

BHARATHIAR UNIVERSITY, COIMBATORE 641 046
M.Phil./Ph.D. LIFE SCIENCES (DIBER)
(For the candidates admitted from the academic year 2016-17 onwards)
PAPER-III
Cropping System and Crop Improvement

UNIT I: CROPS AND THEIR ORIGIN

Important crops of India including cereals, pulses, fruits and vegetables, forage and forestry including classification. Their centre of origin and distribution and importance in Indian Agriculture.

UNIT II: AGRONOMIC PRINCIPALS AND PRACTICES

Crop rotation principles and advantages, cropping pattern, cropping systems prevalent in India including agro-forestry systems. Tillage and its classification with importance, tillage implements, techniques of seed production and seed quality testing. Organic farming system- definition and concept. Soil less cultivation-concept, types and advantages, protected cultivation- definition, categories of greenhouses, its principle, Indian scenario, etc.

UNIT III: AGRO-CLIMATIC ZONES OF INDIA

Agro-climatic zones of India, pattern of rainfall, distribution of soil and rainfall pattern, cropping pattern in various zones and merits. Effect of climate and weather conditions on crop production.

UNIT IV: SOIL FERTILITY AND NUTRIENT MANAGEMENT

Essential plant nutrients and their role in crop production, deficiency symptoms, soil reclamation, integrated plant nutrient management- definition and concept. Fertilizers- their classification, role and importance. Plant growth regulators and promoters, their classification and role in agriculture.

UNIT V: CROP IMPROVEMENT

Crop improvement methods for self-pollinated crops- Pure line and mass selection, Pedigree method, Bulk population method, Backcross method, Testing and evaluation of pure lines, hybrid breeding, For cross-pollinated crops- Selection, recurrent selection, development of hybrids, synthetics and composites.

Reference

1. Principles of Agronomy - T.Y. Reddy and G. H. Sankar Reddi
2. Soils and soil fertility – C.M. Thomson and F.R. Troeh
3. The Nature and Properties of Soil - N.C.Brady and Ray R. Weil
4. Manures and Fertilizers - K. S. Yawalkar, J.P. Agrawal and S. Bokde
5. Soil Conditions and Plant Growth – E.W.Russel and E.J. Russell
6. Crops and Weather – S. Venkataraman and A. Krishnan (ICAR)
7. Climate, Weather and Crops in India – D. Lenka
8. Chahal GS and Gosal SS (2003) Principles and procedures of Plant Breeding: Biotechnological and Conventional Approaches. Narosa Publishing House.
9. Singh BD (2003) Plant Breeding. Kalyani Publishers.
10. Climate Change: The Principles and Applications in Horticultural Science, Edition: 2014, Publisher: CRC Press, Taylor & Francis Group.
11. Advances in Protected Cultivation 2015 by Brahma Singh , Balraj Singh