

PAPER - II SILKWORM BIOLOGY GRAINAGE & BREEDING:

1. Systematic position of silkworm - Classification & distribution.
2. Morphology & External characters of egg - larva - pupa & Adult.
3. Life history - voltinism - Moltinism.
4. Anatomy of silkworm - digestive system - Excretory - Respiratory circulatory - Nervous & Reproductive systems
5. Development - Hormones, diapause & metamorphosis.
6. Environmental & Physiological factors responsible for silkworm development.
7. Different methods of silkworm seed production - Grainages.
8. Seed areas and 3-4 tier seed crops.
9. Seed organisation.
10. Silkworms breeding - Different races of silkworm in India - Japan, China & Europe.
11. Methods of breeding (brief account) of races/strains.

PRACTICALS:

1. Morphology of larva - pupa & moth. Moth parts, sex separation larva/pupa.
2. Dissection of silk glands, digestive & Reproductive systems
3. Cocoon colours & shell quality
4. Moth pupal gut examination for pebrine disease
5. Studies of different silkworm through cocoon dissection
6. Egg preparation (sheet & loose eggs).
7. Acid treatment (cold & hot acid)
8. Disinfection methods.

Handwritten notes: 1/1/16, 15/1/16, 20/1/16

NR 10

NR 10

Sericulture III yr - III Paper

Rearing - 16-17

PAPER - IV: SILK TECHNOLOGY

1. Raw material - Cocoons - Sorting - Types of defective Cocoons - cocoon testing & ~~efficiency~~

~~PAPER STIFFING STORAGE PRESERVATION~~ Cocoons and cooking / Softening

3. Reeling - Methods & machines - Re-reeling, lacing, skeining &

1. Rearing ~~Books~~ Basic requirements

4. Raw silk - properties & uses of Raw silk.

2. Rearing applicances - different types & their use.

5. Other natural & synthetic fibres - difference with natural silk

3. Rearing ~~Methods~~ shelf, shoot & floor rearing - advantage & disadvantages.

2. ~~Disinfection~~ Products - ~~of silkworms~~

5. ~~Exchange~~ Exchange ~~of silkworms~~ rearing at different stages

Environment ~~factors~~ - Their

Practicals - Chawkiworm rearing.

Brushing of silkworm filatures

- Handy
- Straw &
- Bark
- Bar

7. Late age worm rearing.

1. Cocoon testing:

8. Mountages & mounting methods - Harvesting of cocoons.

a) Silk content

9. ~~Disinfection~~ Disinfection ~~of silkworms~~

c) denier

1. Pebrine agent - mode of infection symptoms, prevent

2. Bacterial agent - do-

3. Viral - do-

- Hot air

2. Cocoon cooking methods & Reeling:

PRACTICALS Open pan system

b) Open pan system

1. Place of rearing silkworms

d) Floating system

2. Identification of rearing equipment.

3. Reeling machines - Types.

3. Brushing - Chowkiworm & Late age worm rearing methods.

4. Leaf preservation methods.

5. Identification of diseased worms.

6. Microscopic study of pebrine spores.

7. Uzi infection Identification & control measures.

Filature

Brushing

Handy and reel

PAPER - IV: SILK TECHNOLOGY

1. Raw material - Coccons - Sorting - Types of defective Coccons - cocoon testing & ~~STANDARDIZATION~~

~~PAPER~~ ^{Shree} ^{Preservation} ~~STANDARDIZATION~~ ~~COCONDS~~ Coccons and cooking. / ^{Softering}

3. Reeling - Methods & machines - Re-reeling, lacing, skeining &

1. Rearing ~~Book~~ ~~making~~ - Basic requirements.

4. Raw silk - properties & uses of Raw silk.

2. Rearing applicances - different types & their use.

5. Other natural & synthetic fibres - difference with natural silk

3. Rearing ~~Methods~~ - shelf, shoot & floor rearing - advantage &

disadvantages.

5. ~~Exchange~~ ~~demand~~ ~~for~~ ~~silkworms~~ ~~over~~ ~~the~~ ~~world~~ rearing at different stages.

BRASSICA ~~g~~ - Chawki worm rearing.

breeding
removal of surface
fillos layers

- penduly
- straw &
o. Bank
Bar

7. Late age worm rearing.

1. Cocoon testing.

8. Mountages & mounting methods - Harvesting of cocoons.

a) Silk content

9. Diseases ~~of~~ ~~silkworms~~

1. Pebrine ~~agent~~ ~~usual~~ ~~agent~~ - mode of infection symptoms, prevent

2. Bacterial ~~agent~~ ~~usual~~ ~~agent~~ - do-

3. Viral ~~agent~~ ~~usual~~ ~~agent~~ - do-

2. Cocoon cooking methods & Reeling:

- Hot air

PRACTICAL ~~Open~~ ~~pan~~ ~~system~~

1. ~~PLA~~ ~~of~~ ~~Practical~~ ~~in~~ ~~house~~

2. Identification of rearing equipment.

3. Reeling machines - Types.

3. Brushing - Chowki worm & b Late age worm rearing methods.

4. Leaf preservation methods:

5. Identification of diseased worms.

6. Microscopic study of pebrine spores.

7. Uzi infection Identification & central measures.

Filature

Practical

KAKATIYA UNIVERSITY

Faculty of Science

B. Sc (Sericulture)

Semester – IV

D SC – Seri - IV

Post cocoon Technology

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

Objectives

1. To introduce the cocoon and its significance in reeling.
2. To acquaint with silk reeling technologies and its importance.
3. To understand the process from cocoon to yarn.

UNIT – I

Textile fibers – Brief introduction to natural & synthetic fibers and their uses: cocoon characteristic, structure of fiber; physical and commercial characteristic of cocoons, importance and problems of reeling in industry.

Cocoon sorting – objectives & procedure: defective cocoons, marketing of cocoons – functions & procedure.

UNIT – II

Cocoon handling, Selection, preservation of cocoons,

Cocoon stifling:- objectives, factors and methods – sun drying, steam stifling, hot air drying, Yamato hot air driers – advantages and disadvantages, cocoon sorting, preservation of cocoons.

Cocoon cooking:- objectives, factors and methods – open pan, three pan, pressurized, floating and sunken system- merits and demerits.

Brushing:- objectives – method – advantage and limitations.

UNIT – III

Silk Reeling:- Evolution of silk reeling, reeling units – charaka, cottage basin, multiend, semi automatic and automatic reeling devices – components and their functions.

Re reeling and packing: objectives, grant reeling, hank preparation, lacing, skeinling, booking, baling and bundling.

Raw silk properties – physical, chemical and microscopic - factors influencing the properties/ silk quality of raw silk, silk exchange – structure and functions.

UNIT –IV

Raw silk testing and grading:- objectives of testing/grading,

Raw silk testing: Visual, winding, evenness, cleanness, neatness, tenacity and elongation, cohesion and condition weight:- raw silk grading – international standards and bureau of International standards (BIS).

Doubling, twisting, weaving, degumming, bleaching and silk dyeing – objectives and methods.

REFERENCE BOOKS:-

1. Bibhuti Nath Jha (2012) Silk industry in India, Satyam Publishing house, New Delhi.
2. Dhote, A.K (1989): Sericulture instructional cum practical manual, Volume V, Silk reeling, testing and spinning, NCERT, New Delhi.
3. Huang guo Rui (1998) Silk Reeling, - Oxford & IBM Publishing Co. Pvt Ltd, New Delhi.
4. Krishnaswami, S. Madhava Rao, N.R, Suryanarayana, S.K and Sundaramurthy, TS (1972) Manual – 3 Silk reeling. FAO Agricultural Service Bulletin 15/3 Food & Agriculture Organization of the United Nations, Rome
5. Mahadevappa, D., Halliyal, U.G., Shankar., A.G and Ravindra Bhandiwad 2000. Mulberry silk reeling technology, Oxford & IBM publishing Co. Pvt Ltd, New Delhi.
6. Somasekhar, T.H and Kawakami, K Eds (2002) manual on Bivoltine silk reeling technology, 2002, JICN PP BST Project CSRTI Mysore.

Post cocoon Technology

Practicals D SC - Seri – IV 3 hours/week 1 credit 25 marks

(Core paper)

1. Identification of textile fibers by microscopic, physical, chemical and confirmatory tests.
2. Physical and commercial characters of cocoons in MV and BV races / Breeds.
3. Properties like tenacity, elongation, toughness, elastic recovery and moisture absorption.
4. Sorting of cocoons:- Identification and calculation of good and defective cocoons by number and percentage.
5. Cocoon stifling and cooking
6. Determination of filament length / reel ability/raw % recovery / renditta and denier.
7. Determination of alkalinity and hardness of reeling water by titration method.
8. Identification of reeling machines and their components.
9. Estimation of degumming loss in multivoltine and bivoltine cocoons and raw silk.
10. Estimation of bleaching loss in multivoltine silk.
11. Dyeing of multivoltine and bivoltine silk using acid, basic and compound dyes.

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 (P₄, P₃, P₂ and P₁ 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 – IV

D SC – Seri - IV

2020-2021

Post cocoon Technology

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

Objectives

1. To introduce the cocoon and its significance in reeling.
2. To acquaint with silk reeling technologies and its importance.
3. To understand the process from cocoon to yarn.

UNIT – I

Textile fibers – Brief introduction to natural & synthetic fibers and their uses: cocoon characteristic, structure of fiber; physical and commercial characteristic of cocoons, importance and problems of reeling in industry.

Cocoon sorting – objectives & procedure: defective cocoons, marketing of cocoons – functions & procedure.

UNIT – II

Cocoon handling, Selection, preservation of cocoons,

Cocoon stifling:- objectives, factors and methods – sun drying, steam stifling, hot air drying, Yamato hot air driers – advantages and disadvantages, cocoon sorting, preservation of cocoons.

Cocoon cooking:- objectives, factors and methods – open pan, three pan, pressurized, floating and sunken system- merits and demerits.

Brushing:- objectives – method – advantage and limitations.

UNIT – III

Silk Reeling:- Evolution of silk reeling, reeling units – charaka, cottage basin, multiend, semi automatic and automatic reeling devices – components and their functions.

Re reeling and packing: objectives, grant reeling, hank preparation, lacing, skeinling, booking, baling and bundling.

Raw silk properties – physical, chemical and microscopic - factors influencing the properties/ silk quality of raw silk, silk exchange – structure and functions.

UNIT –IV

Raw silk testing and grading:- objectives of testing/grading,

Raw silk testing: Visual, winding, evenness, cleanness, neatness, tenacity and elongation, cohesion and condition weight:- raw silk grading – international standards and bureau of International standards (BIS).

Doubling, twisting, weaving, degumming, bleaching and silk dyeing – objectives and methods.

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3. Huang guo Rui (1998) Silk Reeling, - Oxford & IBM Publishing Co. Pvt Ltd, New Delhi.
4. Krishnaswami, S. Madhava Rao, N.R, Suryanarayana, S.K and Sundaramurthy, TS (1972) Manual – 3 Silk reeling. FAO Agricultural Service Bulletin 15/3 Food & Agriculture Organization of the United Nations, Rome
5. Mahadevappa, D., Halliyal, U.G., Shankar., A.G and Ravindra Bhandiwad 2000. Mulberry silk reeling technology, Oxford & IBM publishing Co. Pvt Ltd, New Delhi.
6. Somasekhar, T.H and Kawakami, K Eds (2002) manual on Bivoltine silk reeling technology, 2002, JICN PP BST Project CSRTI Mysore.

Post cocoon Technology

Practicals D SC - Seri – IV 3 hours/week 1 credit 25 marks

(Core paper)

1. Identification of textile fibers by microscopic, physical, chemical and confirmatory tests.
2. Physical and commercial characters of cocoons in MV and BV races / Breeds.
3. Properties like tenacity, elongation, toughness, elastic recovery and moisture absorption.
4. Sorting of cocoons:- Identification and calculation of good and defective cocoons by number and percentage.
5. Cocoon stifling and cooking
6. Determination of filament length / reel ability/raw % recovery / renditta and denier.
7. Determination of alkalinity and hardness of reeling water by titration method.
8. Identification of reeling machines and their components.
9. Estimation of degumming loss in multivoltine and bivoltine cocoons and raw silk.
10. Estimation of bleaching loss in multivoltine silk.
11. Dyeing of multivoltine and bivoltine silk using acid, basic and compound dyes.

12. Printing of silk fabrics: objective and methods – hand and screen printing.
13. Study of different types of silk waste
14. Visit to nearest silk reeling centers.
15. Longitudinal & cross section view of silk textile fibers & its impact on physio-mechanical characters.

KAKATIYA UNIVERSITY
FACULTY OF SCEINCE
B. Sc (Sericulture)
Semester – V
DSE – Seri – I (Elective - I)
Mulberry and Silkworm Crop Protection

2020 - 2021

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

Objectives

1. To study the incidence, symptoms and damage caused by pests and diseases of mulberry & silkworm.
2. To acquaint with management of pest and diseases through different methods to prevent crop loss (in mulberry and rearing).

UNIT – I:- Sampling of Diseases / Sample

Collection of diseases form Mulberry, Identification, Isolation, culturing and preservation of pathogen of mulberry; disease scoring scale – calculation of disease index percentage and severity, significance of crop protection.

Mulberry diseases & its management

- Introduction and importance of mulberry diseases
- Fungal disease:- mulberry leaf and stem diseases – incidence, symptoms
- Root rot – incidence, symptoms, casual organism, life cycle of pathogen and management and incidence, symptoms.
- Viral, bacterial, nematode diseases of mulberry- occurrence, symptoms, casual organisms, and its management.
- Nutritional disorders in mulberry - symptoms and remedial measures

UNIT – II Mulberry pests:-

- Pests, predators and parasites.
- Definition - mulberry pest and its classification.
- Mulberry pests:- leaf eating cater pillars, mealy bugs (tukra), leaf rollers, jassids, thrips, scale insects, beetles, grass hoppers, sap suckers - occurrence, symptoms, nature of damage and integrated crop measures,
- Mulberry predators - nature of damage & management.
- Integrated Pest Management.

UNIT – III Silkworm diseases:-

- Introduction – mode of infection, classification of silkworm diseases.
- Protozoan disease (Pebrine) – occurrence, symptoms, casual organism, life cycle and management.
- Bacterial disease of silkworm – occurrence, types symptoms, casual organism, predisposing factors, mode of infection, prevention and control measures.
- Viral disease (grasserie) – occurrence, types, symptoms, casual organism, mode of infection – management.
- Fungal disease (muscardine) – occurrence, types, symptoms, casual organism, mode of diseases and management,
- Diseases of non mulberry & its management.

UNIT – IV Pests and Predators of Silkworm:-

- Dermestid beetles – life cycle, factors responsible, Indian uzifly, nature of damage and prevention / control measures.
- Predators of Silkworm:- Cockroach, ant, lizards, rodents, birds – systematic position, nature of damage and control measures.
- Integrated pest management:- physical, chemical and biological control methods.
- Pest and predators of non mulberry and their management.

REFERENCE BOOKS: -

1. Govindaiah Gupta, V.P, D. Rajadurai, S & Nishitha Naik (2005) A text book on mulberry crop protection, Central Silk Board, Bangalore.
2. Govindan R and T.K. Narayanaswamy (1998) principles and silkworm pathology mulberry and silkworm crop protection.
3. Jolly M.S., Sen S.K., Sonwalker, N. and Prasad G.K, (1979) Sericulture Manual – 4 Non mulberry silk, Food and Agricultural Services Bulletin 15/4 food and Agricultural Organization of the United Nations Rome.
4. Khan, M.A., Anil dhar., Zeya, S.B. and Trag, A.B (2004) Pests and Disease of Mulberry and their management. Bishan Singh, Mahendra Pal Singh Publishing.
5. Lu Yup Lian (1991) silkworm disease FAO Agricultural Services Bulletin 73/4 FAO of the United Nations Rome.
6. Nataraju B and Balavenkatasubbaiah (2008) silkworm diseases and their management, under block 2, Silkworm disease and pest management in crop protection INGOU, New Delhi.
7. Singh R.N and Saratchandra, B (2011) sericulture entomology A.P.H Publishing Corporation, New Delhi.
8. Singh R.N, Samson, M.V and Datta R.K (2000) Pest management in sericulture. Indian Publishers House Pvt. Ltd, New Delhi.
9. Tribhuvan Singh and Pramod Kumar Singh (2013) Mulberry crop protection, Discovery Publishing House Pvt. Ltd. New Delhi.

Mulberry and silkworm crop protection

Practicals - DSE – Seri - 1 Semester - V 3 hrs/week 1 credit 25 marks

1. Studies of fungal disease of mulberry (free hand sectioning), staining and temporary mounting.
2. Collection of diseased samples of mulberry leaf / root and their identification and preservation, identification of fungal, bacterial pathogen, mineral deficiencies symptoms in mulberry and their remedial measures.
3. Pests of mulberry – collection, identification and preservation / mounting.
4. Studies on common insect pests of mulberry - leaf eating caterpillars, scale insects, mealy bugs, thrips, jassids, leaf roller and grass hoppers.
5. Morphological features of pebrine infected silkworm eggs, pupa and moth – isolation and microscopic examination. Staining of spores (giemsa staining).
6. Preparation of media and cultivation of bacteria,
Characterization of bacteria, 1) Morphological: Shape, endospore stain, capsule stain
2) Cultural growth in different carbon sources (Media)
3) Biochemical Tests – Catalase, IMVC, Nitrate reductase
7. Staining and study of symptoms of bacterial diseases of silkworm – microscopic examination and identification of pathogens.
8. Identification / visual examination of silkworm larva infected with NPV, CPV and kenchu – collection and Microscopic examination of polyhedral bodies – staining polyhedral
9. Study of silkworm larva, pupa and moth infected by fungal disease – collection, staining and microscopic examinations.
10. Fungicide / pesticides – forms, formulation and application
11. Studies on India uzifly and dermestid beetle - identification of maggot, pupa, adult and silkworm larva infected by uzifly.
12. Visit to different mulberry garden in different districts for field study.

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE

B. Sc (Sericulture)

Semester – II

D. SC - Seri - II

Silkworm Biology & Rearing Technology

2019-2020
2020-2021

Theory: 4 hours/week	4 credits	Theory {Internal marks: 20}
Practicals: 3 hours/week	1 credit	Theory {External marks: 80}
		Practical: External Marks – 25

Objectives

1. Acquire knowledge on various aspects of silkworm biology & development.
2. To acquaint with ecology & ethiology of silkworm rearing.
3. To familiarise with improved rearing technologies.
4. Develop confidence to set up farms on their own.

UNIT – I

Salient features of class Insects - Classification of Serigenous Insects – Characteristics features of order Lepidoptera - families - Bombycidae and Saturniidae- economical importance of insects, Classification of Silkworms – based on origin, geographical distribution, voltinism and moulting - popular mulberry silkworm species and varieties of Telangana and India.

Biology of Silkworm *Bombyx mori* – Life cycle of *Bombyx mori*.

UNIT – II

Morphology of *B. mori*: egg, larva, Pupa and moth. Metamorphosis – Definition, types and Significances.

Anatomy:- digestive system, circulatory system - excretory system - nervous system, male and female reproductive system, structure and function of silk glands.

UNIT – III

Rearing House:- model rearing house, types of rearing houses, rearing appliances- disinfection of rearing house and appliances-personal hygiene.

Procurement of DFL – transportation procedures.

Incubation – Definition, environmental requirements, black boxing and its importance.

Brushing - Definition; types of brushing and its importance

UNIT – IV

Chawki rearing:- Preparation:- brushing & its methods, rearing -optimum condition, chawki methods and frequency of feeding, bed cleaning & methods of cleaning, spacing, moulting & care during moulting.

Late rearing: methods, optimum condition, feeding, bed cleaning and methods – spacing, moulting & care to be taking during moulting.

Spinning: Identification of spinning worms, mounting and mounting density – types of mountages – environmental conditions during spinning and moulting.

Moulting – identification of moulting worms and care

Harvesting: Time of harvesting, harvesting methods, storage, preservation, transportation and marketing of cocoons- time and procedure to be followed.

Mounting – identification of worms, mounting and spinning of larvae.

REFERENCE BOOKS:-

1. Chrsley,S.R (1982) Culture and Sericulture Academic press inc., New York U.S.A
2. Ganga., G., and J. Sulochana Chetty (1991) An Introduction to Sericulture:- Oxford & IBM Publishing Company, Both Editions
3. Krishnaswami, S; Narasimhanna, M.N; Suryanarayan, S.K and Kumararaj, S. (1973) SERICULTURE MANUAL-2 – Silkworm Rearing, Agriculture services Bulletin FAQ sericulture manual, Rome
4. Manuals - @ Silkworm Rearing Agriculture Serice bulletin FAO, Rome.
5. Madan Mohan Rao, M. (1999) Comprehensive Sericulture Manual. P.S Publication, Hyderabad
6. M.Amin Masood & Afifa S, Kamie I (2000) Principles of temperate sericulture Kalyani C Publisher
7. S.Morashi (2001) Improvement of biological functions in the silkworm, science publisher.
8. Tazim Y (1922) Handbook of silkworm rearing Fuzi pub Co Ltd Tokyo Japan.
9. Yataro Fazima (2001) improvement of Biological Functions in the silkworm science, publishers

Silkworm Biology and Rearing Technology

PRACTICALS

3hours/week

1credit

Marks-25

1. Life Cycle: Morphology of egg, larva, pupa and adult silkworm of *B. mori*
2. Sex separation in larva, pupa and adult silkworm
3. Anatomy of silkworm: Dissection of mouthparts, digestive system –respiratory system, nervous system, silk glands, reproductive system of male and female moth, cocoon characteristics- uni, bi & mv races
4. Rearing houses, model rearing house, rearing appliances for chawki and late age
5. Disinfection – types of disinfectants – concentration, dosage requirements
6. Incubation of silkworm eggs: method, black boxing, optimum environmental condition.
7. Calculation of fecundity and hatching percentage
8. Chawki rearing – feeding, bed cleaning, spacing, moulting.
9. Late age rearing - feeding, bed cleaning, spacing, moulting.
10. Mounting and spinning – types of mountages.
Note: silkworm rearing (22-24 days) submission of report
11. Mounting – identification of moulted worms and care to be taken during moulting.