

**2nd SEMESTER
MAJOR COURSE**

BRS222J: BIORESOURCES-II (PLANT RESOURCES)

CREDITS: THEORY: 4; PRACTICAL: 2

THEORY (LECTURES: 60 HRS)

Unit: I

(15 Lectures)

Plant resources: Introduction to Cryptogams and Phanerogams; Origin of agriculture; Centres of origin and domestication of cultivated plants (proposed by Vavilov); Green revolution.

Bioprospecting: Bioprospecting— Concept; Role of traditional knowledge in bioprospecting; Biopiracy, case studies of biopiracy (Basmati, Neem, Turmeric); Traditional Knowledge Digital Library (TKDL).

Unit: II

(16 Lectures)

Food and fodder crops: Underutilised crops— importance as future food; Morphology, cultivation practice and limitations of buckwheat (*Fagopyrum* spp.) and foxtail millet (*Sterea italica*); Morphology, cultivation and utility of rice (*Oryza sativa*) and maize (*Zea mays*); Cultivation, extraction and processing of mustard oil; Fodder crops, cultivation and utility of alfalfa (*Medicago sativa*); Pulses— *Cicer arietum* (Morphology and nutritional importance)

Unit: III

(15 Lectures)

Fruits, vegetables and spices: Cultivation, storage and packaging of fruits (apple, walnut, Cherry and apricot); Morphology and importance of wild vegetables (*Taraxacum officinale*, *Cichorium intybus*, *Rumex*, *Malva sylvestris*); Spices and condiments, Saffron (Cumin, coriander, Fennel).

Non woody forest products (NWFP's): Important sources of gums, resins and dyes their economic importance.

Unit: IV

(14 Lectures)

Medicinal plants of Kashmir Himalaya: Morphology, ethnobotanical and medicinal importance of *Artemisia absinthum*; *Arnebia benthamii*, *Atropa acuminata*, *Saussurea costus*, and *Rheum emodi*.

Essential oils: Cultivation practice and extraction of lavender and rose oil, their economic importance.

Practical Work: 2 Credits

- Study the diagnostic features of some economically important angiosperm families (Asteraceae, Apiaceae, Brassicaceae, Fabaceae, Rosaceae, Lamiaceae and Poaceae).
- Study various types of plant fibres.
- Study the presence and structure of starch granules and oil bodies in various food crops.
- Estimation of starch content and its comparison in various food crops.
- Identification and cultivation practices of oil yielding crops- Sunflower and Mustard.
- Pseudocereals- Buckwheat: Morphological features and seed structure; Test for presence of starch and proteins.
- Collection of wild vegetables from the field and preparation of herbarium.
- Identification of some commonly used spices and condiments.
- Study the diagnostic features and medicinal importance of native medicinal plants of Kashmir Himalaya.

Suggested Readings:

- Textbook of Economic Botany, 2009, Verma V, Ane Books Pvt Ltd, ISBN 8180521672, 9788180521676.
- Textbook of Economic Botany, 2016, ISBN-13: 978-8193241554
- Economic Botany, B. P. Pandey, S. Chand Publishing, ISBN 9788121903417
- Economic Botany Paperback, 2009, S. Sen, New Central Book Agency (1 January 2009) ISBN-10: 8173812063, ISBN-13: 978-8173812064
- Economic Botany, Principles and Practices, **Wickens, G.E.** © 2017 Springer International Publishing ISBN 978-0-7923-6781-9