

**Part-A: Diseases and pests of Mulberry.****Unit-1**

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| 1. Introduction to plant diseases and importance of plant protection.         | 1 Hrs. |
| 2. Classification of mulberry diseases.                                       | 1 Hrs. |
| 3. Influence of biotic and abiotic factors on the incidence of plant diseases | 1 Hrs. |
| 4. Mineral deficiency symptoms in mulberry.                                   | 2 Hrs. |
| 5. Pesticides: Forms, formulations, calculation and application.              | 3 Hrs  |

**Unit-2**

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| 6. Fungal diseases of mulberry: Occurrence, symptoms, etiology and preventive and control measures of the following diseases : |        |
| (a) Powdery mildew.  |        |
| (b) Leaf spot.   |        |
| (c) Leaf rust.   |        |
| (d) Leaf blight.   |        |
| (e) Root rot.  | 5 Hrs. |
| 7. Root-knot disease of mulberry- occurrence, symptoms and preventive and control measures.                                    | 1 Hrs. |
| 8. Viral, bacterial and dwarf diseases of mulberry- their occurrence- symptoms and preventive and control measures.            | 2 Hrs. |
| 9. Pest: Definition; pest outbreak; pest forecasting .   | 1 Hrs. |

**Unit-3**

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| 10. Major pests: leaf roller, Bihar hairy caterpillar, mealy bug and thrips – their preventive and control measures | 3 Hrs. |
| 11. Minor pests: girdlers, termites and mites-their preventive and control measures.                                | 2 Hrs. |
| 12. Biological control of mulberry pests.   | 2 Hrs. |

**Part B: Diseases and pests of silkworm.****Unit-4**

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| 13. Introduction; classification of silkworm diseases.  | 1 Hrs. |
| 14. Protozoan disease – symptomatology, structure of pebrine spore, life cycle of <i>Nosema bombycis</i> , source, mode of infection and transmission, cross infectivity, prevention and control. | 2 Hrs. |
| 15. Bacterial diseases - causative agents, symptoms, factors influencing flacherie, source, mode of infection and transmission prevention and control.  | 3 Hrs. |

**Unit-5**

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| 16. Viral diseases (grasserie, infectious flacherie, cytoplasmic polyhedrosis, denonucleosis and gattine)- causative agents- symptoms – sources, mode of infection and transmission- prevention and control. | 4 Hrs. |
| 17. Fungal diseases: white and green muscardine and aspergillosis- causative agents- symptoms - structure and life cycle of fungal pathogen- mode of infection and transmission- prevention and control.     | 3 Hrs. |
| 18. Integrated management of silkworm diseases.  | 2 Hrs. |

**Unit-6**

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| 19. Life cycle of Indian uzifly; seasonal occurrence; oviposition and host-age preference; nature and extent of damage; prevention and control; integrated management of Indian uzifly. | 3 Hrs. |
| 20. Cocoon pests of silkworm: Dermestid beetle- life cycle; nature and extent of damage; prevention and control measures.   | 1 Hrs. |
| 21. Predators of silkworm: Cockroaches, ants, lizards and rodents; prevention and control measures.   | 2 Hrs. |
| 22. Brief account of methods of pest control: Cultural, mechanical, physical, legislative (Quarantine), chemical, genetical / autocidal, biological and IPM.                            | 3 Hrs. |

**PRACTICAL -4: MULBERRY AND SILKWORM CROP PROTECTION 15 Practicals -3 hrs each****Diseases and pests of Mulberry;**

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| 1. Study of powdery mildew, leaf spot and leaf rust through sectioning, staining and temporary mounting  | 3 Prct. |
| 2. Study of root-knot nematode in mulberry   | 1 Prct. |
| 3. Collection, mounting/preservation of insect pests of mulberry (field work).   | 1 Prct. |
| 4. Identification of mulberry pests. Study of nature of damage of the following pests: Leaf roller, Bihar hairy caterpillar, scale insect, mealy bug, thrips, beetles, jassids and grasshoppers. | 2 Prct. |
| 5. Identification of fungicides, pesticides- their formulation. Study of various types of insecticide applicators (sprayers and dusters).  | 1 Prct. |

**Diseases and pests of silkworm;**

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| 6. Identification of different diseased silkworms based on external symptoms (grasserie, flacherie, muscardine and pebrine). Identification of pathogens associated with silkworm diseases: Staining and preparation of temporary slides of bacteria, spores of pebrine, polyhedra of nuclear polyhedrosis virus and mycelial mat of muscardine. | 4 Prct. |
| 7. Methods of application of silkworm bed disinfectants for management of silkworm diseases.   | 1 Prct. |
| 8. Life cycle of Uzi fly; Identification of uzi-infested silkworms and cocoons.  | 1 Prct. |

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| 9. Life cycle of dermestid beetles: Dermestid infested silkworm cocoons and estimation of incidence. | 1 Prct. |
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