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11. Srivastava H S, 2004. Plant physiology and Biochemistry. Rasthogi publications.
12. Verma V, 2007. Text Book of Plant Physiology. Ane Books Pvt. Ltd.
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SEMESTER III

Complementary course 3

Code: BO3CMT03

ANGIOSPERM TAXONOMY AND ECONOMIC BOTANY

(Theory 54 hrs; Practical 36 hrs; Credits 3 + 1)

Objectives:

- Acquaint the student with the objectives and components of Taxonomy.
- Help the student to understand the systems of classification of angiosperms.
- Help the student to identify the common angiosperm species of Kerala.
- Familiarize the student with plants of immense economic importance.

ANGIOSPERM TAXONOMY (36 hrs)

Module 1: Morphology (10 hrs)

Leaf - simple, compound; venation and phyllotaxy. Flower as a modified shoot, structure of flower - floral parts, their arrangement, relative position; cohesion and adhesion of floral parts, symmetry of flowers; types of aestivation and placentation; floral diagram and floral formula. Inflorescence: racemose - simple, spike, spadix, catkin, corymb, umbel and head; cymose - simple, monochasial-helicoid and scorpioid; special types – cyathium, verticillaster. Fruits: outline on the classification; Simple: Fleshy - drupe, berry, hesperidium; Dry - Dehiscent - legume, capsule; Indehiscent - Caryopsis, Cypsella, Schizocarpic - lomentum, carcerulus, regma, cremocarp with examples. Aggregate. Multiple: sorosis, syconus. (Examples should be from families prescribed in the syllabus).

Module 2: Plant classification and Herbarium techniques (8 hrs)

Importance of plant classification, types of classification - artificial, natural and phylogenetic (brief account only); binomial nomenclature; ICBN (Brief account only). Bentham and Hooker's system of classification (up to series) and its merits and demerits. Cytotaxonomy and chemotaxonomy (brief account only). Herbarium techniques; importance of herbarium.

Module 3: Angiosperm families (18 hrs)

Study of the following families of Bentham and Hookers system of classification with special reference to major identifying characters and economic importance: Annonaceae, Malvaceae, Rutaceae, Leguminosae (Mimosaceae, Caesalpiniaceae and Fabaceae), Apiaceae (Umbelliferae), Rubiaceae, Asteraceae (Compositae), Apocynaceae, Lamiaceae (Labiatae), Euphorbiaceae, Arecaceae (Palmae), Poaceae (Gramineae).

ECONOMIC BOTANY (18 hrs)

Module 4: Classes of economically important plants (10 hrs)

Classification of economically important plants based on their uses. Study of the following groups of plants with special reference to their botanical name, family, morphology of useful part, economic products and uses: Cereals - Paddy, Wheat; Pulses - Green gram, Bengal gram; Tuber crops -

Tapioca; Spices - Pepper, Cardamom; Beverages - Tea, Coffee; Oil yielding plants - Coconut, Groundnut; Fibre yielding plants - Cotton, Coir; Timber yielding plants - Teak, Rose wood; Latex yielding plants - Para rubber; Bio pesticides - Neem, Tobacco; Ornamental plants - Rose, Orchids, Anthurium.

Module 5: Medicinal plants (8 hrs)

Study of the following medicinal plants with special reference to their binomial, family, morphology of useful parts and uses: *Adhatoda*, *Aloe*, *Bacopa*, *Catharanthus*, *Eclipta*, *Neem*, *Ocimum*, *Phyllanthus amarus*, *Rauvolfia*, *Sida*.

PRACTICAL (36 hrs)

1. Students should be trained to identify the different types of inflorescence and fruits of typical plants belonging to the families prescribed in the syllabus.
2. Students should be trained to identify typical local plants belonging to the families prescribed in the syllabus.
3. Students should be trained to describe the floral parts in technical terms and draw the L.S. of flower, construct the floral diagrams and write the floral formula of at least one flower from each family.
4. Study of the groups of plants mentioned in the economic botany syllabus with special reference to their botanical name, family, morphology of useful part, economic products and uses.
5. Students should study the botanical name, family, morphology of the useful part and the uses of the medicinal plants listed in the syllabus.

REFERENCES

1. Eames A J, 1969. *Morphology of Angiosperms*. McGraw Hill, New York.
2. Hill A F, 1952. *Economic Botany: A Text book of Useful Plants and Plant Products*. Tata McGraw-Hill Publishing Company Limited, New Delhi.
3. Jain S K, 1987. *A Manual of Ethnobotany*. Scientific Publishers, Jodhpur.
4. Kochhar S L, 1981. *Economic Botany in the Tropics*. Macmillan India Limited, Delhi.
5. Lawrence G H M, 1951. *Taxonomy of Vascular Plants*. Oxford & IBH, New Delhi.
6. Naik V N, 1984. *Taxonomy of Angiosperms*. Tata McGraw Hill Publishing Co, New Delhi.
7. Pandey S N, S P Misra, 2008. *Taxonomy of Angiosperms*. Ane Books India, New Delhi.
8. Sharma O P, 1993. *Plant Taxonomy*. Tata McGraw Hill Publishing Co Ltd., New Delhi.
9. Simpson B S, M Conner – Ogorzaly, 1986. *Economic Botany: Plants in Our World*. McGraw Hill Book Company, New York.
10. Singh G, 1999. *Plant Systematics – Theory and Practice*. Oxford & IBH, New Delhi.
