a four-inch long maple branch with one dead leaf hanging on it and he or she says "My tree is sick, what's wrong with it?" How will you answer this important question?

As professionals in the plant industry, our goal is to ensure that plants thrive where they are grown, whether indoors or outside. Many factors can affect plant growth, depending on how the plant was grown, handled, planted and maintained. When plants become stressed, they become more susceptible to various kinds of problems. Plant problems should be diagnosed quickly to enable the plants to recover as quickly as possible and resume growth.

Diagnosing plant problems is an essential part of being a plant professional. Some plant problems seem very difficult to figure out, so where do you begin the diagnostic procedure? Fortunately, an analytical approach can be used for diagnosing plant problems.

Plant adaptability strongly influences if a plant will develop problems after it is growing at a site. Inherent site conditions affect plant growth, so plants must be able to adapt to the planting site. Plants unable to adapt become stressed, and stress plants become susceptible to pests or the environment. The bottom line is that a plant should be selected for a particular site based on its ability to adapt to and grow in a particular location. Again, our goal as plant professionals is to get the plant to THRIVE where it is planted. If a plant becomes stressed, problems will most likely develop. For this reason, industry professionals must be able to diagnose problems quickly to either correct the problem or minimize the damage.

### Types of Plant Stress

Although many types of plant stresses may exist, I have put them into two categories, acute stress or chronic stress. Acute stresses take place rapidly, and plant damage is usually seen soon after the stress affects the plant. Chemical burn from an applied pesticide, an early autumn frost,

or injury due to shipping are a few examples of acute stresses. Typically, acute stresses take place quickly, and the damage is seen soon after the plant is stressed.

In contrast, chronic stresses occur over a period of time so that plants eventually become weakened. Examples of chronic stresses are a sun-loving plant growing in heavy shade, improper soil pH causing a nutrient deficiency, or a root circling the trunk of a tree (girdling the trunk). The longer the plant has to endure stress, the weaker it becomes and the more difficult the task of getting the plant to grow again.

Management of plant health involves early recognition of plant problems. The reason for diagnosing plant problems is to find the sources or causes of the problems and correcting them as soon as possible to limit weakening the plant.

### Accurate Diagnosis of a Plant Problem

An accurate diagnosis of a plant problem involves a number of factors. First and foremost, the diagnostician must be able to identify the plant and know the difference(s) between "normal" and "abnormal" growth. Knowledge of plants, soils, climate, cultural practices, various pests (diseases, insects, and weeds) and the interactions among them are helpful for making a diagnosis. Accurate information about the recent history of the plants at the site is important. A logbook listing information about the site should supply information useful for the diagnostic process.

Another important factor in diagnosing plant problems is using an analytic approach to solving the problem. Any procedure used to diagnose plant problems includes gather plenty of information about plants, soils, climate, etc. An analytic approach will help you to diagnose the problem accurately. The next article in this series will cover problem categories and the diagnostic process.