Plant Pathology axes:

Plant Pathology as a practical science deal with four main axes:

1- Diseases' causatives.

2- Mechanisms by which diseases occur.

3- Interactions between plants and disease-causing agents.

4- Controlling diseases (Management).

There are some **terminologies** that plant pathologists should be familiar with. Of these terminologies are:

Disease:

Is a status of malfunction of a plant, which results from a continuous irritant by a pathogenic agent.

Parasitic plants:

Not only fungi, bacteria, nematodes, insects, and viruses are causative agents, but also some plants Known as **flowering plants** might behave as parasites and harm economic crops through either invasion the host plants themselves with the assistance of special structures to obtain food **(pic.1)** or by establishing a competition relationship to gain nutrients from soil **(pic.2)**.

Pathogens and parasites:

In terms of plant pathology, plant pathologists need to differentiate between **pathogens** and **parasites**.

Pathogens are organisms that most likely kill the host during the occurrence of disease. They do not rely on the host to complete their life cycle.

Parasites are organisms that try not killing the host, but instead driving the host's metabolism to survive, and they are relatively need the host to complete their life cycle.

Symptoms and sings in plant diseases:

Symptoms are defined as visible effects of disease on the plant as it responds to the pathogen. Symptoms may include a detectable change in color (e.g., blight, browning, yellowing), shape (e.g., dwarfism, wilting, necrosis) or function of the plant.

Sings are physical evidence of the presence of disease agent such as bacterial or fungal colonies (or spores), fruiting bodies of fungi ...etc.

Types of symptoms:

Symptoms can be classified depending on where they are going to appear into two types:

1- Morphological symptoms (external symptoms).
2- Histological symptoms (internal symptoms).

Morphological symptoms can present at all plant body (i.e., leaves, stems, roots, and even fruits). However, histological symptoms only appear inside the plant body, but the final expression of these symptoms would reflect on plant appearance in all.

Necrosis: Is a localized area with black or brown color described by the degeneration of protoplast of cells followed by death of the tissue, or organ.

Causative agents: Bacteria, fungi, abiotic effects.

There are two types of necrotic status:

A- Plesionecrosis: a symptom exhibited by tissues not yet dead but in the process of dying (e.g., yellowing, Wilting, and hydrosis).

a- Yellowing: symptom of plant disease in which normally green tissue is yellow due to breakdown chlorophyll pigment **(pic.1)**.

b- Wilting: common symptom of plant disease resulting from water loss in leaves and stems. Affected parts lose their turgidity and droop **(pic.2)**.

c- Hydrosis: a disease symptom in which the effected area appears water-sunken or translucent lesion **(pic.3).**

B- Holonecrotic symptoms: necrotic symptoms expressed after the death of the whole protoplast of a tissue. In this, the affected tissue turns brown in color (e.g., rot, spot, and blight diseases). Depending on the attacked area, it can be divided into three categories:

a- Necrosis of the green plant parts:

1- Stem: such as damping off disease in which seedlings collapse or death because of extensive necrosis of stem tissues before or after they emerge from the soil. (e.g., *Pythium spp.* and *Rhizoctonia spp.*) **(pic.1)**.

2- Leaf: such as leaf spots disease in which spots on foliage vary in size and color depending on the plant affected, pathogens involved, and the stage of development. Spots seem brownish and maybe black with concentric rings and dark margins **(pic. 2)**.

3- Root: such as root rot disease which described as a plant disease, caused by any species of soil-borne (bacteria, fungi, and funguslike organisms (Oomycota). Rot diseases are characterized by plant decomposition and putrefaction **(pic. 3)**.