

# CBO 3003: PLANT RESOURCE UTILIZATION, CONSERVATION AND BIOMETRY

## Unit-I Plant resources-I

Adulteration in plant products: Introduction, detection of adulteration in the flowering: oils-groundnut and sunflower, species and condiments: pepper, carawax, cardemonas, saffron and clove. Cereals and pulses-Bajara, Rice, Tur and Gram.

Origin, evolution, botany, cultivation and use of:

- (i) Food (Wheat, chicken pea, potato, groundnut),
- (ii) Forage/fodder crops (bajara, guarbean).

Plant fibers: Textile fibers (cotton, jute, linen, sun hemp, cannabis); Cordage (coir); Fibers for stuffing (silk cotton).

## Unit-II Plant resources-II

Dyes (Turmeric, Indigo, *Butea monosperma*, *Lawsonia alba*).

Important fire-wood and timber-yielding plants: *Acacia nilotica*, *Tectona grandis*, *Dalbergia sissoo*, *Terminalia arjuna* (Arjun sadar), *Mangifera indica*.

Rubber: Introduction, chemical composition of rubber, hevea rubber, plantation and production of rubber in the world and India, processing. Uses of rubber and synthetic rubber.

Medicinal Plants: *Atropa belladonna*, *Catheranthus roseus*, *Adhatoda vasica*, *Allium sativum*, *Rauvolfia serpentina*, *Papaver somniferum*, *Phyllanthus amarus*, *Aloe barbadense*.

## Unit-III Conservation

Principles of conservation

Strategies for conservation *in situ* conservation: International efforts and Indian initiatives; protected areas in India – sanctuaries, national parks, biosphere reserves, mangroves and coral reefs for conservation of wild biodiversity.

Strategies for conservation *ex situ* conservation: Principles and practices; botanical gardens, field gene banks, seed banks, general account of the activities of Botanical Survey of India (BSI), National Bureau of Plant Genetic Resources (NBPGR), Indian Council of Agricultural Research (ICAR), Council of Scientific Industrial Research (CSIR) and the Department of Biotechnology (DBT) for conservation.

## Unit-IV Biometry

Sampling: Sample characters, sampling techniques.

Probability distribution: Normal, Poisson and Binomial.

Level of significance, Degree of freedom, Chi-square, Homogeneity Chi-square, Binomial expansion, Testing hypotheses using binomial distribution, level of significance, Student's t test, F test.

Analysis of variance.

Correlation: Measures of relationship between continuous variables, Types of correlation, Calculation of correlation, coefficient from ungrouped series and grouped series.

Regression, Calculation of regression coefficient.

Non parametric tests: Rank test, F-max test, Mann-Whitney (U) test, and Sign test.

## Plant resource Utilization and Conservation

1. Perform the tests of Adulteration in plant products:

Oils: groundnut and sunflower,

Spices and condiments: pepper, carawax, cardemonas, saffron and clove,

Cereals and pulses: Bajara, Rice, Tur and Gram.

2. Scientific name, local name, family, useful organ, morphology and uses of :
  - (i) Food crops (Wheat, chicken pea, potato, groundnut)
  - (ii) Forage/fodder crops (bajara, guarbean)
  - (iii) Plant fibers: (cotton, jute, linen, sun hemp, cannabis, coir, silk cotton).
  - (iv) Medicinal Plants: *Atropa belladonna*, *Catheranthus roseus*, *Adhatoda vasica*, *Allium sativum*, *Rauvolffia serpentina*, *Papaver somniferum*, *Phyllanthus amarus* and *Aloe barbadense*.
  - (v) Dyes: (Turmeric, Indigo, *Butea monosperma*, *Lowsonia alba*)
  - (vi) Important fire-wood and timber-yielding plants: *Acacia nilotica*, *Tectona grandis*, *Dalbergia sissoo*, *Terminalia arjuna* (Arjun sadar), *Mangifera indica*.
3. Rubber: Introduction, chemical composition, plantation, production, processing and Uses of rubber.
4. A visit to protected areas of India – sanctuaries, national parks, biosphere reserves, mangroves and coral reefs for conservation of wild biodiversity, BSI, NBPGR, ICAR, CSIR, DBT and prepare the general account.

## **Biometry**

1. Various examples of Sampling.
2. Various examples of Probability.
3. Chi-square analysis and 2 x 2 contingency.
4. Various examples on coefficient of correlation and regression.
5. Analysis of variance.