

## 2. SERICULTURE ASSISTANT

### 1) INTRODUCTION

As long as human desire for silk garments continues, the demand for sericulture activity remains. Silk is the queen of textiles and the naturally produced animal fibre. Even in the present age of super computers and hi-tech life the silk industry is having increased demand. It is for this reason China, the birth place of sericulture still stands No.1 in the World in silk production worth about 52-55 per cent of the total yarn production. Next place is for India with 12-15 per cent. Karnataka state stands first with 60% contribution in silk production at National level. While A.P. State with lot of potentiality for sericulture is now contributing only up to 16% which needs to be improved.

Since the soil and climatic conditions are suitable and it is being agro based job-oriented/self employment generated several unemployed under qualified youth can be provided with short duration certificate courses of capsular syllabi with maximum exposure to practical/field work. Thus they can become professionally self sufficient. With this objective only present syllabi are prepared to suit the clientele.

### 2) OBJECTIVES OF THE COURSE

- ❖ To train students in Mulberry Cultivation, Seed Technology, Silk Worm Rearing, Silk Reeling.
- ❖ To make them to learn the skills necessary for self-employment in mulberry leaf production, seed production, rearing and reeling.
- ❖ To give maximum scope for hands on work and to learn state of the art.

### 3) SKILLS TO BE PROVIDED

- ❖ Land preparation.
- ❖ Mulberry plantation & Crop maintenance.
- ❖ Silk moth pairing – DFLs preparation.
- ❖ Acid Treatment.
- ❖ Rearing.
- ❖ Reeling.
- ❖ Twisting
- ❖ Propagation skills.
- ❖ Disease Identification.

### 4) EMPLOYMENT OPPORTUNITIES

- a) Wage Employment
  - i) Operative (Grainage)
  - ii) Operative (Mulberry cultivation)
  - iii) Operative (Extension)
  - iv) Operative (Rearing)
  - v) Operative (Reeling)
- b) Self Employment
  - i) Mulberry nursery
  - ii) Grainage
  - iii) Sericulture service center
  - iv) Mulberry grower

- v) Silk worm seed supplier
- vi) Mulberry propagator
- vii) By product supplier
- viii) Silk worm rearer
- ix) Silk Reeler
- x) Silk twister
- xi) Seed rearer
- xii) Cocoon supplier

**5) Schemes Of Instruction Per Module**

Module	Theory		On Job Training		Total	
	Hours	Weightage	Hours	Weightage	Hours	Weightage
I	72	30	216	70	288	100
Total	72	30	216	70	288	100

**Schemes Of Instruction Per Week**

Module	Theory	On the Job Training	Total
Modules I/II/III	6 Hours	18 Hours	24 Hours

**6) SYLLABUS:**

**MODULE-I**

**THEORY: MULBERRY CULTIVATION & FARM MAINTENANCE**

Chapter No.	Topic	No. of Hrs.
1)	History of Sericulture & Mulberry Distribution	5
2)	Environmental conditions	5
3)	Soils & land preparation	7
4)	Propagation of mulberry	12
5)	Cultivation & Inter cultivation	10
6)	Manures and fertilizers	5
7)	Harvesting of leaves	2
8)	Farm Maintenance and Economics	6

**1. HISTORY OF SERICULTURE & MULBERRY DISTRIBUTION**

- 1.1 Introduction
- 1.2 History
- 1.3 Silk Road
- 1.4 Distribution of Mulberry varieties

**2. ENVIRONMENTAL CONDITIONS:**

- 3.1 Introduction
- 3.2 Atmospheric components
- 3.3 Climatic Conditions

**3. SOILS & LAND PREPARATION**

- 4.1 Introduction
- 4.2 Soils of A.P.
- 4.3 Properties of Soils
- 4.4 Soils suitable for Mulberry
- 4.5 Land preparation
- 4.6 Soil & Moisture Conservation

**4. PROPAGATION OF MULBERRY:**

- 5.1 Introduction
- 5.2 Nurseries
- 5.3 Sexual propagation
- 5.4 Asexual propagation

**5. CULTIVATION & INTERCULTIVATION:**

- 6.1 Introduction
- 6.2 Selection of Mulberry
- 6.3 Rainfed Method
- 6.4 Irrigated Method
- 6.5 Methods of Irrigation
- 6.6 Cultivation Schedules
- 6.7 Inter-Cultivation

**6. MANURES AND FERTILIZERS:**

- 8.1 Introduction

- 8.2 Manures
- 8.3 Fertilizers
- 8.4 Vermi compost
- 8.5 Application schedules

**7. HARVESTING OF MULBERRY LEAVES:**

- 9.1 Introduction
- 9.2 Harvesting Methods
- 9.3 Preservation of Leaves

**8. FARM MAINTENANCE & ECONOMICS :**

- 1.1 Introduction
- 1.2 Systems of farming
- 1.3 Farm implements
- 1.4 Farm records
- 1.5 Estimation of leaf yield
- 1.6 Economics

**9. MULBERRY DISEASES & PESTS:**

- 2.1 Introduction
- 2.2 Bacterial
- 2.3 Viral
- 2.4 Fungal
- 2.5 Parasitic
- 2.6 Deficiency diseases
- 2.7 Bihar Hairy Caterpillar
- 2.8 Jassids
- 2.9 Thrips
- 2.10 Mites
- 2.11 Scale insects
- 2.12 Beetles

**MODULE-I**

**ON THE JOB TRAINING**

**MULBERRY CULTIVATION AND FARM MAINTENANCE**

<b>Sl.No.</b>	<b>Unit of Activity</b>	<b>Total Hours : 216</b>
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1. Study of different types of soils
2. Soil sampling
3. Preparation of land for mulberry cultivation
4. Measurement of environmental temperature
5. Measurement of environmental humidity
6. Recording of soil pH.
7. Reclamation of soil.
8. Study of mulberry varieties (local).
9. Identification of hybrid varieties.
10. Study of leaf characters.
11. Study of soil erosion in the cultivable lands.
12. Soil conservation methods.
13. Moisture conservation methods.
14. Estimation of soil moisture.
15. Preparation of herbarium.
16. Propagation through nurseries.
17. Propagation through cuttings.
18. Propagation through grafting.
19. Propagation through budding.
20. Propagation through layering.
21. Planting systems.
22. Irrigation of mulberry farms.
23. Identification of weeds and their control.
24. Collection and preservation (herbarium) of weeds.
25. Application of organic manure.
26. Application of green manure.
27. Preparation of compost and Farm Yard Manure.
28. Preparation of vermin compost.
29. Study of pruning methods.
30. Leaf harvesting.
31. Transporting and preservation of leaves.
32. Visits to nearest mulberry farms and fields.
33. Study of different farms in the village.

34. Study of labour management in the neighboring farms.
35. Identification of farm implements.
36. Estimation of leaf yield.
37. Identification of bacterial diseases.
38. Identification of Viral diseases.
39. Identification of Fungal diseases.
40. Identification of deficiency diseases.
41. Identification of root-knot nematode disease.
42. Identification of different major pests of mulberry.
43. Identification of different minor pests of mulberry.
44. Collection and preservation of diseased leaves.
45. Collection and preservation of different pests.
46. Maintenance of farm records.
47. Visits to nearest mulberry and other farms.
48. Tabulation farm economics.

## MODULE-II

### THEORY - SILKWORM SEED PRODUCTION AND REARING

Chapter No.	Topic	No. of Hrs.
1)	Life cycle of silk worm <i>Bombyx</i>	3
2)	Grainage house & equipments	10
3)	Grainage operations & activities	15
4)	Rearing House & Equipments	7
5)	Preparation for rearing	5

6)	Rearing conditions	10
7)	Incubation and brushing	5
8)	Silkworm rearing	15
9)	Effective Rate of Rearing (ERR) & Economics	2

**Total Hours : 72**

**1. LIFE CYCLE OF SILKWORM**

- 1.1 Introduction
- 1.2 Morphology of life stages (*Bombyx mori*)
- 1.3 Life cycle

**2. GRAINAGE HOUSE & EQUIPMENTS :**

- 2.1 Introduction
- 2.2 Grainage building
- 2.3 Equipments
- 2.4 Disinfection

**3. GRAINAGE OPERATIONS AND ACTIVITIES:**

- 3.1 Introduction
- 3.2 Seed cocoon selection
- 3.3 Sexing
- 3.4 Synchronisation
- 3.5 Coupling & decoupling
- 3.6 Preparation of Layings
- 3.7 Moth examination
- 3.8 Handling of eggs
- 3.9. Acid Treatment
- 3.10 Incubation of eggs
- 3.11 Transporting of eggs

**4. REARING HOUSE AND EQUIPMENTS**

- 4.1 Introduction
- 4.2 Site Selection
- 4.3 CSB Model
- 4.4 Types of rearing houses

4.5 Equipments & Uses

4.6 Chemicals and Uses

**5. PREPERATION FOR REARING:**

5.1 Introduction

5.2 Cleaning

5.3 Preparation of disinfectants

5.4 Disinfection

5.5 Maintenance of hygienic conditions

**6. REARING CONDITIONS:**

6.1 Introduction

6.2 Temperature

6.3 Humidity

6.4 Air

6.5 Light

6.6 Regulation of Environmental Conditions

**7. INCUBATION & BRUSHING:**

7.1 Introduction

7.2 Incubation

7.3 Black Boxing

7.4 Hatching

7.5 Methods of Brushing

**8. SILKWORM REARING:**

8.1 Introduction

8.2 Importance of chawki and Late age rearing

8.3 Quality of mulberry leaf and feeding schedules

8.4 Rearing activities (Bed cleaning Spacing Moulting, Spinning, mounting)

8.5 Rearing Methods

8.6 Cocoon harvesting Transport

**9. EFFECTIVE RATE OF REARING AND ECONOMICS:**

9.1 Introduction



9.2 Calculation of ERR by Weight and Number

9.3 Economics of rearing 300 DFLs or 1 acre.

## MODULE – II

### ON THE JOB TRAINING SILKWORM SEED PRODUCTION & REARING

**Sl.No. Unit Of Activity**

**No. of Hrs. 216**

1. Morphological studies of silkworm (*Bombyx*)
2. Study of different races of silk worms.
3. Study of plan of grainage building.
4. Study of grainage equipment.
5. Study of types seeds.
6. Preparation and grainage for seed production.
7. Selection and procurement of seed cocoons.
8. Identification of bad cocoons.
9. Preservation of seed cocoons.
10. Sexing.
11. Synchronisation of moth emergence.
12. Coupling, decoupling and oviposition.
13. Preparation of layings (Egg card, loose eggs).
14. Moth examination
15. Disinfection of eggs.
16. Handling of eggs.
17. Collection and preservation of *Bombyx* life stages.
18. Visits to nearest grainage centres.
19. Incubation of silkworms.
20. Black boxing of silk worms eggs
21. Brushing of worms by different methods.
22. Rearing of silkworms from brushing to harvesting.
23. Regulation of environmental conditions, quality leaf, selection feeding, frequency of feeding, cleaning by different methods, spacing, moulting etc., are to be practiced.
24. Collection of mature worms and mountings.

25. Preparation of different mountages.
26. Maintenance of rearing records.
27. Visit to nearest rearing houses to observe rearing and submit the report to the teacher concerned.
28. Prepare mountages with locally available material
29. Calculate hatching percentage
30. Calculate ERR by weight and number
31. Dissect spinning worm and identify the silk gland and its parts
32. Prepare life cycle of silkworm (specimens)
33. Identify the parts of cocoon

Report on the following items to the concerned teacher with respect to your field visit

- ❖ Method of rearing
- ❖ Type of rearing house
- ❖ Process of disinfection
- ❖ Types of mountages
- ❖ Income aspects
- ❖ Opinion of the Rearer on Sericulture

### MODULE-III

#### THEORY - SILK WORM PATHOLOGY & SILK REELING

Chapter No.	Topic	No. of Hrs.
1)	Silkworm diseases	14
2)	Silkworm pests	10
3)	Raw material for reeling	8
4)	Stifling and conditioning	8
5)	Cocoon cooking and brushing	8
6)	Reeling	10
7)	Raw silk testing	6

8)	Byproducts of sericulture	4
9)	Economics	4
<b>Total Hours :</b>		<b>72</b>

**1. SILKWORM DISEASES**

- 1.1 Introduction
- 1.2 Protozoan diseases
- 1.3 Bacterial diseases
- 1.4 Viral diseases
- 15. Fungal diseases

**2. SILKWORM PESTS**

- 2.1 Introduction
- 2.2 Major pests
- 2.3 Minor pests

**3. RAW MATERIAL FOR REELING:**

- 3.1 Introduction
- 3.2 Physical characters
- 3.3 Principles for assessment
- 3.4 Tactile and numerical tests
- 3.5 Defective cocoons
- 3.6 Good cocoons
- 3.7. Model problems
- 3.8. Price Fixation

**4. STIFLING AND CONDITIONING**

- 4.1 Introduction
- 4.2 Stifling methods
- 4.3 Storage of cocoons
- 4.4 Sorting of cocoons
- 4.5 Deflossing
- 4.6 Riddling
- 4.7. Mixing

**5. COCOON COOKING & BRUSHING**

- 5.1 Introduction
- 5.2 Properties of silk
- 5.3 Cooking methods
- 5.4 Brushing and methods

## **6. REELING**

- 6.1 Introduction
- 6.2 Reeling operations
- 6.3 Reeling Apparatus
- 6.4 Reeling machines
- 6.5 Re-reeling
- 6.6. Silk examination
- 6.7. Lacing
- 6.8. Skeining
- 6.9. Book making and bailing
- 6.10 Storage of silk

## **7. RAW SILK TESTING**

- 7.1 Introduction
- 7.2 Testing methods and parameters
- 7.3 Standard testing appliances
- 7.4 Classification of silk

## **8. BY PRODUCTS OF SERICULTURE**

- 8.1 Introduction
- 8.2 Mulberry
- 8.3 Grainage
- 8.4 Rearing
- 8.5 Reeling

## **9. ECONOMICS**

- 9.1 Introduction
- 9.2 Economics of country charka and cottage basin
- 9.3 Records and uses

## **MODULE-III**

**ON THE JOB TRAINING**  
**SILKWORM PATHOLOGY & SILK REELING**

<b>Sl.No.</b>	<b>Unit of Activity</b>	<b>Total Hours : 216</b>
1.	Identification of different cocoons.	
2.	Identification of silkworm diseases-Pebrine, Muscardine, Flacherie, Grasserie based on external symptoms.	
3.	Collection and preservation of diseased worms.	
4.	Collection and preservation of pests.	
5.	Identification of uzifly infected larva, preservation and control measures.	
6.	Evaluation of commercial aspects such as shell ration, filament length, denier, productivity, renditta etc.	
7.	Problems on the above aspects.	
8.	Visits to nearest rearing houses to observe the diseases and to collect the diseased worms.	
9.	Visit to nearest cocoon markets.	
10.	Observation Price fixation.	
11.	Stifling of cocoons by different methods.	
12.	Cooking of cocoons by open pan methods.	
13.	Reeling of cocoons by cottage basin and country charka machines.	
14.	Silk examinations: Lacing, skeining, boiling.	
15.	To calculate various commercial cocoon characters.	
16.	Visits to nearest reeling centres.	

**6. C) FIELD WORK (FOR SKILL DEVELOPMENT):**

**SITE: Research Institute:**

Central Sericulture Research and Training Institute, Mysore; Central Silk Board, Coonoor; Nilgiris district/Central Silk Technological Research Institute, Bangalore; Central Tasar Research and Training Institute, Ranchi; State Govt. Institutions, Universities offering Sericulture at PG Level; Kakatiya, Osmania, Padmavathi, SKD, SV Universities.

**SYLLABUS**

- Visit to meteorological observatory to study the use of weather recording equipments.
- Study of deficiency symptoms of essential plant nutrients.
- Seed treatment with fungicides and bacterial inoculant.
- Inorganic fertilizers and their identification.
- Study of economical use of water (micro-irrigation).

- Important weeds, their collection and preparing weed herbarium.
- Use of chemical pesticides-preparing solution of given concentration application and observing their effects on crops and weeds.
- Identification and collection of insect, pests and diseases.
- Estimation of quantity of fertilizers based on recommended dose of crop.
- Study of water requirement of various crops.
- Seed germination types and conditions necessary for germination and schedules of cultivation.
- Study of seed character-viability, purity, dormancy, germination.
- Asexual methods of propagation-cutting layering budding grafting.
- Use of plant structures for multiplication-(tissue culture) suckers bulbs corns stolon runners, rhizomes.
- Raising of seeding and plant materials and their transplanting.
- Use of growth regulators in plant multiplication and study of glass houses nursery bed.

**SITE: Sericulture Farms:**

CSR and TI Research Extension Centre, Bangalore; State Govt. Institutions having Rearing, Grainage facilities.

**SYLLABUS:**

- Study of the food plants of different types of silkworms.
- Study and morphological features of root, branch and leaf.
- Visits to farmer to understand the profitability of a mulberry cultivation.
- Study of different farm tools, implements, equipment and machinery used on farm.
- Study of agronomic aspect of farm tools and implements for their operation.
- Study of manually operated farm tools.
- Study of manually operated farm tools.
- Study of anima operated farm implements.
- Study of power operated machines.
- Study the different mulberry varieties and their diagnostic features.
- Selection of nursery site based on soil type, topography, drainage/irrigation facility.
- Examination of seed material for its suitability and freeness from seed born diseases/pests.
- Methods of nursery bed preparation.
- Preparation of farm yard manure and compost.
- Methods of fertilizer application.
- Weeding and interculture operations.

- Identification of various diseases, pests and other disorders.
- Uprooting, care and preservation of seedlings.
- Pests of mulberry crops and post harvest produce.
- Study of the cycle nature and extent of damage, host range of pests.
- Study and application of the management methods.
- Study and application of integrated pest management.
- Up-keep and maintenance of plant protection equipment.

**SITE: Grainages:**

National Silk Worm Seed Project, Central Silk Board, Mysore; State Govt. Institutions (Gainage), Private Grainages.

**SYLLABUS:**

- ❖ Visit to a grainage and study the space and equipment requirements for a seed production unit.
- ❖ Identification of different sericigenous insects.
- ❖ Cleaning, washing and drying of appliances.
- ❖ Preparation of disinfectants of rearing building and appliances.
- ❖ Preliminary seed cocoon testing.
- ❖ Early eclosin test.
- ❖ Sorting, sexing and preservation of seed socoons.
- ❖ Preparing loose and sheet eggs and understanding their merits and demerits.
- ❖ Pairing, duration of pairing and ideal conditions for ovipositioning.
- ❖ Microscope functioning and maintenance.
- ❖ Moth examination (individuals and mass) pebrine detection.
- ❖ Methods of acid treatment.
- ❖ Refrigeration requirements.
- ❖ Different schedules of chilling and acid treatment.
- ❖ Hibernation schedules.
- ❖ Silkworm seed incubation requirements.
- ❖ Assessing the cocoons for yield and quality.
- ❖ Cocoon transportation and marketing.
- ❖ Study of various records of a grainage.

**SITE:**

Cocoon Markets; State Govt. Cocoon markets.

## **SYLLABUS**

- ❖ Cocoon selection for seed preparation.
- ❖ Ideal method of transporting seed cocoons.
- ❖ Price fixation.

### **SITE:**

Govt.Reeling Centres.

### **SYLLABUS :**

- ❖ Study of good cocoons.
- ❖ Study of defective cocoons.
- ❖ Collection of defective cocoons.
- ❖ Preparation for reeling.
- ❖ Observation of brushing equipments & brushing.
- ❖ Collection of waste silk.
- ❖ Reeling machine-study.
- ❖ Practice on charka reeling.
- ❖ Stifling of cocoons.
- ❖ Cooking of cocoons.
- ❖ Cocoon mixing.
- ❖ Cocoon sorting
- ❖ Cocoon riddling.
- ❖ Study of reeling records.

## **7. LIST OF TOOLS & EQUIPMENT**

<b>Sl.No.</b>	<b>Description</b>	<b>Nos. Required</b>
1)	Ant wells	8
2)	Rearing Stands	2
3)	Feeding stand	1
4)	Leaf chamber	1
5)	Bamboo round trays	16
6)	Bill Hoe	2
7)	Budding knife	4



8)	Grafting cum budding knife	4
9)	Digging fork	2
10)	Garden shear	2
11)	Garden rake	2
12)	Hand fork	4
13)	Hand cultivator	4
14)	Iron pans	4
15)	Kodali	4
16)	Pick axe	4
17)	Pruning knife	4
18)	Pruning saw	4
19)	Secateur	4
20)	Showel	2
21)	Spade	4
22)	Tree pruner	2
23)	Crow bars	2
24)	Sprayer	1
25)	Face mask	1
26)	Gloves	2 pairs
27)	Chandrikas	16
28)	Leaf baskets	4
29)	Metal door mats	4
30)	Metal basin stand	1
31)	Hydrometer	1
32)	Thermometer	1
33)	Hygrometer	1
34)	Form rubber strips	1 kg.
35)	Paraffin wax paper	2 rolls every year
36)	Cleaning nets each size	20

37)	Chopping board and knife	1 each
38)	Acid treatment bath	1
39)	Chemical balance	1
40)	Cellules	100
41)	Compound microscope	4
42)	Moth crushing sets	10
43)	Slide box, slides	5 pkts
44)	Watch glasses	5 dozens
45)	Wife mesh (uzy proof)	25'
46)	Water cans	4
47)	Measuring cylinders	1 each size
48)	Electric stove	1
49)	Specimens :	
	Mulberry/silkworm diseases, pets	
	Soil (different types)	
	Fertilizers	
	Cocoons (Mulberry, non-mulberry)	
	Weeds (laminated)	
	Varieties of mulberry leaves	
50)	Chemicals-formalin, KOH, NaOH, HCl	
51)	An amount of Rs.5,000/- (Rupees five thousand) grant for recurring expenditure for mulberry and rearing operations.	

**RAW MATERIAL:**

**a) Consumable;**

Fertilizers

HCl

KOH

Cocoons

Formation/Para formal dehyde

Grafting wax

Plant hormones

Egg cards

Eatch/Maranta starch/gum

Uzicide

China clay

Diatharie M45

**b) Non-consumable;**

All garden implements.

Specimens, (Mulberry plant material, silk worm stages, cocoons, weeds).

**9. QUALIFICATION FOR TEACHING FACULTY**

M.Sc. (Seri) / M.Sc. (Zoo)

**10. REFERENCE BOOKS**

- 1) Pattu Parishrama (Telugu Edition) by Dr.P.Srinivas, Telugu Academy, Hyderabad.
- 2) Text Book on Mulberry cultivation, BIE, Hyderabad by Jaya Rao and Ramaswamy.
- 3) Text Book on Farm Maintenance and Seed Technology, BIE, Hyderabad by Adithya Kumar and Somi Reddy.
- 4) Text Book on silkworm rearing, BIE, Hyderabad by Dr.Srinivas and Y.Ramaswamy, 1994.
- 5) Text Book on Silkwork Diseases, Pests and Silk reeling, BIE, Hyderabad by Dr.P.Srinivas, Y.Ramaswamy.
- 6) Instructional cum practical manuals, NCERT, New Delhi.
- 7) Pattu Parishrama (B.Sc. Elective) Telugu Edition by Dr.P.Srinivas, Madan Mohan, Smt.Laxmi, Telugu Academy, Hyderabad, 2000.
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- 9) A Text Book of Sericulture by Madan Mohan. The Book Syndicate, Hyderabad.
- 10) Mulberry Agronomy by P.Srinivas and Madan Mohan, SIVE, DIE, Hyderabad, 2001.
- 11) Mulberry Cultivation by P.Srinivas and Madan Mohan, SIVE, DIE, Hyderabad, 2001.
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- 13) Silkworm morphology and Seed Technology by P.Srinivas and Ramadevi, SIVE, DIE, Hyderabad, 2001.
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- 20) Hand Book of Silkworm Rearing by Tazim Fuji-Publishing Co.Ltd., Tokyo, Japan.
- 21) Hand Book of Practical Sericulture by Ullal and Narsimhanna, CSB, Bangalore.
- 22) Manual on Silkworm Egg Production by Narsimhanna, CSB, Bangalore.
- 23) Appropriate techniques on Sericulture by Jolly S.Manfert, CSB, Bangalore.
- 24) Text Book on Tropical Sericulture by Japan Co-operative Volunteers, Tokyo.
- 25) CSRTI Bulletins, CSB, Bangalore.
- 26) Principles of Agronomy by V.T.Subbaiah Mudaliar.
- 27) Irrigation Theory and Practice by A.M.Michael.
- 28) Hand Book on Agriculture ICAR New Delhi.
- 29) Land and Soil by Rayachaudhri.
- 30) Imms Text Book of Entomology.
- 31) Economics Entomology of South India by Ramakrishna Iyyar.
- 32) Sericulture (B.Sc. III year Elective Dr.Ambedkar Open University) Theory Dr.P.Srinivas, Dr.G.Shamitha, Dr.Sujatha in Press.
- 33) Sericulture (B.Sc. III year Elective Dr.Ambedkar Open University) Practical Manual Dr.P.Srinivas, Dr.G.Shamitha, Dr.Sujatha in Press.

#### **JOURNALS :**

- 1) Indian Silk, CSB, Bangalore.
- 2) Indian Journal of Sericulture, CSB, Bangalore.
- 3) Annadata, Eenadu Publications, Hyderabad.
- 4) Padipantalu, ASTI, Dept. of Agriculture, Hyderabad.

#### **11. LIST OF PARTICIPANTS:**

##### **Subject Committee Members:**

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