GLOSSARY FOR PHYTO PATHOLOGY

A

Abiotic

pertaining to physical and inorganic components. For example, diseases/disorders in plants can be caused by abiotic factors such as extremes of heat, light, moisture, lack of nutrients etc.

Appressorium (pl. Appressoria)

An enlarged fungal filament that adheres to the surface of the host, prior to penetration.

Avirulent : unable to cause disease; lacking virulence (see virulent); nonpathogenic.

B

Biotic

Pertaining to life and therefore living organisms. For example, plant diseases of a biotic origin are caused by living organisms such as insects, nematodes, etc.

Biotroph

an organism that can live and reproduce only on another living organism. A biotroph is completely dependent on the host organism as a source of nutrients, i.e. it is an obligate parasite.

D

Defensins

antimicrobial proteins that inhibit the growth and development of pathogens. Plant defensins are found throughout the plant kingdom and are released upon seed germination, creating an antimicrobial environment around the seed while it germinates.

Disease

any malfunctioning of host cells and tissues that results from continuous irritation by a pathogenic agent or environmental factor which leads to the development of symptoms;
- abnormal functioning of physiological processes of an organism.

Disease Incidence : the number of plants affected by a disease within a population.

Disease Severity : the measure of damage done by a disease.

E

Ectoparasite

a parasite that lives and feeds from the exterior of its host's cells or tissues. Compare with endoparasite.

Endoparasite

a parasitic organism that lives and feeds within the cells or tissues of its host. Compare with ectoparasite.

Epidemic:

Increase in a disease or a pest in a population. This situation is also refered to as “severe outbreak”

Epidemiology: The study of factors affecting the outbreak and spread of infectious diseases

Epiphytic : living on the surface of a plant, but not as a parasite and without causing infection.

Eradication

the control of plant disease by eliminating the pathogen after it is established or by eliminating all of the plants that carry the pathogen.

Etiology: The determination and study of the cause of a disease

Exclusion

a method of disease prevention in which the pathogen or infected plant material is excluded from crop production areas. See quarantine.

F

Fungicide : a substance (chemical or physical) that kills or inhibits the growth of fungi.

Fruiting body: A complex fungal structure containing spores

H

Haustorium (pl. Haustoria)
: a specialized branch of a fungal hypha formed inside a living cell of the host plant in order to obtain nutrients.

Host: an organism harboring a parasite or pathogen.

Host Range
: the range of plants on which an organism feeds, particularly a parasite ; the range of plants in which a pathogen is capable of causing disease.

Hypersensitive
: the state of being extremely or excessively sensitive. It often refers to an extreme reaction by a plant to an invading pathogen in which the plant tissue around infected sites dies in order to prevent further spread of the infection.

Hypha (pl. Hyphae)
: a single tubular thread-like filament of a fungal mycelium. The hypha is the basic structural unit of a fungus.

I

Immune: Can not be infected by given pathogen

Immunity: The state of being immune

Infection: The establishment of a pathogen (or parasite) within a host plant or animal

Inoculate
: to introduce a microorganism or virus into an environment (i.e. an organism or culture medium) suitable for its growth ; to insert a pathogen into healthy tissue.

Inoculum (pl. Inocula)
: a pathogen or its parts which can cause infection when transferred to a favourable location ; the population of microorganisms introduced in an inoculation.

L

Latent Infection
: where the host is infected with a pathogen but does not show any symptoms.

Lumen
: central cavity of a cell, vessel or other structure.

M

Macroscopic: Can see through naked eye without the help of magnifying divice

Microscopic: Ultra small, thus can see only with the aid of a magnifying divice (Microscope)

Mycelium (pl. Mycelia) : a mass of hyphae that forms the body (thallus) of a fungus.
Mollicutes: Kind of prokaryotic disease causing agents (phytoplasmas and Spiroplasmas)
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O

Obligate Parasite

an organism that is only capable of living as a parasite in association with its host plant. The term is synonymous with biotroph.

P

Parasite

an organism or virus living in or on another living organism (host) from which it obtains its nutrient supply. A parasite is not necessarily a pathogen. Similarly not all pathogens are parasites.

Pathogen

a disease causing organism or agent (fungi, bacteria, virus, viroids, nematodes, mollicutes :phytoplasmas and Spiroplasmas)

Pathogenesis

the sequence of processes in disease development that describes a pathogen's association with its host. The sequence begins with initial contact between the pathogen and host and ends when the pathogen is no longer associated with that host (i.e. when the host/pathogen dies or the pathogen moves to another host).

Pathogenicity : the ability to cause disease.

Penetration : initial invasion of a host by a pathogen.

Penetration Peg

a structure found in some plant parasitic fungi. The penetration peg is a specialised, narrow, hyphal strand located on the underside of an appressorium that penetrates the epidermal cell wall.

Phytoalexin

a substance produced in higher plants in response to a number of stimuli (chemical, physical or biological) that inhibits the development of a microorganism.

Phytoplasmas : Mollicutes that infest plants and can not be grown in culture media. (Phloem-dwelling prokaryotic microorganisms, transmitted by phloem-feeding insects.)

Primary Inoculum

inoculum that initiates disease in the field following a dormant stage in its life cycle (called overwintering or oversummering). Compare with secondary inoculum.

Propagules

any part of an organism capable of independent growth (e.g., a spore, a mycelial fragment, etc.).

Protectant

any chemical agent that interacts with a pathogen on the plant surface to prevent infection.
- **Protectant fungicide:** a protectant that kills or inhibits the growth of fungi. See fungicide.

Pustule :A blister-like spore mass breaking through a plant epidermis.

Q- Quarantine

legal restriction of the transport of plants and/or plant parts in order to prevent the spread of pests and pathogens. In order to accomplish this plants may be held in isolation (i.e. quarantine) for an extended period of time to ensure that they are free of pests and diseases.

R

Race

a subgroup of pathogens within a species that infect a given set of plant varieties. Races may be distinguished from each other by virulence or symptom expression but not by morphology.

Resistant

possessing qualities that prevent or impede the development of a disease.

Resistance

the power of an organism to exclude or overcome, completely or partially, the effects of a pathogen or some other damaging factor.

Resting Spore

a thick-walled spore, usually formed by a sexual process, that germinates after remaining in a dormant state for an extended period of time.

S

Saprophyte

an organism that obtains nourishment from non-living organic matter (usually dead and decaying plant or animal matter) by absorbing soluble organic compounds.

Sclerotium (pl. Sclerotia)

a hard, resistant vegetative resting body of a fungus composed of a compact mass of hyphae and capable of surviving under unfavourable environmental conditions. Under favourable conditions the sclerotium can produces sexual or asexual fruiting bodies.

Secondary Inoculum

inoculum produced by infections that took place during the same growing season. Compare with primary inoculum.

Sign

Presence of part of the body/ entire body of the pathogen or propagules of the pathogen. E.g. presence of mycellium

Spiroplasmas:

Wall-less microorganisms that present in phloem of diseased plants. Helical in shape and can be grown in culture media.

Sporangiophore : sporangium-bearing body of a fungus.

Sporangium (pl. Sporangia)

an unicellular or multicellular sac-like structure in fungi that produces asexual spores.

Spore

a specialised reproductive body in fungi (and some other organisms), containing one or more cells, capable of developing into an adult.

Symptoms

Any condition in a host resulting from disease that indicates the occurance of disease. E.g presence of black spots

Systemic

(1) Pertaining to a disease in which the pathogen spreads generally throughout the plant

(2) Pertaining to a chemical absorbed into the plant through root or foliage and transported internally throughout the plant.

- Systemic fungicide: a chemical agent that spreads internally through the plant and eradicates established fungal infections. See fungicide.

T

Tylose, Tylosis (pl. Tyloses)

a balloon-like outgrowth from a parenchyma cell that expands through a pit in a xylem vessel wall and into the lumen of the vessel, either blocking it completely or partially.

V

Virulence

the degree or measure of pathogenicity of a given pathogen; relative capacity to cause disease.

Virulent : strongly pathogenic; capable of cause severe disease (see avirulent).

Virus - a submicroscopic, non-cellular structure consisting of a core of infectious nucleic acid (either RNA or DNA) within a protein coat.