

AGRICULTURE

CODE-01

Paper-I

Ecology and its relevance to man, natural resources, their management and conservation. Physical and social environment as factors of crop distribution and production. Climatic elements as factors of crop growth, impact of changing environment, crops and cropping pattern plants as indicators of environments. Environmental pollution and associated hazards to crops, animals and humans.

Cropping patterns in different agro-climatic zone of the country-impact of high yielding and short duration varieties on shifts in cropping pattern. Concepts and principles of multiple cropping, multi-storey, relay intercropping and their importance in relation to food production. Package of practices for production of important cereals, pulses, oil seeds, fiber, sugar and commercial crops grown during seasons in different regions of the country.

Weeds, their characteristics, dissemination and association, with various crops, their multiplications, cultural, biological and chemical and integrated control of weeds.

Processes and factors of soil formation, classification of Indian soils including modern concepts, mineral and organic constituents of soil and their role in maintaining soil productivity. Problem soils, extent and distribution in India and their reclamation. Essential plant nutrients and other beneficial elements in soils and plants, their occurrence, factors, affecting their distribution availability functions and recycling in soils symbiotic and non-symbiotic in nitrogen fixation. Principles of soil fertility and its evaluation for judicious fertilizer use.

Watershed management soil conservation planning on watershed basis. Erosion and run off management in hilly, foot hill, and valley lands- Processes and factors affecting them. Dry land agriculture, its problems and crop production techniques.

Water use efficiency in relation to crop production, criteria for scheduling irrigations, ways and means of reducing losses of water.

Farm management, scope, importance and characteristics, farm planning and budgeting. Economics of different types of farming systems.

Extension techniques, methods of evaluation of extension programmes, socio-economic survey and status of big small and marginal farmers training programmes for extension workers, Training and extension lab to land programmes.

PAPER-II

Heredity and variation, Mendel's Law of Inheritance, Chromosomal theory of inheritance. Cytoplasmic inheritance, Quantitative characters.

Origin and domestication of field crop. Morphology and patterns of variations in varieties and related species of important field crops, Causes and utilization of variations in crop improvement.

Application of the principles of plant breeding to the improvement of major field crop, method of breeding of self and cross pollinated crops. Introduction, selection, hybridisation, heterosis and its exploitation. Male sterility and self incompatibility, utilization of mutation and polyploidy in breeding.

Seed and seed technology, importance, types of seeds and their production, processing and testing of seeds of crops and seed certification regulation.

Climatic requirements and cultivation of major fruits, plants and vegetable crops with special reference to commercial fruits and vegetables, the package of practices and the scientific basis for same. Handling and marketing problems of fruits and vegetables, principle methods of preservation of important fruits and vegetable products, processing techniques and equipment. Role of fruits and vegetables in human nutrition landscape and floriculture, including raising of ornamental plants and design and layout of lawns and gardens.

Diseases and pests of fields, vegetable, orchard and plantation crops of India and measures to control these. Causes and classification of plant diseases. Principles of plant.

Disease control including exclusion, eradication, immunization and production. Biological control of pests and diseases. Integrated management of pests and diseases. Pesticides and their formulations plant protection equipment, their care and maintenance.

Growth and Development of Vegetable Crops- Physiology of dormancy and germination of vegetable seeds and tubers. Tissue culture techniques.

Post-harvest technology- Maturity and ripening process and factors affecting them. Quality evaluation for fresh market and processing. Factors responsible in deterioration of harvested fruits and vegetables role, of growth substances and irradiation in decay control respiration and transpiration, storage of fresh fruits and vegetables, theories of chilling injury and symptoms of chilling injured, modified gas storage.
