

Department of Horticulture and Plantation Crops
Syllabus and Lecture Schedule for Second semester Diploma
in Horti- 2018-20 batch

1. HOR 103. Fruit crops Production Technology (1+2) Theory

Definition – area and production of fruit crops in Tamil Nadu – Orchard management – Definition- Selection and layout of orchard - Physical features in orchard. Study of cultural practices of the following fruit crops, with reference to soil, climate, varieties, methods of propagation, nutrient, irrigation and weed management practices – training and pruning – role of growth regulators – maturity standards for harvesting – post harvest technology of fruit crops – yield – grading – packing – storage and value added products. Tropical fruits – Mango, Banana, Grapes, Papaya, Sapota, Guava, Jack. Sub-tropical and temperate fruits – Pineapple, Avocado, Apple, Pear - Organic fruit production and Good Agricultural Practices.

Practical

Layout of orchards – methods of planting – manuring and irrigation methods – training and pruning of different fruit crops – judging maturity standards of major fruit crops – pest and disease management in fruit crops. Visit to commercial orchards – fruit processing unit. Orchard planning and budgeting – Calendar of operation for important fruit crops. Working out cost of cultivation for important fruit crops - Maintenance of orchard accounts and records. Crops: Tropical fruits – Mango, Banana, Grapes, Papaya, Sapota, Guava, Acid Lime, apple, Avocado, Apple and Pear.

Lecture Schedule

1. Definition – Area & production of fruits in Tamil Nadu.
2. Orchard management – Definition, objectives, scope and importance, physical features in orchard
3. Study of varieties and propagation methods of Mango
4. Study of cultural practices of mango
5. Study of varieties and planting systems of banana

6. Study of cultural practices of banana
7. Study of cultural practices of grapes.
8. Study of cultural practices of papaya.

9. Mid semester Examination

10. Study of cultural practices of Sapota
11. Study of cultural practices of Guava
12. Study of cultural practices of Acidlime, Mandarin
13. Study of cultural practices of Pineapple.
14. Study of cultural practices of Avocado, Jack.
15. Study of cultural practices of Apple and Pear.
16. Introduction to Organic fruit production
17. Good Agricultural Practices in fruit crops

Practical schedule

1. Selection and layout of orchards and physical features in orchard.
2. Different planting systems in fruit crops
3. Practices in mango propagation
4. Practicing pruning in mango
5. Practicing Top working and rejuvenation of senile mango orchards
6. Visit to HDP fruit orchards
7. Practicing sucker treatment for banana and planting
8. Practicing bunch cover application and other special operations followed in banana
9. Practices in grapes propagation
10. Practicing training in grapes
11. Practicing pruning in grapes
12. Nursery practices for papaya
13. Practicing papain extraction from Papaya
14. Practices in sapota propagation
15. Practices in guava propagation
16. Nursery practices for Acid lime and Jack
17. **Mid semester examination**
18. Growth regulator application in fruit crops

19. Visit to sub tropical fruits cultivating areas and identifying their important varieties
20. Irrigation management in fruit crops
21. Irrigation systems and their maintenance
22. Practicing micro nutrient spray in fruit crops
23. Practicing integrated nutrient management in fruit crops and their corrective measures
24. Weed management in fruit crops
25. Identification of nutrient deficiency symptoms in major fruit trees
26. Machineries for fruit cultivation
27. Identification of important pest symptoms and their corrective measures
28. Identification of important disease symptoms and their corrective measures
29. Preparing calendar of operations for different fruit crops
30. Visit to temperate fruit orchards
31. Visit to fruit processing industries
32. Farm planning and budgeting
33. Working out cost economics of cultivation of fruit crops

34. Final practical Examination

References

- Veeraraghavathatham, D., M. Jawaharlal, S. Jeeva and S. Rabindran
2004. Scientific
Fruit culture, Suri Associates, Coimbatore.

2. HOR 104 Dry Land Horticulture (1+1)

Theory

Dry land horticulture – Importance, scope and distribution of arid and semi arid zones in India and Tamil Nadu. Crops suitable for dry land systems – Important varieties, climate and soil requirements, commercial propagation methods - Spacing and planting patterns - Cropping systems and intercropping – mulching - Soil and moisture conservation methods – Anti transpirants – Management of nutrients, water, weeds and problem soils – Regulation of cropping – training

and pruning methods - top working and rejuvenation – Use of plant growth regulators – Post harvest handling – Economics of production.

Crops: Aonla, Ber, Pomegranate, Custard Apple, Jamun, Bael, Wood Apple, Manila Tamarind. Cluster beans, Senna, Periwinkle, Vetiver and Palmarosa

Practical

Description and identification of cultivars/varieties - nursery management - nursery preparation, seed sowing and raising seedlings / rootstocks, practicing propagation techniques of dry land horticultural crops. soil and moisture conservation practices - Practicing water harvesting methods – practices in nutrient management, crop regulation – harvesting and post harvest practices - grading and packaging - visit to commercial dry land fruit orchards Crops: Aonla, Ber, Pomegranate, Custard Apple, Jamun, Bael, Wood Apple, Manila Tamarind. Cluster beans, Senna, Periwinkle, Vetiver and Palmarosa.

Lecture Schedule

1. Dry land Horticulture - overview: Area, production, and export potential, past and present status of dry land fruits in India and Tamil Nadu
2. General appraisal of dry land horticulture regions / zones in India and Tamil Nadu – special features of arid and semi arid zone fruits.
3. Cropping systems and intercropping – crops suitable for dry land system – spacing and planting patterns for dry land horticultural crops
4. Soil and moisture conservation methods and management of problem soils
5. Aonla - climate and soil requirements – varieties - production constraints – propagation – planting method –planting density – pollination - nutrient, weed and water management - training and pruning - use of growth regulators – harvest - grading – postharvest handling.
6. Ber - climate and soil requirements – varieties– production constraints, propagation – planting density – nutrient, weed and water management - training and pruning - use of growth regulators - and harvest – grading – postharvest handling.
7. Pomegranate - climate and soil requirements – varieties – propagation – planting density – nutrient, weed and water management, training and pruning-Growth regulation by chemical regulators and harvest - grading – postharvest handling.

8. Custard apple - climate and soil requirements – varieties – propagation – planting density – nutrient, weed and water management - training and pruning – crop regulation - use of growth regulators – harvest - grading – postharvest handling & processing

9. Mid semester examination

10. Jamun - climate and soil requirements - varieties - propagation - planting density - nutrient, weed and water management - use of growth regulators - harvest - grading – postharvest handling

11. Bael - climate and soil requirements - production constraints - propagation - planting density - nutrient, weed and water management - harvest - grading - postharvest handling

12. Wood apple - climate and soil requirements – varieties – propagation – planting density – nutrient, weed and water management– use of growth regulators – harvest - grading – postharvest handling

13. Manila tamarind - climate and soil requirements – varieties – propagation – planting density – nutrient, weed and water management-- harvest - grading – postharvest handling

14. Cluster beans - climate and soil requirements – varieties – propagation – Spacing – nutrient, weed and water management– use of growth regulators – harvest - grading – postharvest handling

15. Senna, Periwinkle - climate and soil requirements – varieties – propagation – Spacing – nutrient, weed and water management – use of growth regulators – harvest - grading – postharvest handling

16. Vetiver and Palmarosa- climate and soil requirements – varieties – propagation – planting density – nutrient, weed and water management– use of growth regulators – harvest - grading – postharvest handling.

Practical

1. Study of soil conservation practices for dry land horticulture
2. Study of moisture conservation practices for dry land horticulture
3. Study of water and nutrient management strategies for dry land horticulture
4. Study of Aonla varieties, crop regulation and Propagation methods
5. Study of Ber varieties, Propagation methods
6. Study of Pomegranate varieties, Propagation methods

7. Crop regulation and post harvest technology of Pomegranate
8. Study of Custard apple varieties, Propagation methods and Crop regulation
9. **Mid semester examination**
10. Study of Jamun varieties, propagation and planting
11. Study of Bael and Wood apple varieties, propagation and planting
12. Study of Manila tamarind varieties, propagation and planting
13. Study of Cluster bean varieties, propagation and cultural practices
14. Study of Senna varieties, propagation and cultural practices
15. Study of Periwinkle varieties, propagation and cultural practices
16. Study of Vetiver and Palmarosa varieties, propagation and cultural practices
17. **Practical examination.**

References

- Chadha, K.L. 2001. Handbook of Horticulture. ICAR, Delhi
- Veeraraghavathatham, D., M. Jawaharlal, S. Jeeva and S. Rabindran 2004. Scientific Fruit culture, Suri Associates, Coimbatore.

3. HOR 105 Basics of Ornamental gardening and Landscaping (1+1)

Theory

Scope and importance of ornamental gardening and landscaping –principles – formal and informal garden – Styles of garden - Features of garden - Garden components and adornments – plant Components - edges, hedges, flower beds, trophy, topiary, mixed borders - non plant components - garden walls, fencing, steps, garden drives and paths, pavements, fountains, arches, pergolas, trellises, pools, etc.

Operations in maintenance of trees, annuals, shrubs, climbers, creepers, herbaceous perennials, ferns, cacti and succulents, palms and cycads – sunken garden, roof garden, rockeries.

Operations in planting and maintenance of public garden, institutional garden, Industrial garden, residential complex garden - Operations in landscape maintenance for high ways, bus terminus, airports, city roads and IT parks.

Lawn – types of lawn grasses – criteria for selection- methods of lawn establishment - operation and maintenance – problems and remedial

management – flower arrangements and dry flowers – suitable plant spp. and methods.

Practical

Features of ornamental garden, Identification of ornamental plant species – identification of plant and non plant components – practices in establishment and maintenance of plant and non plant components – identification of lawn grasses – practices in lawn making methods – operations in ornamental nursery - exposure visit to, industrial, institutional, residential complex, public garden – project preparation.

Theory Schedule

1. Scope and importance of ornamental gardening and landscaping
2. History of Gardening in India and Famous Gardens in India
3. Principles of ornamental gardening and Various Color Schemes
4. Formal and informal types of garden
5. Styles and features of gardens
6. Garden components and adornments
7. Plant components: edges, hedges, flower beds, trophy, etc.,
8. Non plant components - garden walls, fencing, steps, garden drives and paths, pavements, Fountains, arches, pergolas, trellises, pools, etc.

9. Mid Semester Examination

10. Principles in establishing herbaceous Borders – Flower Beds, Carpet Beds, Topiary,
11. Indoor Gardening - Vertical Garden, Hanging Basket, Tray Garden, Terrarium, Bio wall
12. Establishment and maintenance of sunken garden, roof garden and rockeries.
13. Bonsai Styles, Suitable Species, Principles, Pruning, Wiring and Maintenance of Bonsai.
14. Operations in planting and maintenance of Industrial garden, residential complex garden
15. Principles in Planting Trees in Road Side, Avenue Planting, Highways

16. Lawn – types of lawn grasses – criteria for selection- methods of lawn establishment –

operation and maintenance – problems and remedial management

17. Flower arrangements and dry flowers: suitable plant spp. and methods.

Practical schedule

1. Study of different plant components in ornamental garden

2. Identification of ornamental plant species – Trees , Tree Transplanting

3. Identification of ornamental plant species – Annuals

4. Identification of ornamental plant species – Shrubs

5. Identification of ornamental plant species – Climbers and creepers

6. Identification of ornamental plant species – Ferns, cacti and succulents

7. Identification of ornamental plant species – Palms and cycads.

8. Practices in establishment and maintenance of Plant and non plant components

9. Mid semester examination

10. Practices in establishment and maintenance of non plant components

11. Identification of lawn grasses

12. Practices in lawn making methods

13. Practices in nursery production of ornamental plants

14. Exposure visit to industrial garden and institutional garden

15. Exposure visit to residential complex and public garden

16. Project preparation on different types of garden

17. Final practical examination

References

- Randhawa, G.S and Mukhopadhyay, A. 1998. Floriculture in India. Allied Publishers Pvt.Ltd., New Delhi.
- Aroara, J.S 2010, Introductory Ornamental Horticulture. Kalyoni publishers, New Delhi, India
- Kumar, N. 2011. Introduction to Horticulture, Oxford and IBH Publication, New Delhi

4. HOR 106 Medicinal and Aromatic crops production Technology

(1+1)

Theory

Medicinal and aromatic plants - Definitions, Scope and importance. Medicinal plant wealth of India and Tamil Nadu - area and production - classification - annual, biennial and herbaceous perennial. Medicinal and aromatic plants for tropical, sub - tropical and temperate region. Soil and climatic - conditions, propagation and planting, manuring, irrigation, weed control, harvesting, yield, economic parts, post harvest handling, curing and processing practices, storage methods - contract farming and Good Agricultural Practices.

Medicinal Plants:

Glory lily, Medicinal Coleus, Senna, Periwinkle, Gymnema, Ashwagandha, Phyllanthus, Kalmegh, *Aloe vera* and Stevia.

Aromatic Plants:

Japanese mint, Rosemary, Lemon grass, Citronella, Palmarosa, Vetiver, Geranium, Patchouli, Sacred and sweet basil.

Practical

Identification and description of medicinal plants, parts used - nursery raising and planting - intercultural operations - harvest - processing - post harvest handling - cost of cultivation.

Medicinal Plants:

Glory lily, Medicinal Coleus, Senna, Periwinkle, Ashwagandha, Gymnema, Phyllanthus, Kalmegh, *Aloe vera* and Stevia Identification and description of aromatic plants, parts used - nursery raising and planting - intercultural operations - harvest - post harvest handling and extraction of essential oil - cost of cultivation.

Aromatic Plants:

Japanese mint, Rosemary, Lemon grass, Citronella, Palmarosa, Vetiver, Geranium, Patchouli, Sacred and sweet basil.

Lecture schedule

1. Scope and importance of medicinal plants-Classification of medicinal plants-annual, biennial and herbaceous perennial-Medicinal plants for tropical, sub - tropical and temperate regions
2. Production technology of Gloriosa and coleus
3. Production technology of Senna and Periwinkle
4. Production technology of Ashwagandha and Gymnema
5. Production technology of Phyllanthus and Kalmegh,
6. Production technology of Aloe vera and Stevia
7. Contract farming in medicinal plants
8. Good Agricultural Practices for medicinal plants

9. Mid semester Examination

10. Post harvest handling and processing methods
11. Scope, importance of aromatic plants and classification of aromatic plants
12. Production technology of Japanese mint and Rosemary
13. Production technology of Lemon grass and Citronella
14. Production technology of Palmarosa, Vetiver
15. Production technology of Geranium, Patchouli
16. Production technology of Sacred and sweet basil
17. Processing and extraction technologies for aromatic crops

Practical Schedule

1. Identification and description of Medicinal plants and parts used
2. Field preparation-propagation-selection of tuber-tuber treatment – intercultural operations-harvest indices-harvesting-processing-post harvest handling of Glory lily
3. Propagation-planting methods- intercultural operations-harvest indices-harvesting-cost of cultivation-processing-post harvest handling of coleus
4. Propagation-planting-seed treatment- intercultural operations –harvest- cost of cultivation - post harvest handling of Ashwagandha and senna
5. Propagation-nursery raising-planting- intercultural operations –harvest- cost of cultivation -

post harvest handling of Periwinkle, phyllanthus and kalmegh

6. Propagation-selection of planting material -planting- intercultural operations
-harvest- cost of

cultivation -post harvest handling of Aloe

7. Propagation-selection of planting material -planting- intercultural operations
-harvest- cost of

cultivation -post harvest handling of Stevia

8. Propagation-selection of planting material -planting- intercultural operations
-harvest- cost of

cultivation -post harvest handling of Gymnema

9. Mid semester examination

10. Field preparation –propagation-selection of planting material-intercultural
operation-harvest

indices-harvesting -post harvest handling-cost of cultivation for palmarosa and
lemon grass

11. Field preparation –propagation-selection of planting material-intercultural
operation-harvest

indices-harvesting -post harvest handling-cost of cultivation for citronella and
vetiver

12. Propagation-selection of planting material-intercultural operation-harvest
indices-harvesting

post harvest handling-cost of cultivation for Japanese mint and Rosemary

13. Propagation-selection of planting material-intercultural operation-harvest
indices-harvesting

post harvest handling-cost of cultivation for Geranium and Patchouli

14. Propagation-selection of planting material-intercultural operation-harvest
indices-harvesting

post harvest handling-cost of cultivation for Sacred and sweet basil

15. Extraction of essential oils from aromatic plants and visit to aromatic
industry

16. Visit to medicinal plant processing unit and Identification of aromatic plants
-parts used

17. Final practical Examination.

References

A.A.Farooqi and B.S. Sreeramu.2004.Cultivation of medicinal and aromatic crops.University press

5. FOR 101 Agroforestry and Silviculture (0+1)

Practical

Silvics, silviculture and Agroforestry – Classification of agroforestry system and its merits and demerits - Study about structure and components of silvicultural system-Study of compatible tree species for silvicultural system - Conducting Design and Diagnosis exercise - Visit to successful silvicultural models - Assessing the shade effect and light intensity of trees on phenology of horticultural intercrops - Study on the below and above ground interaction and allelopathic effect of trees on horticultural crops - Assessing the productivity of horticulture crops under silvicultural system- Economics of silvicultural system. - Identification of fruit trees for silvicultural system - Important multipurpose fruit trees suitable for silvicultural system - Management practices for improved fruit crop production under silvicultural system – Soil fertility management of fruit trees for enhancing the productivity in silvicultural system – Potential vegetables , spices, plantation crops , flower crops, medicinal and aromatic plants under silvicultural system.

Practical schedule

1. Silvics, silviculture and Agroforestry.
2. Classification of agroforestry system and its merits and demerits.
3. Study about structure and components of silvicultural system-Study of compatible tree species for silvicultural system.
4. Conducting silviculture Design and Diagnosis exercise.
5. Visit to successful silvicultural models.
6. Assessing the shade effect and light intensity of trees on phenology of horticultural intercrops.
7. Study on the below and above ground interaction and allelopathic effect of trees on horticulture crops.
8. Assessing the productivity of horticulture crops under silvicultural system.

9. Mid semester examination

10. Economic analysis of Silvihorticultural system.
11. Identification of fruit trees for silvihorticultural system and study of important multipurpose fruit trees suitable for silvihorticultural system.
12. Study on the management practices for improved fruit crop production under silvihorticultural system.
13. Soil fertility management of fruit trees for enhancing the productivity in silvihorticultural system.
14. Potential vegetables and flower crops under silvihorticultural system.
15. Potential spices and plantation crops under silvihorticultural system.
16. Potential medicinal and aromatic plants under silvihorticultural system
17. **Practical examination**

References

- Chundawat, S. 1995. A text book of agro forestry and IBH publishing Co. Pvt. Ltd., 66
Janpath , New Delhi.

6. EXP 102 Out Door Experience for Semester II subjects (0+1)

Visit to Mango orchards, Banana orchards, fruit markets, NRCB, Trichy, GRS, Theni, Organic fruit orchard, HDP fruit orchards, papain extraction unit, sub tropical fruit orchards, Dept. of Entomology, Insect museum & Dept. of Pathology, TNAU, temperate fruit orchards, fruit processing industries, Soil conservation unit, Dry flower industries, parks, gardens, arboretum, medicinal plant processing unit, Successful silvihorti models.

Practical Shedule

1. Visit to Mango orchards to study of varieties and propagation methods of Mango
2. Visit to ornamental nurseries and Gardens to experience nursery practices and identify the plant species
3. Visit to Fruit Markets to identify varieties
4. Visit to Mango orchards to practice training, pruning and top-working
5. Visit to parks and Gardens to identify the plant species and Garden components

6. Visit to Banana orchards to Study of varieties and planting systems of Banana
7. Visit to HDP fruit orchards
8. Visit to papain extraction unit
9. Visit to fruit processing industries and medicinal plant processing unit.
10. Identification of Medicinal and Aromatic plants and parts used
11. Visit to Organic fruit orchards
12. Visit to dry flower industry
13. Visit to successful silvihorti models
14. Visit to industrial gardens and institutional gardens.
15. Visit to residential complex and public gardens
16. Visit to NRCB, Trichy; GRS, Theni; Subtropical and Temperate Fruit orchards; Dept. of Entomology and Pathology, TNAU; Soil conservation unit; Parks, Gardens, Arboratum, Nurseries, Forest Zone. (Study Tour)
17. **Practical examination**