

Course Code	Course Name	Credits
26BY903	PLANT RESOURCES	04

Course Objectives

- To understand the origin, domestication and diversity of crop plants and their agricultural importance.
- To study the economic importance of plants including oils, fibres, timber, medicinal and industrial products.
- To explain the role of plants in ecosystem services such as climate regulation, soil and water conservation.
- To develop awareness about biodiversity conservation and sustainable utilization of plant resources.

Learning Outcomes

Upon successful completion of this course it is intended that a student will be able to:

- Explain centres of diversity and the process of crop domestication.
- Identify economically important plants and describe their uses.
- Analyze the ecological roles of plants in maintaining environmental balance.
- Evaluate different conservation strategies for protecting plant biodiversity.

Unit 1 - Origin, Domestication and Cultivation of Major Crop Plants (12 Hrs.)

Centres of diversity of plants, origin of crop plants, domestication and introduction of crop plants. Cultivation, production and uses of - wheat, rice, maize and legumes.

Unit 2- Economic Importance of Plants (12 Hrs.)

Economic importance: Plants yielding fatty/essential oils, spices, beverages (tea, coffee, cocoa), fiber (cotton, coconut, jute, flax); medicinal and petro plants

Unit 3 – Economic Importance of Plants (12 Hrs.)

Economic importance: Timber yielding plants (Teak, Sal, Shisham, Deodar, Mahogany), gums and resins (*Acacia*, *Commiphora*, *Pinus*), dye yielding plants (*Carthamus*, *Indigofera*, *Rubia*, *Haematoxylum*); Ornamental and Landscaping Plants (Roses, Orchids, Bougainvillea).

Unit 4- Plants and Ecosystem Services (12 Hrs.)

Plants and ecosystem services -maintaining air quality, carbon sequestration and controlling global climate change, waste water recycling and regulation of water flow, controlling soil erosion and soil fertility, providing habitat for other species. Forests as repositories of biodiversity, forests and ecotourism.

Unit 5 - Biodiversity, Threats and Conservation Strategies (12 Hrs.)

Conservation of plant resources- Biodiversity hotspots in India, Endemic species, keystone species. Threatened species, Principles of biodiversity, *In situ* conservation: sanctuaries, national parks, biosphere reserves, wetlands, mangroves. *Ex situ* conservation: field gene banks, seed banks, cryobanks.

Reference Books:

1. Pandey, B. P. (2010). Economic botany (6th ed.). S. Chand & Company Ltd.
2. Kochhar, S. L. (2016). Economic botany in the tropics (4th ed.). Macmillan India Ltd.
3. Krishnamurthy, K. V. (2003). An advanced textbook on biodiversity: Principles and practice. Oxford & IBH Publishing Co. Pvt. Ltd.
4. Odum, E. P., & Barrett, G. W. (2005). Fundamentals of ecology (5th ed.). Thomson Brooks/Cole.
5. Simpson, M. G. (2010). Plant systematics (2nd ed.). Elsevier Academic Press.
6. PROSEA Foundation. (1999). Plant resources of South-East Asia. Backhuys Publishers.