

Paper Code BSEC-01: Biofertilizers
(Credits 3; Lectures: 45)

Unit 1: (15 Lectures)
General account about the microbes used as biofertilizer, maintenance and mass multiplication of Rhizobium and Azospirillum.

Unit 2: (15 Lectures)
Cyanobacteria (blue green algae), Azolla and Anabaena association, Biological nitrogen fixation, Azolla in rice cultivation. Mycorrhizal association, Endomycorrhizal and Ectomycorrhizal association, Influence of VAM on growth and yield of crop plants.

Unit 3: (15 lectures)
Organic farming – Green manure and organic fertilizers; recycling of biodegradable wastes; biocompost making methods, vermin composting; field application.

Suggested Readings

1. Dubey, R.C., 2005 A Text book of Biotechnology. S. Chand & Co, New Delhi.
2. Kumaresan, V. 2005, Biotechnology, Saras Publications, New Delhi.
3. John Jothi Prakash, E. 2004. Outlines of Plant Biotechnology. Emkay Publication, New Delhi.
4. Sathe, T.V. 2004 Vermiculture and Organic Farming. Daya Publishers.
5. Subha Rao, N.S. 2000, Soil Microbiology, Oxford & IBH Publishers, New Delhi.
6. Vayas,S.C, Vayas, S. and Modi, H.A. 1998 Bio-fertilizers and organic Farming AktaPrakashan, Nadia.

Paper Code BSEC-02: Floriculture
(Credits 3; Lectures: 45)

Unit 1: Floriculture and Nursery Management (15 Lectures)
Importance and scope of floriculture; Common features of a garden. Routine Garden Operations: Soil sterilization; Seed sowing; Pricking; Planting and transplanting; Shading; Stopping or pinching; Defoliation; Wintering; Mulching; Topiary.

Unit 2: Ornamental Plants (15 Lectures)
Ornamental Plants: annuals, biennials and perennials; Cultivation of plants in pots; Bonsai.

Unit 3: Commercial Floriculture (15 lectures)
Commercial Floriculture: Production and packaging of cut flowers; Flower arrangements; Methods to prolong vase life; Cultivation of Important cut flowers (Lilium, Carnations, Orchids).

Suggested Readings

1. Randhawa, G.S. and Mukhopadhyay, A. 1986. Floriculture in India. Allied Publishers.

Paper Code BSEC-03: Herbal Technology
(Credits 3; Lectures: 45)

Unit 1: Herbal Medicine and Pharmacognosy **(15 Lectures)**

Introduction to herbal medicines and herbal technology, role of medicinal plants in Siddha systems of medicine; cultivation and utilization of medicinal plants.

Unit 2: Pharmacognosy **(15 Lectures)**

Pharmacognosy-; medicinal uses of the following herbs in curing various ailments; Tulsi, Ginger, Goose berry, Nutgall.

Unit 3: Medicinal Plants and Herbal Foods **(15 Lectures)**

Medicinal plant banks micropropagation of important species (Withaniasomnifera, neem and Tulsi. Herbal foods

Suggested Readings

1. R.N.Chopra, S.L.Nayar and I.C.Chopra, 1956. Glossary of Indian medicinal plants C.S.I.R, New Delhi.
2. Kanny, Lall, Dey and Raj Bahadur, 1984. The indigenous drugs of India, InternationalBookDistributors.
3. Agnes Arber, 1999. Herbal plants and Drugs Mangal Deep Publications.
4. V.V. Sivarajan and Balachandran Indra 1994. Ayurvedic drugs and their plant source. Oxford IBH publishing Co.
5. Miller, Light and Miller, Bryan, 1998. Ayurveda and Aromatherapy. Banarsidass, Delhi.
6. Anne Green, 2000. Principles of Ayurveda Thomsons, London.
7. Dr.C.K.Kokate et al. 1999. Pharmacognosy. NiraliPrakashan.

BSEC-04: Nursery and Gardening
(Credits 3; Lectures: 45)

Unit 1: Introduction to nursery **(15 Lectures)**

Nursery: definition, objectives and scope and building up of infrastructure for nursery
Seed: Structure and Seed dormancy, Seed storage: Seed banks, factors affecting seed viability

Unit 3: Vegetative Propagation and Gardening **(15 lectures)**

Vegetative propagation, Greenhouse – mist chamber, shed root, shade house and glass house.
Gardening: objectives and scope, Gardening operations: soil laying, manuring, watering.

Unit 3: Cultivation **(15 Lectures)**

Sowing/raising of seeds and seedlings - Transplanting of seedlings - Study of cultivation of different vegetables: brinjal, lady's finger, onion, garlic, tomatoes, and carrots

Suggested Readings

1. Bose T.K. & Mukherjee, D., 1972, Gardening in India, Oxford & IBH Publishing Co., New Delhi.
2. Sandhu, M.K., 1989, Plant Propagation, Wile Eastern Ltd., Bangalore, Madras.
3. Kumar, N., 1997, Introduction to Horticulture, Rajalakshmi Publications, Nagercoil.
4. Edmond Musser & Andres, Fundamentals of Horticulture, McGraw Hill Book Co., New Delhi.

5. Agrawal, P.K. 1993, Hand Book of Seed Technology, Dept. of Agriculture and Cooperation, National Seed Corporation Ltd., New Delhi.
6. Janick Jules. 1979. Horticultural Science. (3rd Ed.), W.H. Freeman and Co., San Francisco, USA.

**Paper Code BSEC-05: Medicinal Botany
(Credits 3; Lectures: 45)**

Unit 1: Introduction to Medicinal Plants; Scope (15 Lectures)

Scope and Importance of Medicinal Plants. Indigenous Medicinal Sciences; Definition and Scope- Ayurveda and Unani. Definition and conservation of endemic and endangered medicinal plants and Red list criteria.

Unit 2: Conservation and Nursery (15 Lectures)

In situ conservation: Biosphere reserves, sacred groves, National Parks. Ex situ conservation: Botanic Gardens, Ethnomedicinal plant. Objectives of the nursery, its classification, important components of a nursery

Unit 3: Ethnobotany and Folk Medicine (15 Lectures)

Ethnobotany, Folk medicines and Ethnomedicine and their Applications

Suggested Readings

1. Trivedi P C, 2006. Medicinal Plants: Ethnobotanical Approach, Agrobios, India.
2. Purohit and Vyas, 2008. Medicinal Plant Cultivation: A Scientific Approach, 2nd edn. Agrobios, India.

**Paper Code BSEC-06: Mushroom Culture Technology
(Credits 3; Lectures: 45)**

Unit 1: Introduction to Mushroom Culture Technology (15 Lectures)

Introduction, Nutritional and medicinal value of edible mushrooms; Poisonous mushrooms.

Unit 2: Mushroom Cultivation Technology (15 Lectures)

Spawn Production, Cultivation of Oyster mushroom

Unit 3: Post Harvest Technology (15 Lectures)

Storage of Mushrooms: short term storage and Long term storage, Food Preparation; Types of foods prepared from mushroom.

Suggested Readings:

1. Marimuthu, T. Krishnamoorthy, A.S. Sivaprakasam, K. and Jayarajan. R (1991) Oyster Mushrooms, Department of Plant Pathology, Tamil Nadu Agricultural University,

Coimbatore.

2. Swaminathan, M. (1990) Food and Nutrition. Bappco, The Bangalore Printing and Publishing Co. Ltd., No. 88, Mysore Road, Bangalore - 560018.
3. Tewari, Pankaj Kapoor, S.C., (1988). Mushroom cultivation, Mittal Publications, Delhi.
4. Nita Bahl (1984-1988) Hand book of Mushrooms, II Edition, Vol. I & Vol. II.