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Annexure-A

SYLLABUS FOR HORTICULTURE DEVELOPMENT OFFICER

PAPER – I

1. **General Horticulture:** Agro climate zone of India and Arunachal Pradesh, Nature and Scope of Horticulture and its importance in Arunachal Pradesh, Classification of Horticulture Plants, Production and scopes of Horticulture in India and Arunachal Pradesh pertaining to fruits, vegetables, flowers, Spices and Mushroom and its cultural practices, Nutri-sensitive horticulture, Export potential of Horticultural Crops from NEH Region, Peri- urban horticulture, Vertical Farming.
2. **Pomology:** Definition, its scope, importance and production of fruit crops in India and Arunachal Pradesh, cultivation of Apple, Walnut, Citrus, Kiwi plum, Chestnut, Guava, Banana, Pineapple and uses of varieties and its cultural practices.
3. **Olericulture:** Definition, Classification, its scope, production and importance of growing vegetables in Arunachal Pradesh, cultural practices of major vegetables crop i.e. Cabbage, Cauliflower, Potato, Okra, Brinjal, Beans Pumkin, Cucumber etc. Vegetable seed production.
4. **Floriculture:** Definition, its scope and landscaping in Arunachal Pradesh, cultural practices of Roses, Begonia, Marigold, Calendula, Salvia, Chrysanthemum, Gladiolous, Orchids, Anthurium etc.
5. **Medicinal, Aromatic and Spices Plants:** Scope, opportunities and constrain in cultivation of medicinal, aromatic, spice and condiments in India and Arunachal Pradesh, cultural practices, training, promising of medicinal, aromatics and spices crops preparation of nurseries, after care and its importance in therapeutic and pharmaceutical uses.
6. **Propagation & Orchard Management:** Fundamental/Principle/methods of plant propagation of horticulture crops, Layout of orchard, system of plant and method of cultivation, planning and Management of nurseries, scope and zone-wise growing of Horticultural crops pertaining to temperate, sub-temperate, tropical, sub-tropical, Definition, its scope and importance of green house production and protection.
7. **Plant Physiology:** Absorption of water and nutrients, its movement in plant, factor affecting, photo respiration, evaporation, enzymes and enzymes activities in physiological process, stress at physiology by Horticulture crops with special reference to Arunachal conditions.
Plant growth Hormones/ regulators substance: Definition, influence of growth in plant, physiological effects of a different growth hormone methods. Method of application and evaluation of responses. Pre-harvest regulation of Horticultural crops by usages of plant hormone.
8. **Genetics & Plant Breeding:** Elementary concept, principal of inheritance, interaction of gene, linkage crossing over, wild relation and resources of resistance to biotic, abiotic stresses and quality characters for fruit, vegetables, flowers, plantation crops, spices, medicinal and aromatic Horticulture crops. Breeding as modern science, classification of

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crops according to breeding behavior, application of breeding method. Use of Biotechnological tools for improvement of horticultural crops.

9. **Soil Science:** Composition of soil, soil texture, soil water, soil colloid, minerals, organic and their natures and protection, concept of soil pH. Theories and concept of soil moisture, characterization of soil by dramatic mobilization organic matter, humus, its formation, preparation of CN ratio in soil, nitrification and its significance. Details of soil profile, land capability, classification, soil survey. Different types of soil Micro-organism, soil texture evaluation methods and analysis. Soil acidity management.

Plant nutrition/Manure & Fertilizer: Definition of essential plant nutrition's mechanism of mineral absorption, soil reaction nutrient, deficiency symptoms and function of nutrient, method of application, importance of organic farming, special management practices for utilization of organic material in soil. Types of bulky organic manures.

PAPER – II

1. **Plant Pathology:**

- i) Concept of disease in plant, importance of plant disease, classification of plant disease, various parasite and non-parasite, causes of plant disease, stages of disease development and their casual organism.
- ii) Disease of fruit and plantation crops, its etiology, system of methods of spread, epidemiology of banana citrus, grape, apple, peach, walnut, pineapple, pear, kiwi and concept of integrated of control measures and their casual organism.
- iii) Disease of vegetable tuber and spices crops, its etiology, epidemiology, method of spread and concept of integrated of control measure.
- iv) Disease of ornamental, medicinal and aromatic plants, its etiology and management of disease of major crops, tube rose, rose, jasmine etc.
- v) Definition of weeds, menace in Horticultural crops, classification of weeds, its control measure, their application methods and biology control of weeds. Modern concept of organic biological cropping.

2. **Entomology:** Classification of insects, Nematodes, its nature and extent of damage caused by the insects, life cycle, seasonal occurrence, its management practices of major pest of fruits crops, vegetable, spices, aromatic medicinal and flowers.

Different pest control measure with special reference to IPM, classification of insecticide/ Pesticide and their physical, chemical and biological properties, type of formulation, different type of plant protection equipment, its maintenance, use in field maintenance and Toxicology.

Nematodes, its pathogenesis, relationship with other micro-organism and nature of damaged and life cycle and its control measure.

3. **Extension Education/ Rural Psychology:** Definition, meaning objectives of extension, importance of extension education in Horticulture and Rural Development, teaching, learning process, classification, characteristic of extension, reading method. Role of AV aids in extension, planning, Programme and Evaluation, teaching method, definition of rural psychology & its importance.

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- 4. **Agricultural Economic and Management:** Concept of micro & macro-economic. Basic concept like wants goods, wealth, welfare value prices, consumption, exchange factors of production, law of diminishing return. Farm business organization, National income, per capita income. Basic concept of economic and Agricultural Economics, Division of Horticultural Economics, importance of the subject concept of supporting price. Importance of Farm Management, its relationship with other science. Advantages of records and accounts. System of book-keeping, types of farm record and act physical of financial principles involved in farm management decision, management of farm labour and wages record. Planning labour, use for higher efficiency estimation of different kind of labour required in farm. Cost of production and return of farm. Cost of fencing, irrigation, farm layout. Agriculture marketing cooperation.

- 5. **Agriculture Engineering:** Scope of farm mechanization- benefits and limitations, sources of farm power, IC engines, elementary knowledge about tractors, types and system soil tillage implements, inter-culture implements/equipment harvesting and threshing equipment. Soil-plant-water relationship. Drainage engineering, surveying and levelling field structures and practices to control erosion by water. Different system of soil water conservation.

- 6. **Post-harvest management & Marketing:** Importance of post-harvest technology in horticulture crops, maturity indices, harvesting, grading of fruit, vegetable, cut flowers, plantation crops, medicinal and Aromatic spices contents crops. Pre-factor affecting quality control responsible for determination of horticultural produces, physiological and biochemical changes hardening and delaying ripening process pre-harvest treatment. Different system of storage & packages, advance packaging, elementary principles of processing & preservation. Definition of marketing, importance of marketing, classification of marketing, special reference to Arunachal Pradesh, constrain of marketing for produces of Horticultural crops in Arunachal Pradesh, its solution. Role of government in promoting marketing in Arunachal Pradesh.

- 7. **Agro-Forestry & Agro-Technology:** Definition, objectives, potential, Agro forestry system, importance of Horti-Silviculture, Horti-Silvi-Pastoral, intercropping, home garden, wind breaks, Shelter belts and energy plantation. Shifting cultivation in its definition and its remedial and alternative for sustainable resources. Definition of Agro methodology, objectives, scope and its factor and element of weather and climate. Use of remote sensing technology in Agro-methodology types of cloud precipitation, hail and frost etc. its effects and plant growth crops.

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