

## DEPARTMENT OF PLANT PATHOLOGY

PATH 172

Credits 2( 1 + 1 )

### INTRODUCTION TO PLANT PATHOLOGY

#### Theory

Introduction - Objectives of Plant Pathology - Economic importance - Terms & Concepts - Classification of Plant diseases based on Cause, Occurrence, etc. - Various groups of plant pathogens (Fungi, Bacteria & Viruses .etc.}. Classification of fungi up to Sub division. Study of Plasmodiophora of Myxomycota and pathogenic fungi under Mastigomycotina - Pythium, Phytophthora, Albugo and Downey mildew fungi. Sub division. Zygomycotina - Rhizopus, Sub division. Ascomycotina. Study of Powdery mildew fungi, claviceps, Venturia. Sub division Basidiomycotina. Study of rust and smut fungi, Mushrooms. Study of plant pathogenic genera under Deuteromycotina. Study of plant pathogenic bacteria, Rickettsia, Phytoplasma, Viruses and Viroids. Survival and Dispersal of plant pathogens. Phenomenon of infection - Penetration - Pre penetration & Post Penetration activities of plant pathogens. Pathogenesis - role of enzymes, toxins, growth regulators & polysaccharides. Defence mechanism in plants - structural, biochemical (pre & post infection defence mechanism). Principles of plant disease management - Avoidance, Exclusion, Eradication, Protection, Therapy and Immunization. Biotechnology in plant disease management - Tissue culture and genetic engineering. Integrated plant diseases management - Concept of IDM.

#### Practicals

1. Study of vegetative structures of fungi and their modifications
2. Study of reproductive structures of fungi (sexual and asexual)
3. Study of Pythium, Phytophthora and Albugo
4. Study of different genera of Downy mildew fungi
5. Study of different genera of Powdery mildew fungi
6. Study of different Rust fungi
7. Study of different Smut fungi
8. Study of Mushroom fungi
- 9&11. Study of fungi belonging to Deuteromycotina
- 12&13. Mushroom cultivation

## 14&15. Tissue culture

### References

- 1 Introduction to Principles of Plant Pathology Singh R S 1984. Oxford & IBH Publishing Company, New Delhi
- 2 Plant Pathology. Agrios G N 1997. Academic Press, London
- 3 Introductory Mycology Alexopoulos C J Mims.C W and Blackwell, M. 1996. Wiley, U.S.A.
- 4 Introduction to Mycology Mehrotra R Sand Aneja K R 1990. Wiley Eastern Limited, New Delhi

### PATH 373

Credits 3(2 + 1)

### DISEASES OF IMPORTANT CROPS AND THEIR MANAGEMENT

#### Theory

Economic importance, symptoms, cause, disease cycle and management of the important diseases of rice, maize, wheat, sugarcane, turmeric, ginger, tobacco, groundnut, castor, sunflower, sesamum, cotton, mesta, redgram, bengalgram, blackgram, greengram, citrus, mango, grapevine, guava, sapota, papaya, banana, pomegranate, chilli, brinjal, bhendi, potato, crucifers, cucurbits, tomato, onion, coconut, oilpalm, betelvine, coffee, tea, eucalyptus, rose, chrysanthemum, jasmine and crossandra. Post-harvest diseases of important fruits, vegetables, flowers and their management.

#### Practicals

Study of symptoms, etiology, host-parasite relationship and specific control measures of the following crop diseases.

1. Diseases of rice
2. Diseases of wheat and maize
3. Diseases of ground nut, castor and sunflower
4. Diseases of sesamum, cotton and mesta
5. Diseases of sugarcane, turmeric, ginger
6. Diseases of redgram, bengalgram, blackgram & greengram
7. Diseases of citrus, guava and sapota
8. Diseases of papaya, banana and pomegranate
9. Diseases of mango and grapes
10. Diseases of chilli, brinjal, bhendi and onion

11. Diseases of potato, tomato and crucifer
12. Disease of cucurbits and betelvine
13. Diseases of oil palm, coconut, tea and coffee
14. Diseases of leak, eucalyptus, rose, chrysanthemum, jasmine, and crossandra
- 15&16. Field visit at appropriate time during the semester

## References

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| 1 | Forest Pathology - Principles and Practice in Forestry            | Bimal Kumar Bakshi 1976. F R I Press Forest Research Institute & Colleges, Dehradon. |
| 2 | Diseases of Fruit Crops   | Pathak V N 1980. Oxford & IBH Publishing Company, New Delhi                          |
| 3 | Diseases of Tropical and Sub Tropical Field, Fiber and Oil Plants | Cook A A 1981 Macmillan Publishing Company, New York                                 |
| 4 | Diseases of Crop Plants in India                                  | Rangaswamy G 1988. Prentice Hall of India Private Limited, New Delhi                 |
| 5 | Diseases of Ornamental Plants in India                            | Sohi H S 1992. Indian Council of Agricultural Research, New Delhi                    |
| 6 | Diseases of Vegetable Crops                                       | Singh R S 1994. Oxford & IBH Publishing Company, New Delhi.                          |
| 7 | Plant Diseases  | Singh R S 1994. Oxford & IBH Publishing Company, New Delhi.                          |