Plant pathology

Is the science that studies any change or deviation harmful to the normal functions of the physiological processes of the plant, whether external appearance or internal anatomy due to non-parasitic pathogens such as temperature and the lack and increase of mineral and other elements or parasitic pathogens such as fungi, bacteria, viruses and flora and other parasitic and the possibility of treatment or resistance to these diseases .

Principles of plant pathology

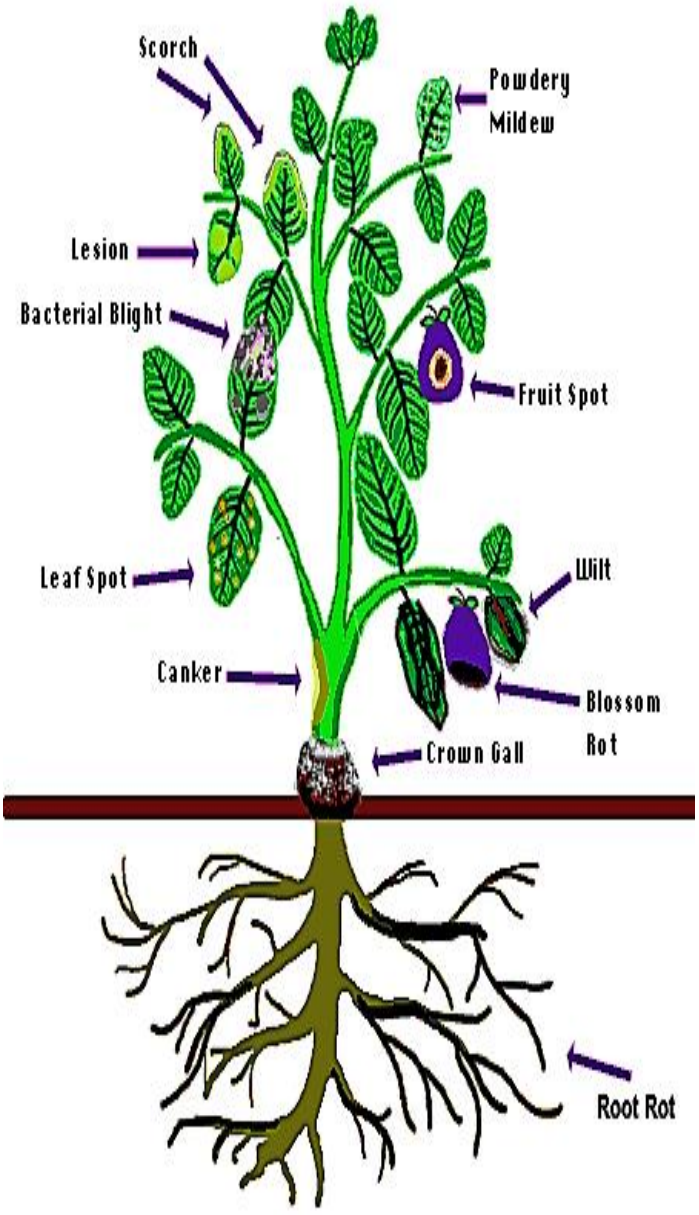
The plant is considered sick when it has symptoms

1- **Disease symptoms**: A group of appearance differences appear on the plant can be characterized by diagnosis of the disease such as staining, yellowing, blight, leaf wrapping, dwarfism, roots and stems and fruits rot.

2- **Disease signs** : Is the existence of the causative agent of the disease on the plant or inside its tissues, whether the presence of symptoms or lack of disease as in most diseases caused by different microscopic living organisms

3- **Pathogen** : An organism living on or in another organism called the host.

4- **Pathogenicity** : The pathogenic capacity of plant pathogens is usually estimated by measuring the degree of spread of the disease on the affected plants and the size of the part of the pathogen capable of infecting and penetrating the plant, as well as measuring the degree of plant impact of the disease, especially under the appropriate environmental conditions for the occurrence of the disease



5- **Infection** : An parasitic relationship between Pathogen and Host.
6- **Parasitic disease** : It is a disease caused by a parasite on the host plant. This causative agent is able to move to a healthy plant to cause a new infection. This group of diseases is called infectious disease.
7- **A parasitic disease** : Is a disease caused by non-living causes such as environmental factors, nutrition and some other factors which is a non-infectious disease .
8- **Local disease** : It is a disease that is limited to certain parts of the host germination, such as staining.
9- **Systemic disease** : Is the disease that spreads on most parts of the plant as a result of the transmission of the pathogen within the plant with a systemic vasodilator or wood pulp vaccine such as vascular wilt disease .
10- **Resistant plant** : The host, which has a slow and incomplete infection, is called a resistance. The tolerant host Tolerant is the least affected by what is expected of other infected families with the same pathogen.

Disease symptoms

1- **Discoloration**

Some of the specific reasons turn plant leaves to yellow. which may include too little water, too much water, nutrient deficiency, disease and/or plant stress.

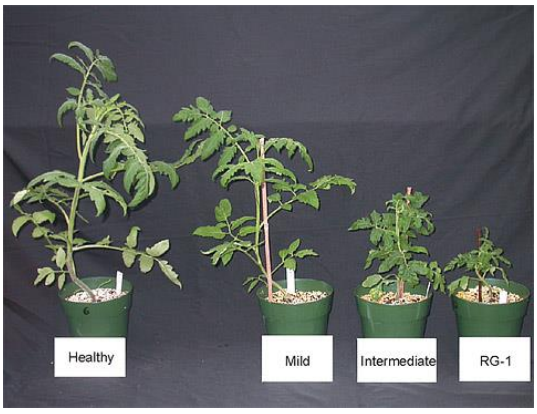
2- **Shot hole**

Shot hole disease (also called Coryneum blight) that creates sized holes in leaves, rough areas on fruit, and concentric lesions on branches.

3- **Tumors**

Plant tumors — aggregates of cells that have multiplied excessively — are usually caused by a bacterium, virus or fungus, or may develop as a result of structural damage, "The bacterium *Agrobacterium* is one of the most common culprits in plant tumors and is the cause of crown gall.

4- **Stunting (Dwarfism)**



May be caused by viral, bacterial, fungal, or nematode . infections and by noninfectious (abiotic) means including an excess or lack of water, imbalance of soil nutrients, excess light, chemical or mechanical injuries, insect feeding, and too-deep planting.

5- **damping off**

Several fungi can cause rot of seeds and seedlings including species of *Rhizoctonia*, *Fusarium* and *Phytophthora*. However, species of the soil fungus *Pythium* are most caused infection. Damping off typically occurs when old seed is planted in cold, wet soil and is further increased by poor soil drainage.

6- **Wilt**

Some plant diseases can cause wilting. For example, *Fusarium* and *Verticillium* fungi live in the soil and affect many plants, including tomatoes and other vegetable crops. The fungi enter a plant through the roots and cause wilting as they prevent water from reaching the leaves.

7- **Mummification**

Modified in some of the infected fruits into small formulations called MUMMIES and the disease begins to be infected with the fruit, which causes the conversion of solids into dissolved soluble matter and after evaporation of water and consumption of dissolved substances as food for the parasite . dried rotting fruit and wrinkle and take the mummified shape such as brown mold disease In the plum fruits.

8- **Necrosis**

are caused due to necrosis or death of plant cells. The affected plant tissue usually turns brown to black in color. Necrotic symptoms could appear in any part of the plant such as in storage organs, in green tissues, or in woody tissues.

9- **Blight**

Blight is a rapid and complete chlorosis, browning, then death of plant tissues such as leaves, branches, twigs, or floral organs. Accordingly, many diseases that primarily exhibit this symptom are called blights.

10- **Root rot**

Root rot usually a result of over watering in houseplants. many cases of root rot are caused by fungal pathogens *Rhizoctonia*, *Pythium*, *Phytophthora* , *Fusarium*, Roots of plants affected by root rot may turn from firm and white to black/brown and soft, root rot may lead to death of the plant.