

TERMS AND CONCEPTS USED IN PLANT PATHOLOGY

Disease: Any malfunctioning of host cells and tissues that result from continuous irritation by a pathogenic agent or environmental factor and leads to development of symptoms (G.N.Agrios, 1997).

Disorder: Non-infectious plant diseases due to abiotic causes such as adverse soil and environmental conditions are termed disorders. The common characteristic of noninfectious diseases of plants is that they are caused by the lack or excess of something (temperature, soil moisture, soil nutrients, light, air and soil pollutants, air humidity, soil structure and pH) that supports life. Non-infectious plant diseases occur in the absence of pathogens, and cannot, therefore, be transmitted from diseased to healthy plants.

Pathogen: An entity, usually a micro-organism that can incite disease. In a literal sense a pathogen is any agent that causes pathos (ailment, suffering) or damage. However, the term is generally used to denote living organisms (Fungi, bacteria, MLO's, nematodes etc.,) and viruses but not nutritional deficiencies.

Parasite: Organisms which derive the materials they need for growth from living plants (host or suspect) are called parasites.

Pathogenicity is the ability of the pathogen to cause disease Pathogenesis is the chain of events that lead to development of disease in the host (or) sequence of progress in disease development from the initial contact between the pathogen and its host to the completion of the syndrome

Sign: The pathogen or its parts or products seen on a host plant. **Symptom:** The external or internal reactions or alterations of a plant as a result of a disease.

Syndrome: The set of varying symptoms characterizing a disease are collectively called a syndrome.

Biotroph: An organism that can live and multiply only on another living organism. They always obtain their food from living tissues on which they complete their life cycle. Ex: Rust, smut and powdery mildew fungi.

Hemibiotroph (Facultative Saprophyte): The parasites which attack living tissues in the same way as biotrophs but will continue to grow and reproduce after the tissue is dead called as facultative saprophytes.

Perthotrophs or perthophytes (Necrotroph): A parasite is a necrotroph when it kills the host tissues in advance of penetration and then lives saprophytically Ex: Sclerotium rolfsii.

Inoculum: It is the part of the pathogen which on contact with susceptible host plant causes infection (or) the infective propagules which on coming in contact with the host plant causes an infection are known as inoculums

Inoculum potential: The energy of growth of a parasite available for infection of a host at the surface of the host organ to be infected (or) The resultant of the action of environment, the vigour of the pathogen to establish an infection, the susceptibility of the host and the amount of inoculum present

Incubation period: The period of time (or time lapse) between penetration of a host by a pathogen and the first appearance of symptoms on the host. It varies with pathogens, hosts and environmental conditions.

Predisposition: It is the action of set of environments, prior to penetration and infection, which makes the plant vulnerable to attack by the pathogen. It is related to the effect of environments on the host, not on the pathogen, just before actual penetration occurs

Hypersensitivity: Excessive sensitivity of plant tissues to certain pathogens. Affected cells are killed quickly, blocking the advance of obligate parasites. Infection is the establishment of parasitic relationship between two organisms, following entry or penetration (or) the establishment of a parasite within a host plant.

Systemic infection: The growth of pathogen from the point of entry to varying extents without showing adverse effect on tissues through which it passes.

Epidemic or Epiphytotic disease: A disease usually occurs widely but periodically in a destructive form is referred as epidemic or Epiphytotic disease. Ex: Late blight of potato – Irish famine (1845)

Endemic: Constantly present in a moderate to severe form and is confined to a particular country or district. Ex: Club root of cabbage in Nilgiris Black wart of potato – *Synchytrium endobioticum*, Onion smut – *Urocystis cepulae*

Susceptibility: Inability of the host to resist the attack of the pathogen

Tolerance: is a type of defence that minimises crop losses without restricting the disease development.

Sporadic disease: Occur at very irregular intervals and locations and in relatively fewer instances. Ex: Udbatta disease of rice, Angular leaf spot of cucumber – *Pseudomonas lachrymans*.

Virulence: It is defined as the degree of pathogenicity of a particular isolate or race of the pathogen.

Resistance: Ability of the host to resist the attack of the pathogen – Horizontal resistance – Vertical resistance

Hypersensitivity: is the quick death of the host tissue in the vicinity of the pathogen

Disease escape: it is ability of the susceptible host to avoid the damaging disease stress e.g. unfavourable environment/ growth habit

Host: any organism that harbour another organism is called host

Alternate host: is the host that help in the completion of the life cycle of the pathogen and its survival, belong to diff. family

Collateral host: host of the same family and help in the survival of the pathogen

Aggressiveness: it is the capacity of the pathogen to invade and colonize the host and to reproduce on or in it.

Terms describing microbial habitats related to plants

Epiphytic: Organisms growing on the surface of photosynthetic organisms

Endophytic: Organisms growing inside the host

Phylloplane: Leaf surface

Phyllosphere: Area surrounding the leaf and impacted by it

Rhizoplane: Root surface

Rhizosphere: Area surrounding the root and impacted by it