21PATH271 FUNDAMENTALS OF PLANT PATHOLOGY-II
(PRINCIPLES OF PLANT PATHOLOGY)

Source :

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Hours Per Week :

L	T	P	C
2	-	-	2

Total Hours :

L	T	P
30	-	-

Course Description and Objectives:

This course facilitates the students to learn and understand the plant disease causing organisms the damage they can do and management practices that help in contro lling them

Course Outcomes:

Upon completion of the course, the student will be able to achieve the following outcomes:

COs	Course Outcomes
1	Gain Knowledge about various types of plant diseases, causative organisms, mode of infestation and potential damage that the diseases can cause
2	Critical understanding about biochemical defense mechanisms in host plants and about the practices to conol diseases through use of natural methods and fungicides and other chemicals

SKILLS:

- ✓ *Preparation of media*
- ✓ *Isolation of pathogen and Koch's postulates*
- ✓ *Identify different fungicides and bio-control agents of plant pathogens*
- ✓ *Prepare different concentration of fungicides and Bio assay studies of fungicides*
- ✓ *Preperation of botanicals against disease management (Panchagavya, botanical extracts*
- ✓ *Bijamrita and Panchapatra kashayam*

ACTIVITIES:

- *Visit fields of different crop plants and identify different plant diseases and their casual organisms*
- *Preparation of herbariums of diseased plant parts*
- *Multiplication techniques of bio-control agents of plant pathogens*
- *Estimation of relative toxicity of different fungicides against plant pathogens by Bio-assay studies*

UNIT - 1

Introduction: Terms and concepts used in plant Pathology - disease - disorder - pathogen - parasite - symbiosis, mutualism, antagonism, pathogenicity - pathogenesis - sign - symptom - syndrome - biotroph - hemibiotroph - perthotroph (necrotroph) - inoculum - inoculum potential - infection - incubation period - predisposition - hypersensitivity - epidemic - endemic and sporadic diseases. Role of environment and host nutrition on disease development

UNIT - 2

Growth and Survival and dispersal of plant pathogens: - kinds of inoculum - primary and secondary inoculums - pattern of survival - infected host (main host, alternate host and collateral host) - saprophytic survival outside the host (soil, root inhabitants and rhizosphere colonizers) dormant spores or structures (seed borne, soil borne and on infected plant parts). Biotic and abiotic causes of plant diseases; Phanerogamic plant parasites with suitable examples – *Cuscuta*, *Orabanche*, *Striga*, *Loranthus*

UNIT - 3

Pathogenesis: Role of enzymes, toxins, growth regulators and polysaccharides in plant diseases with examples. Enzymes - cutinases, pectinases, cellulases, lignases, proteases and lipases; Toxins - Pathotoxins, phytotoxins and vivotoxins - selective (host specific) and non-selective (host non-specific) toxins.

UNIT - 4

Growth regulators - growth promoting substances (auxins, gibberellins and cytokinins) and growth inhibiting substances and polysaccharides. Phenomenon of Infection (Pre-penetration-penetration and post-penetration of plant pathogens) Defence mechanism in plants

UNIT - 5

Epidemiology and disease forecasting: Advantages, methods in forecasting; Classification of diseases; Factors affecting disease development; Monocyclic – and polycyclic diseases and their examples; Physiological race, biotype; Forecasting of important diseases in the country and pest risk analysis; Ecological management of crop environment; Disease triangle, Disease pyramid; information needed for forecasting, examples of disease forecasting models; Descriptive disease scales in important crops with examples. Survey and surveillance of plant diseases: Use of Remote sensing technology in Plant Pathology

REFER ENCES:

1. Agrios, G.N. 2004. *Plant Pathology*. (5th Ed.). Elsevier Academic Press. 882p
2. Chaube, H.S. and Ramji Singh. 2001. *Introductory Plant Pathology*. International Book Distribution Co.,Lucknow. 136
3. Mehrotra, R.S. 1980. *Plant Pathology*. Tata McGraw-Hill Publishing Co. Ltd., NewDelhi.
4. Singh, R.S. 2002. *Introduction to Principles of Plant Pathology.* Oxford & IBH Publ. Co. Pvt. Ltd., New Delhi
5. Vidyasekharan, P.1993. *Principles of Plant Pathology*. CBS Publishers, New Delhi
6. Dasgupta, M.K.1998. *Principles of Plant Pathology*. Allied Publishers Pvt. Ltd. Bangalore