KAKATIYA UNIVERSITY
Faculty of Science
B. Sc (Sericulture)
Semester – III
D.SC – Seri – III
Silkworm Seed Technology

Theory – 4hours/week	4 credits	Theory {Internal marks 20}
		Theory {External marks-80}
Practical – 3 hours/week	1 credits	Practical - External marks – 25

Objectives

1. To understand about the seed technology, silkworm seed organisation and its importance.
2. Gain knowledge about scientific procedure involved in egg production & hibernation.
3. Schedules and importance of mother moth examination and other related process in production of DFLs.

UNIT – I

Seed technology: introduction, concept and general account of silkworm seeds.
Seed organization – concept and significance, maintenance of parent stock Basic multiplication centers (P_4, P_3, P_2 and P_1 centers), Seed areas - seed cocoon rearers – seed cocoon markets – transaction procedures – significance

Planning for pure and hybrid silkworm eggs production, purchase of bivoltine and multivoltine seed cocoons from markets deflossing, sorting & preservation, pupal examination & its function.

UNIT – II

Grainages: Location, ground plan, model grainage – grainage equipments and their usage, maintenance of environmental factors in grainage, disinfection and hygienic conditions in grainage: Grainage management:- staff and labour maintenance, care to be taken while carrying out grainage activities: Sex separation of pupa and moth, synchronization of moth emergence.

UNIT – III

Processing of eggs: Selection of moth, coupling, decoupling, oviposition, preservation of moths, preparation of starch coated paper – method of egg laying (egg sheet and loose eggs), weighing, disinfection of egg sheet/washing of eggs, weighing and packing of loose eggs,
Pupal and mother moth examination: types of examination – green and dry moth examination, individual, sample and mass examination, precautions.

UNIT - IV

Handling and preservation of eggs:-

Acid treatment – hot and cold acid treatment, advantages and disadvantages. Preservation and handling of hibernated eggs for 3, 4, 6 and 10 months hibernation schedule, incubation of acid treated and hibernated eggs.

REFERENCE BOOKS:-

1. Ganga G. (2003) Comprehensive sericulture, volume 2 Silkworm rearing and seed technology, Oxford & IBH Publishing Co. Pvt. Ltd.
2. Javant Jayaswal, Giridhar K, Somi Reddy J. Jagadish Prabhu, H(2008) Mulberry silkworm seed production, Central Silk Board, Bangalore.
3. Manjeet S. Jolly ed (1987) Appropriate sericulture techniques, International center for training & research in tropical sericulture, Mysore.
4. Reading in sericulture, KU publication, by Dr. Vijaya Babu, Dr. K. Sujatha, Dr. G. Shamitha.
5. Tribuwan Singh, Madan Mohan Bhat (2010) silkworm egg science:- principles and protocol. Daya Publishing house, Delhi.
6. Ullah, S.R and Narasimhanna, M.N (1987) Handbook of practical Sericulture (3rd Edition) Central silkworm Board, Bangalore.
7. Wang San – ming (1989) silkworm egg production, Vol-III FAO Agricultural services Bulletin 73/3 Translated by Li Ping Y, Pan Runshi and Ou Bing – Se

Silkworm Seed Technology

D SC – III Practicals 3hour/week 1 credit 25marks

1. Model grainage plan
2. Identification of grainage equipments.
3. Assessment of cocoons of pure race and hybrids for cocoon weight, shell weight and racial characters.
4. Selection of seed cocoons, sorting & preservation.
5. Sex separation at cocoon, pupa and moth stages.
6. Moth emergence – pairing, de pairing and oviposition.
7. Preparation of egg cards/loose eggs & surface sterilization of eggs.
8. Moth & pupal examination. Individual moth examination, pupal gut examination, identification of pebrine spores
9. Identification of different types of eggs – fertilized, unfertilized, un hatched and dead eggs.
10. Morphology of silkworm egg.
11. Acid treatment: preparation of acids of required specific activity and treatment of eggs with acid.
12. Visit to seed cocoon markets, cocoon markets, grainage and cold storage centers.

KAKATIYA UNIVERSITY
Faculty of Science
B. Sc (Sericulture)
Semester – III
Value Addition in Sericulture
(SEC – I)

Theory	2 hours/week	2-credits	50 marks

Objectives

1. To gain knowledge about the medicinal values of mulberry & its medicament.
2. To understand about the value addition from mulberry leaf, fruit, stem and root.

UNIT – I

Value addition from mulberry leaf:- Animal feed Importance, mulberry leaf extraction in reducing blood glucose, reducing Blood fat, strengthening blood vessels, cosmetic production, Health benefits of mulberry leaves (Tea, Soap, Atherosclerosis)

Value addition to mulberry fruit:- Multipurpose uses of mulberry fruit, mulberry fruit jam, mulberry fruit chutney etc.

Value addition products from mulberry stem:- Mulberry as fodder and fuel, mulberry wood art, utilization of mulberry twigs for basket making, agricultural and sports items etc

Recycling technology of sericulture waste:- preparation of compost from sericulture waste, silkworm litter for biogas generation, vermicomposting of silk waste, Livestock maintenance, Agriculture, Biogas slurry

Value addition to silkworm:- commercial food

Value addition to silkworm pupae:- cereal diet, use of pupal chitin, use of pupal fat and oil, pupae as broilers diet ruminant diet, Pig diet; organic fertilizers, health products pupae diet as astronaut food, paints & vanishes.

UNIT – II

Silk reeling waste and cocoon waste utilization for value addition micro tubes, use in biomedical and bioengineering field, pharmaceutical industry, art craft, interior decoration.

Grainage waste and value addition:- utilization of cut and pierced cocoons, pharmaceutical industry, value addition to silk moth.

Non mulberry sericulture waste utilization for value addition: - Tasar, muga and eri waste – garland, silk paper, silk package material, spun silk & noil silk, importance of quilts

Impact of value added byproducts as entrepreneurship.

REFERENCE BOOKS:-

1. Kundu, S. (ed) (2014) Silk biomaterials for tissue engineering & regenerative medicine, Elsevier.
2. Internet (Literature)

KAKATIYA UNIVERSITY
Faculty of Science
B. Sc (Sericulture)
Semester – III
Agri and Seri Clinic
(SEC – II)

Theory	2 hours/week	2 credits	50 marks

Objectives

1. To study about INM practices, to improve soil health.
2. To gain knowledge about problems related to sericulture.
3. Assessment of inputs and outputs.
4. To gain knowledge about pests and diseases and acquaint with remedial measures.

UNIT – I

Soil health analysis, INM practice to improve the soil and plant health, identification of deficiency symptoms in mulberry & acquainting with remedial measures; Diagnosis of pest and diseases of silkworm and acquainting with remedial measures; survey of problematic rearing houses and mulberry garden and finding of the inputs, leaves and Dfls; Assessment of toxicity & their nature, levels and suggested remedies, development of INM and IDPM schedules for management of nutrition, pest and diseases in mulberry and acquainting with remedial measures.

REFERENCE BOOKS:-

1. Plant Ecology & Phytogeography – N. Arumugam.
2. Soil Fertility fertilizer & integrated nutrients management by Tolanurs, CBS publication.
3. An introduction to environmental toxicology – 4th Edition Michael M Dory.
4. https://www.intechopin.com