U.P. EDUCATION SERVICE SELECTION COMMISSION, PRAYAGRAJ

Syllabus

HORTICULTURE

(Assistant Professor-Higher Education)

(Subject Code-90)

Unit-1: Prospect of recent trend in National and Global Scenario of Horticulture Development, Classification of horticultural crops on the basis of agro-climatic conditions, nutritional values, botanical plant parts used, medicinal uses. Present status of cultivation and export potential of horticultural crops. Contribution of Horticultural Research Centres in development of horticulture. Concept of 'Golden rainbow, Revolution' and future thrust. Concepts of MIDH and its programme. Role of NHB, APEDA, ICAR, NMPB, State and Central Govt. Horticulture Development Agencies and Societies in Development of Horticulture.

Unit-2: Prospect of improved fruits, vegetables, medicinal and aromatic plants, spices, floriculture & landscaping, plantation crops, orchids, post harvest technology and handling, Principles and importance of protected cultivation, precision farming, organic farming, green house/glass house cultivation, net house, Natural and bio-dynamic farming. Principles of modern nursery establishment and management principles. Role of root-stocks in production of quality planting materials Methods of propagation and multiplication of important horticultural crops, tissue culture, mist house, bottom heat, hot bed, hybrid seed production, methods of quality seed production, breeding methods of important fruits, vegetables and flowers & spices.

Unit-3: Recent advances, importance & improved production technology for cultivation of commercial and potential fruits, vegetables, ornamental plants, spices, flowers, orchids, plantation crops, medicinal & aromatic plants and their management practices for production of quality produce, plant protection measures, nutrients and water management practices, determination of maturity indices and harvesting technology, storage, marketing and post-harvest management practices, methods of minimising post-harvest losses, and development of post-harvest and processing technology. Growth and development, dormancy, chilling requirement, pollination, fertilization, parthenocarpy, seedlessness, parathenogenesis, sterility, unfruitfulness, problems, fruit/seed setting, biochemical changes during maturation and ripening.

Unit-4: Crop improvement technology of varieties in commercially cultivated fruits, vegetables, spices and flowers, principles of hybridization, mutation, polyploidy and heterosis breeding and biotechnology in development of horticultural crops, role of pollination and polinizers. Role of molecular marker for improvement of Horticultural Crops. Role of Genetic engineering in Horticultural Crops.

Unit-5: Principles of high density orcharding, meadow orcharding, planting systems, multi-tier inter cropping systems, canopy management. Principles of pruning & training and methods of training, rejuvenation and top working management of wasteland, watershed and dry land. Integrated nutrients and pest/disease management, water management/ water harvesting and micro-irrigation systems, fertigation, methods of fertilizers application and foliar feeding of nutrients. Principles and elements of landscaping, garden features and adornments, principles and important features of different types of gardens, bonsai cultivation, indoor garden and arrangements of indoor plants, flower arrangement, packaging, storage and transportation of different types of

cut flowers, principles of turf grass management and planting techniques, different types of special dish garden, terrarium, hanging baskets, window boxes, miniature garden, vertical gardens, potting containers and potting media. Turfing and turf management.

Unit-6: Prospect of value addition, National and Global scenario, production and export women empowerment through value added products making supply chain management. Problems of pre and post-harvest losses, cool chain, zero-energy cool system, refrigerated system, quality certification food and labelling and Horti-business management system, enhancing shelf life of perishable horticultural produce of fruits, vegetables, flowers, medicinal & aromatic crops, methods of post-harvest handling, storage and new packaging technology.

Unit-7: Export and import of Horticultural produce, value addition of horticultural produce, agri export zone for Horticultural Crop (AEZ). Problems and prospects of Development of Horticultural Industry. Role of Horticulture in National Development.

Unit-8: Role of remote sensing in Horticultural Crops, Bio-diversity and Conservation issues and goal centres of origin of Horticultural Crops. Role of bio-technology in production of horticultural crops, major establishment of bio-diversity zones and distribution of plant genetic resources and methods of their conservation, principles of herbal garden, gene garden, gene bank, bio-technical garden, plantorium and Bio-park.

Unit-9: Food safety standard and food laws. Horticultural produce waste management. Principles and methods of preservation, by heat, chemical, radiation, dehydration, freezing, fermentation, preparation of different quality produce and quality of control mechanism, modern storage system, precooling, low temperature modified atmosphere (MA).

Unit-10: Climate management in Horticultural Crop Production and Production Technology of Cool season and Warm season Vegetables Crops and their Seed Production. Aeroponics and Hydroponic in Horticulture. Role of plant growth regulators in propagation, flowering, fruit setting, fruit dropping, fruit ripening and storage. Physiology of flowering and flowering behaviours of important fruit crops. Problems of biennial bearing behaviours, its causes, and control. Biotic and Abiotic Stress Management in Horticultural Crops.