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**PPATH-121**

**Fundamentals of Plant Pathology**

**3(2+1)**

**Theory:**

**Introduction:** Importance of plant diseases, scope and objectives of Plant Pathology.

History of Plant Pathology with special reference to Indian work. Terms and concepts in Plant Pathology. Pathogenesis. Causes and classification of plant diseases. Important plant pathogenic organisms, different groups: fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, spiroplasmas, viruses, viroids, algae, protozoa, phanerogamic parasites and nematodes with examples of diseases caused by them. Diseases and symptoms due to abiotic causes. **Fungi:** general characters, somatic structures, types of fungal thalli, fungal tissues, modifications of thallus, reproduction (asexual and sexual). Nomenclature, Binomial system of nomenclature, classification of fungi (key to Domain to Phylum).

**Bacteria and mollicutes:** general morphological characters, reproduction and classification of plant pathogenic bacteria.

**Viruses:** nature, structure and transmission.

Role of enzymes and toxins in disease development. Defense mechanism in plants.

**Nematodes:** General morphology, outline of classification, symptoms and nature of damage caused by plant nematodes (*Heterodera*, *Meloidogyne* and *Anguina*).

**Practical:**

Acquaintance with various laboratory equipments and microscopy. Preparation of media, isolation and Koch's postulates. General study of different structures of fungi. Study of symptoms of various plant diseases. Staining and identification of plant pathogenic bacteria. Identification of plant parasitic nematodes (*Heterodera*, *Meloidogyne* and *Anguina*). Sampling and extraction of nematodes from soil and plant material, preparation of nematode mounting.

**Lecture Schedule: Theory**

S.N.	Topic	No. of lectures
1.	Introduction: Importance of plant diseases, scope and objectives of Plant Pathology.	02
2.	History of Plant Pathology with special reference to Indian work. Terms and concepts in Plant Pathology.	02
3.	Pathogenesis. Causes and classification of plant diseases, diseases and symptoms due to abiotic causes.	02

4.	Important plant pathogenic organisms, Different groups: fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, spiroplasmas, viruses, viroids, algae, protozoa, phanerogamic parasites and nematodes with examples of diseases caused by them.	07
5.	Fungi: general characters, somatic structures, types of fungal thalli, fungal tissues, modifications of thallus, reproduction (asexual and sexual).	03
6.	Nomenclature, Binomial system of nomenclature, Classification of fungi (key to Domain to Phylum).	03
7.	Bacteria and mollicutes: general morphological characters	02
8.	Reproduction and classification of plant pathogenic bacteria.	02
9.	Viruses: nature, structure and transmission.	02
10.	Role of enzymes and toxins in disease development. Defense mechanism in plants.	02
11.	Nematodes: General morphology and Outline of classification	02
12.	Symptoms and nature of damage caused by plant nematodes ( <i>Heterodera</i> , <i>Meloidogyne</i> and <i>Anguina</i> ).	03

#### Lecture Schedule: Practical

S.N.	Topic	No. of lectures
1.	Acquaintance with various laboratory equipments and microscopy.	02
2.	Preparation of media, isolation and Koch's postulates.	02
3.	General study of different structures of fungi.	03
4.	Study of symptoms of various plant diseases.	03
5.	Staining and identification of plant pathogenic bacteria.	01
6.	Identification of plant parasitic nematodes ( <i>Heterodera</i> , <i>Meloidogyne</i> and <i>Anguina</i> ).	03
7.	Sampling and extraction of nematodes from soil and plant material, preparation of nematode mounting.	02

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