**SEMESTER-5**

**(Silkworm Seed and Grainage Technology)**

 **DSE-SR-16-503**

 **(Credits: Theory -04, Practical-02)**

**Unit- I: Introduction to Seed Technology**

1. Morphology of Silkworm egg.
2. Embryology of silkworm egg and various stages of development
3. Silkworm seed: Types, production and demand trends
4. Seed areas: Norms for seed areas and selected seed cocoon growers.

**Unit-II: Seed Organization**

1. Seed organization : Introduction to parental stock maintenance and multiplication
2. Seed areas –identification of selected seed rearers/villages.
3. Maintenance of hygiene and disinfection in seed production centres.
4. Seed cocoon markets and seed legislation Act. Norms for marketing.

**Unit-III: Grainage management**

1. Introduction to grainages: Plan of model grainages and equipments
2. Types of grainages.
3. Grainage management: Staff component, labour maintenance of grainage good cocoons, laying ration.
4. Distribution of eggs: precautions and preventive measures

**Unit-III: Seed production in Grainages**

1. Eclosion and oviposition of moths: Synchronization of emergence, card egg and loose egg preparation techniques.
2. Mother moth examination for disease infection: Types of examination, green moth and dry moth examination, individual and mass examination.
3. Acid treatment of bivoltine eggs: hot and cold acid treatments. Advantages and disadvantages
4. Hibernation schedules for egg preservation

**PRACTICALS**

1. Study of morphology of silkworm egg
2. Study of various grainage equipments—Visit to the commercial grainage, visit to the seed cocoon markets, commercial, multivoltine and bivoltine.
3. Demonstration of Cocoon sorting.
4. Sex separation by pupal method
5. Moth eclosion-pairing and depairing. Pupal gut and Mother moth examination—Individual and mass, whole and sampling method
6. Oviposition, preservation of male moths.Sheet eggs and loose egg preparation methods.
7. Dissection of silkworm eggs of different stages—Staining method
8. Acid treatment of bivoltine eggs. Hot acid and cold acid treatments