LESSON 1 IDENTIFYING PROBLEMS

It always seems that the more work you do in a garden, the more pest and disease problems seem to appear. For this reason, the keen home gardener and the professional landscaper need to be aware about what pests and diseases they may come in contact with, and how to control them.

This Study Guide will help in the identification of these problems. Without correct identification, it would be very difficult to suggest a suitable method of control. For example, a hole in a leaf may indicate damage by a pathogen such as a fungus, bacterium, or virus, or it could be caused by an insect. If you thought the problem was caused by an insect and sprayed it with an insecticide, but it was actually caused by a virus, then the spray is totally wasted.

This Study Guide will help the home gardener and those working in horticulture at an entry level to identify and control a range of the most common pests and diseases of plants.

We live in an age of heightened environmental awareness where there is an emphasis on caring for our environment through sustainable land management, farming, and horticultural practices which includes reducing the use of chemicals. It is therefore important that plant problems are correctly identified so that an appropriate treatment can be chosen. This will help to prevent useless spraying of possibly harmful chemicals or, perhaps more importantly, the spraying of beneficial insects.

What's wrong with my plant?

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Suggested Tasks

Just remember as you go through this study guide that all the tasks are 'suggested' only. You do not need to do all of them but it will enhance your learning experience if you do some of them (or all of them if you so choose).

UNDERSTANDING WHAT CAN GO WRONG WITH YOUR PLANTS

Plants can suffer from a range of problems. The types of problems they encounter can include:

- **Pests:**
  Included here are animals of various sizes and forms (from microscopic worms to birds, dogs, cows & humans). Insects are the most significant group which can cause damage to plants.

- **Diseases:**
  These are problems caused by living organisms other than animals. Fungi, bacteria and viruses are the most common. Not all fungi and bacteria cause problems for plants. In fact, many are extremely important in maintaining the healthy growth of most types of plants.

- **Environmental disorders:**
  Problems can caused by environmental factors including things like; poor soil conditions, pollutants, adverse weather conditions such as frosts, strong winds, extremes of temperature, and hail.

Heavy frost and snow caused this leaf burn on a Choisya ternata

- **Nutritional problems:**
  Too few nutrients can lead to deficiencies, and too many nutrients can cause toxicity in plants. Plants can also suffer from deficiencies when nutrients present in the growing media are not in a form that can be easily used by the plant.

- **Weeds:**
  These are plants growing where you don't want them. It is the location of a plant which makes it a weed, NOT the species of the plant. A plant can be weed in one position and a desired plant in another. A weed can be a host plant for pests & diseases or it may compete with your desired plants for nutrients, water, light and space making it difficult, or even impossible, for your desired plants to maintain healthy growth.

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Suggested Tasks

Research and define the following terms in your own words:

- Environmental Disorders
- Nutritional Problems
- Weeds

Spend no more than 5 - 10 minutes on this task.

MORE THAN ONE PROBLEM

Often your plants can suffer from more than one problem at the same time. Frequently these different problems are interrelated, with one problem causing the others to develop.

For example, poor drainage may result in damage to a plant's roots. This in turn can result in reduced vigour, opening the plant up to attack from various pests and diseases. These pests and diseases may be obvious, but the damaged roots may not be. The most important problem is called the "primary problem" and other problems which can occur as the plant weakens, are called "secondary problems."

When you look for the cause of a problem, always remember; you might be looking for several answers (not just one).

FINDING OUT WHAT THE PROBLEM IS

Quick methods for assessing plant problems tend to be less technical and include things like: matching the problem to a photograph or description (in a book or on a chart), checking problems common on that plant, and identifying broad groups rather than specific diseases.

Before we can treat a plant we need to know what is causing the problem/s. It requires a great deal of knowledge and expertise to be able to precisely diagnose plant troubles. Do not expect to develop such ability quickly.

The first and perhaps most important skill to develop is how to inspect a plant in order to discover the telltale symptoms which will provide an indication of what is wrong.

These azalea leaves have been severely attacked by microscopic mites (red spider mite).

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Suggested Tasks

Research the 'Red Spider Mite' and find out the following:

- What plants the Red Spider attacks.
- Symptoms of the pest on the plant
- How to control and prevent this pest.

This task should take you no more than 10 -15 minutes.

CONDUCTING AN INSPECTION

As already stated, a sick plant may be sick due to have one or several causes being present at the same time. There are thousands of possible causes which can contribute to a plant's problems.

More often than not, there are several factors involved. Minor diseases or environmental problems may weaken the plant, making it susceptible to some more major (obvious) disorder.

When you inspect a plant for problems, systematically consider all of the things which might possibly be going wrong.

STEP ONE

Systematically examine the plant, paying attention to any abnormalities.

Look closely at the leaves

- Is there any discoloration?
- Are there abnormal markings, swellings, distorted shapes, etc?
- Are there dead patches, or holes, or sections that appear chewed?

Examine the fruit and flowers

- Are the flowers and fruit developing well?
- Is there any fruit drop?
- Is fruit undersized? This often indicates weakness of the plant, a lack of water, or over-bearing (too much fruit on the plant creates competition for nutrients and water).

Look at the stems/branches

- Are the growth tips lush and fast growing? A healthy plant will have lush, growing tips during the main growth seasons. If other parts are damaged but the tips are lush, this can indicate that the plant is recovering from a previous problem.
- Are there any abnormalities on the stems, such as swellings or weeping gums/resins (known as gummosis on most plants, or resinosis in the case of conifers)?

Look carefully at the roots

- Are roots coming out of the surface of the ground? This may indicate soil is frequently infertile or dry deep down (roots are coming up for water and nutrients); or that soil has been eroded away.
- Is the plant loose in the ground? This can indicate that roots are weak or damaged.
- Are root tips healthy and strong, or black and rotting?

Identify which parts of the plant are most damaged

The parts which are most exposed to the problem will generally be the most affected.

- Frost damage occurs more on parts most exposed to frost.
- Sun burn occurs more on parts exposed more to the sun.
- Fruit rots may occur on branches close to the ground where disease spores can splash up from the soil.

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Suggested Tasks

Type in the following words into your search engine (or google):

- Healthy Plant Roots Video.

Watch a 2-3 minute video that shows you what healthy plant roots should look like.

Now search with the words:

- 'Examples unhealthy plant roots'

Spend 2-3 minutes studying the images of unhealthy plant roots.