

SRI KRISHNADEVARAYA UNIVERSITY: ANANTAPUR
DEPARTMENT OF SERICULTURE

CURRICULUM FOR B.Sc Z.S.C (Zoology, Sericulture & Chemistry) COURSE
(SEMESTER PATTERN)

(Effective from the Academic Year 2015-2016)

B.Sc ZSC II Semester

60 Hours

Paper -2 CYTOGENETICS, BREEDING, BIOTECHNOLOGY, PATHOLOGY OF
MULBERRY AND RESOURCE MANAGEMENT FOR MULBERRY CROP
IMPROVEMENT

Unit 1: **EMBRYOLOGY:** 10 hrs

1. Sporogenesis
A. Microsporogenesis- Development of microspores;
B. Megasporogenesis- Development of megaspores;
2. Fertilization;
3. Embryo Development.
4. Polyembryony; Parthenogenesis; Parthenocarpy

Unit 2: **CYTOLOGY, GENETICS, BREEDING OF MULBERRY:** 13 hrs

1. Cytological aspects of Mulberry;
2. Brief account of Mendelian genetics, selection, scope and methods.
3. Collection and maintenance of Germplasm Bank.
4. Breeding of Mulberry;
5. Plant introduction and acclimatization.
6. Hybridization- Scope, application and limitations
7. Polyploidy- Euploidy, Aneuploidy, Introduction of Polyploidy and their significance.
8. Mutations-Natural, Induced-Techniques, applications, Limitations.

Unit 3: **BIOTECHNOLOGY IN MULBERRY:** 13 hrs

1. Introduction and Scope of biotechnology in mulberry improvement
2. Biofertilizers –Bio-fertilizers and their application in mulberry cultivation, methods of application, scope and limitation.
3. VermiTechnology.
4. Mulching: Mulches and their significance in soil conservation.
5. Tissue Culture – Tissue culture techniques in mulberry anther/ pollen culture, callus culture, somoclonal variants, somatic, hybrid in *vitro* screening, cryopreservation.

Unit 4: **DISEASES & PESTS OF MULBERRY, INTEGRATED PEST** **MANAGEMENT**

(IPM):

14 hrs

1. Introduction to Plant diseases

1. Foliar Diseases- A. Powdery mildew; B. Rust; C. Leaf Spot; D. Tukra.
2. Stem Diseases- A. Trunk rot; B. Dogare blight; C. Dwarf; D. Stem Canker
3. Root Diseases- A. White root-rot; B. Violet root-rot C. Root-Knot.
4. Prevention and Control of Mulberry Diseases

2. Pest Attack on Mulberry:

1. Identification of different types of leaf eating caterpillars, Jassids, Mealy Bugs, Thrips, Scale Insects, Beetles, Nature of damage, Preventive and control measures.
2. Common Pesticides, Chemical nature, Mode of action.
3. Integrated Pest Management methods.

Unit 5: **RESOURCE MANAGEMENT & ECONOMICS OF MULBERRY** 10 hrs

1. Water management and Watershed management concept – significance of water recharging technologies.
2. Intercropping and uses for soil management.
3. Economics of mulberry cultivation
4. By – products of mulberry and their industrial use

PRACTICALS

45 Hours

1. Identification of different mulberry genotypes
2. Bio – Fertilizers – Identification, Preparation of panchagavya & Jeevamrutha.
3. Vermin Technology
4. By – Products of Mulberry and their utilization – Fruit jam preparation
5. Identification of mulberry diseases and pests Identification,
6. Submission of Herbarium Sheets

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Paper -3 SILKWORM BIOLOGY & PHYSIOLOGY

Unit 1: BIOLOGY OF SILKWORM: 10
hrs

1. Systematic position of Mulberry and Non mulberry silkworms in the animal kingdom (Taxonomic Classification).
2. Kinds of Silkworms & geographical distribution (Mulberry and Non Mulberry Silkworms)
3. Life cycle (Holometabola) of silkworm – egg stage, larva stage, pupa stage and adult stage

Unit 2: MORPHOLOGY & PHYSIOLOGY OF SILKWORM: 14 hrs

1. Morphology of Silkworm Egg, Larva, Pupa & Moth.
2. Anatomy of Silkworm larva
 - A. Digestive System, Excretory System of Larva
 - B. Respiratory, Circulatory and Central Nervous System of Larvae and Silk glands
 - C. Male and Female reproductive system in silkworm larva and moth.

Unit 3: THE SILKWORM AND THE ENVIRONMENT: 10 hrs

1. Introduction of silkworm rearing
2. Rearing Equipment - rearing stand, rearing trays, ant wells, paraffin papers, foam rubber pads, chopsticks, feathers, chopping boards, leaf chambers, cleaning nets, mountages.
3. Disinfection of rearing house - methods, eco-friendly disinfectants-Precautions during disinfection.
4. Rearing and Impact of Environmental factors.

Unit 4: INCUBATION AND PRESERVATION OF SILKWORM EGGS: 10 hrs

1. Preparatory Work for Incubation of Silkworm Egg
2. Development of Silkworm Embryo
3. Environmental conditions for Incubation
4. Technical Management in Incubation
5. Preservation of eggs for initiation of rearing.

Unit 5: SILKWORM REARING & METHODS OF REARING: 16 hrs

1. Rearing of Chawki Silkworms:
 - A. Paraffin Paper method,
 - B. Box rearing
 - C. Cooperative Rearing
2. Scientific Rearing Technology (Package of Practices): Brushing, feeding, bed cleaning, spacing,
3. Moulting and care during moulting
4. Adult Silkworm Rearing Methods:
 - A. Shelf Rearing,
 - B. Floor Rearing
 - C. Shoot Rearing.
5. Mounting-Methods-Variou Mountages
6. Spinning and Harvesting

PRACTICALS

1. Biology of silkworms:

1. Morphology and life cycle of silkworms.
2. Comparative stages of egg, larva.
3. Male pupa, Female pupa, Male moth and Female moth.
4. Digestive system and silk glands of silkworm.
5. Female Reproductive system and Nervous system.

2. Silkworm Rearing:

1. Model rearing house.
2. Chopping Boards, Chopping Knives, Leaf Chambers, Ant wells.
3. Basin Stand, Cleaning Nets.
4. Feeding Stand, Chopsticks and feathers.
5. Hygrometer, Thermometer.
6. Rearing Stands, Chandrikae, Wooden tray.