AgriLIFE EXTENSION
Texas A&M System

Easy Gardening...Disease Control

Jerral D. Johnson, Extension Plant Pathologist

A good home gardener recognizes symptoms of plant diseases quickly and takes steps to prevent or control them. Diseased plants do not grow normally. Diseased plants may have one or more of the following symptoms: stunted, wilted, spots on leaves, stems or fruit; decayed fruit, decayed areas on the stems, distorted leaves, rapid death of leaves, and discoloration of leaves and fruit. Foliage symptoms on plants infected with a bacterium or fungus will normally develop first on the older leaves. Virus symptoms develop on the younger leaves.

Causes of Plant Diseases

Plant disease-causing organisms are divided into four groups - viruses, bacteria, fungi and nematodes. Viruses are very simple forms of life. They are often spread to healthy plants by insects or on one's hands during normal gardening practices.

Bacterial cells are much larger than virus particles, but they are still too small to see with the naked eye. Bacterial cells move in the water film on the leaf surface or in the water surrounding plant roots or soil particles. They are most often spread by splashing water.

Fungal spores are larger than bacterial cells but are not visible without a microscope. Fungi are like small plants. Most plant diseases caused by fungi are most severe during periods of moderate temperatures and when water is retained on the leaves or fruit for an extended period of time. Many fungi are spread by wind, splashing rain and equipment.

Nematodes are small, worm-like animals which live in the soil. They feed on plant roots, causing stunted plants. Root knot is the most damaging nematode in the home garden. It causes galls or knots on susceptible plants such as tomatoes, cucumbers, squash, beans and many other vegetables.

When Do Diseases Occur?

Plant diseases are worst when light rain showers or heavy dews have fallen and when temperatures are mild. During these times, watch your garden closely for signs of disease.

Signs of Plant Diseases

Plant diseases are evident in many ways. They attack all parts of the plant, as shown in Figure 1. Plants can get diseases from the time the seed is placed in the soil until the vegetable is eaten. It is important to identify disease symptoms quickly, so that control practices can be taken to prevent unnecessary loss.

Disease Control in the Garden

Fertilize and water plants properly to keep them strong. Healthy plants do not get diseases as easily as weak ones.

It is best to irrigate the garden by running water between the rows or by trickle irrigation. Irrigate a garden by running water between the rows. Do not sprinkle leaves; this only encourages more disease problems. If you must sprinkle plants, do so before 10 a.m.

Avoid planting vegetable varieties in areas where the same vegetable or vegetable from the same plant family were planted in the last 24 months. Rotations to avoid are:

- tomatoes, eggplant and potatoes
- squash, cucumber, pumpkin and melons
- cabbage, broccoli, cauliflower, mustard, turnips and collards

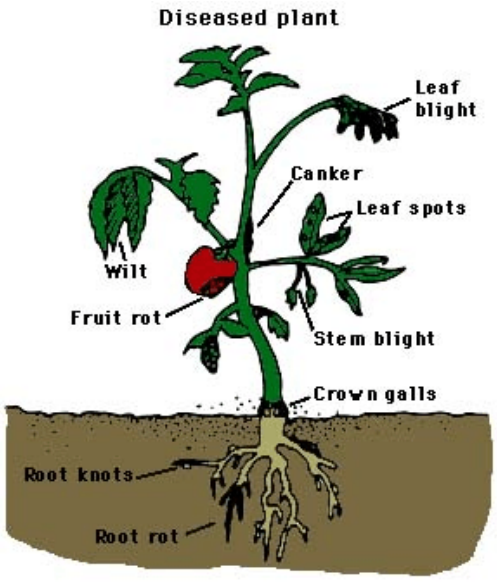

Fig. 1. Possible disease symptoms on plants.

It is best to plant on a raised bed. This will allow excess water to move out of the root area and prevent many root diseases and fruit rots.

When possible train vegetables to grow upright using cages or trellises. This will keep the fruit from contacting the soil and reduce fruit rots.

Plant productive disease resistant varieties when available. Resistant varieties may reduce the need for the use of crop care products on a regular schedule or in some cases their use may eliminate the need completely.

In some cases, crop care products may be required to control plant diseases during the year. These products should be used with caution and only when needed. Read and follow the label carefully. Although several products are approved for use in the garden, some of the copper-containing products and sulfur are considered to be organic-based products. However, they are not always the most effective. Before using any crop care product, make sure the vegetables that you are spraying are listed on the label.

Nematode Control

Nematodes in the soil are best controlled using a combination of practices that will reduce the nematode population to numbers that will not cause significant plant damage. The following practices can be used to reduce nematode numbers:

- Plant nematode resistant varieties
- Plant non-host plants in rotation with susceptible varieties
- Till the soil during the summer months to remove soil moisture (must be done after plants have been removed)
- Cover the soil with clear plastic and leave in place for 6 to 8 weeks during June, July, August or September
- Plant Elbon rye during the fall and early winter

Gardeners using one or more of these practices can reduce the population of nematodes in the soil. You can almost never completely eliminate nematodes. This means that each year you will need to take steps to control this pest.

Currently no crop care chemicals are recommended for use in the home garden for nematode control.