

# SERICULTURE

**1. Introduction to Sericulture:** History and status of mulberry and non-mulberry sericulture in India. Silk production in India and other countries; export and import. Scope of sericulture in India vis-à-vis other agricultural crops, employment potential and income generation, role of women in sericulture. Sericulture organization and extension in India.

**2. Structure, organization and functions of cell organelles.** Cell cycle and regulation. Structure and organization of chromatin. Special chromosomes. Structure and chemistry of nucleic acids. Classification and synthesis of protein. Genetic code.

**3. Principles and methods of plant breeding.** Host plants of mulberry and non-mulberry silkworms. Botanical description and systematics of genus *Morus*. Mulberry cultivars - tropical and temperate regions, irrigated and rainfed conditions. Anatomy of mulberry leaf, stem and root. Reproductive biology of mulberry.

**4. Mulberry propagation and cultivation.** Soils for mulberry cultivation - Soil profile and classification. Physical, chemical and biological properties of soils. Establishment and maintenance of mulberry gardens. Package of practices. Pests and diseases of mulberry and their management. Plant nutrition.

**5. Classification and characteristic features of insects;** classification of sericigenous insects; characteristic features of order Lepidoptera. Metamorphosis in insects. Silkworm respiratory, digestive, circulatory, excretory and nutrition physiology. Neuroendocrine system in insects.

**6. Classification of silkworms;** Morphology and life cycle of mulberry and non- mulberry silkworms. Anatomical features of *Bombyx mori*. Gametogenesis and embryonic development of *B. mori*. Silkworm seed organization and its significance. Process of silkworm egg production.

**7. Silkworm rearing;** Planning for silkworm rearing, rearing houses and equipments, disinfection and hygiene and incubation. Young and late-age silkworm rearing - Qualitative and quantitative requirements of mulberry leaves, bed spacing, cleaning, moulting, mounting and environmental condition. Cocoon harvesting and marketing. Pests and diseases of silkworm and their management.

**8. Principles and methods of animal breeding;** Silkworm breeding, new concepts of silkworm breeding, biochemical genetics and breeding. Hereditary traits of *B. mori* - egg, larva, cocoon, pupa and moth.

**9. Textile fibers – synthetic and natural;** Insect and non-insect fauna producing silk. Types of silk produced in India. Physical and commercial characteristics of cocoons. Cocoon sorting, stifling and cooking. Silk reeling - charaka, cottage basin, multi-end, automatic and semi-automatic. Silk testing and grading. Cocoon markets and silk exchanges. Wet processing and weaving.

**10. Methods and application of plant tissue culture;** Animal cell culture and its application. Transgenic plant and animals. Tools and techniques of molecular biology.