

TECH SHEET THE DIAGNOSIS OF PLANT PROBLEMS

Accurate diagnosis of a problem is extremely important. A wrong diagnosis, and ultimately the incorrect treatment may serve only to compound the problem. In order to carry out a correct diagnosis a certain level of knowledge is required such as what a normal or healthy plant looks like as well as symptoms of disease or other plant abnormality. Problems per se vary in their difficulty to diagnose with some being relatively easy to identify and others, including wilts, root diseases, and diebacks and declines, being much more difficult to diagnose without experience. When attempting to diagnose a problem the aim must be to **not jump to conclusions**. A series of questions and observations may help you diagnose a problem that at first glance may appear complex.

Firstly determine the species and if possible cultivar of the affected plant. The reason for this is that many pathogens are host specific, and identifying the host can narrow the list of insect or disease problems. Plant cultivars can vary markedly in their susceptibility to certain diseases.

A. Collect a complete history both before and after the appearance of symptoms by collecting information on cultural practices, weather conditions, and pesticide applications. Remember that homeowners may not remember correctly all of the cultural practices employed:

1. Date symptoms first appeared and of any previous outbreaks.
2. Temperature and rainfall levels before and after the problem; look for any unusual weather patterns.
3. Irrigation practices (amounts, timing).
4. Fertilisation (amounts, timing, formulations). The quality of fertiliser used can have a major impact on the plant being grown.
5. Soil/growing media. (soil type, soil pH, drainage, compaction, etc.).
6. Age of plant or crop (planting date).
7. Surrounding environment of plant or crop (proximity to sidewalks, sewers, etc.) Is the area shaded?
8. Application of herbicides in the area. If an application has been made discuss the application technique used and rates etc.

B Record your overall impression of symptoms or patterns of problems on the plant. The distribution of the problem is very important. At this point don't rule out the possibility of environmental (physiological), insect, or chemically-induced problems.

9. If the problem occurs on a number of plant species, it is most likely the result of environmental or chemical damage.
10. If the problem is occurring on a single plant, and others of the same species are not affected, it is unlikely that the problem is associated with the foliage. Look for problems on the trunk, stem, or roots.
11. Look at the pattern of the problem on the plant.

C. Record specific symptoms on individual plant parts. Symptoms are the expressions of disease on the host plant. These expressions may include abnormal plant growth, colour, etc. Symptoms may be either localized (leaf spots, canker) or systemic. Symptoms also may be primary (direct changes in the tissue actually attacked by the pathogen) or secondary (indirect physiological effects of the pathogen on distant, uninvaded plant parts). All too often people see secondary symptoms and conclude a pathogen is associated with a certain plant part (such as scorched leaves) when the real cause of the problem actually occurs in another part of the plant (such as the root).

12. Plant part affected (leaves, roots, branches, overall decline). Determine whether symptoms are primary or secondary.
13. Types of symptoms
Localized: leaf spot, insect feeding, cankers, galls.
Systemic: dwarfing, chlorosis, mosaic, wilt.
14. Look for signs of the pathogen or insect. A sign is the presence of a pathogen structure or product on or in a diseased plant. A hand lens is essential.
15. Once detailed information on the cultural conditions, pattern of the disease, and specific symptoms have been obtained, you are now in a position to attempt a diagnosis.

D. Control. Several control methods are available. They include these practices:

16. Exclusion (quarantines, disease-free material)
17. Eradication
18. Cultural modifications
19. Chemical control.