

## पाठ्यक्रम

### सामान्य हिन्दी

सामान्य हिन्दी:— (1) इस पत्र का स्तर वही होगा, जो बिहार विद्यालय परीक्षा समिति की दसवीं (माध्यमिक) की परीक्षा में चौथे वर्ग से लगातर हिन्दी का अध्ययन करने वाले परीक्षार्थियों के लिये अभिप्रेत हिन्दी का है।

(2) इस परीक्षा में (क) उम्मीदवारों को सरल हिन्दी में अपने भावों को स्पष्टतः और शुद्ध-शुद्ध व्यक्त करने की सामान्य क्षमता, और (ख) परिचित विषयों पर सीधी-सादी हिन्दी की सहज बोध शक्ति की जाँच की जायेगी।

## पाठ्यक्रम

### सामान्य ज्ञान

सामान्य ज्ञान (सामयिक घटनाओं की जानकारी सहित)— इस पत्र में भारतीय इतिहास एवं संस्कृति तथा भूगोल के भी ऐसे प्रश्न पूछे जायेंगे, जिनका उत्तर उम्मीदवार बिना विशेष अध्ययन के ही दे सकते हैं।

**Syllabus for Bihar Agriculture Service Category-7 (Horticulture)**

**Paper-1**

Meaning and scope of Agronomy, National and International Agricultural Research Institutes of India, Agro-climatic zones of India and Bihar, Weather and climate, micro-climate, weather elements, Formation and classification of clouds, Basics of weather forecasting. Dry land agriculture. Area, production and productivity of major crops in India and Bihar. Tillage, crops stand establishment, Planting geometry and its effect on growth and yields of cropping systems, harvesting, Classification of crops. Concept of multiple cropping, multistoried, relay and inter-cropping and their importance in relation to food production. Basic elements of crop production, Factors affecting crop production. Irrigation, definition and objectives, water resources and irrigation development in India and Bihar, Soil plant water relationships. Definition, principles and components of organic farming. Sustainable agriculture: Introduction, definition, goal and current concepts, factors affecting ecological balance and ameliorative measures; Land degradation and conservation of natural resources, Definition, principles and components of farming system.

Application of Remote Sensing, GPS and GIS techniques in agriculture. Pedological and Edaphological concepts, Earth Crust, Composition and weathering of rocks and minerals factors and processes of soil formation, Type of soil, production importance and their management. Concept of soil quality and soil health- physical, chemical and biological indicator of soil quality. Movement of soil water. Soil health assessment techniques. Soil as a source of plant nutrients. Criteria of nutrients essentiality and their function, forms of nutrient in soil. Mechanism of nutrient transport to plants and factor affecting nutrient availability to plant. Acidic, calcareous and salt affected soils: their characteristics, nutrient availabilities and reclamation (Mechanical, chemical and biological methods). Fertilizer and insecticides and their effect on soil, Indian standards for water quality, use of saline water in agriculture, Different approaches of soil fertility evaluation.

Indian history of Plant Breeding, major objectives and achievements of plant breeding in India, Centre of diversity and its importance in crop improvement. Nature of Pollination of crops, parthenocarpy in plants. Germplasm conservation and its utilization, concept of gene and gene pool. Hybridization & methods of handling segregating generations. Mass selection, back cross method, recurrent selection. Crop ideotype-concept and importance. Male sterility and self-incompatibility- mechanism and their utilization in crop improvement. Pure line, Synthetic and composite variety and their development, Hybrid production and importance in different crop plants. Wide hybridization and constraints related to it. Mutation and types of mutagens. Quantitative and qualitative characters. Components of genetic variation, correlation and regression. Cell division-mitosis and meiosis. Mendel's laws of inheritance and their exceptions, linkage and crossing over. Polyploidy and its importance in crop breeding. Totipotency in plant, meristem culture, anther culture. Transgenic- achievements and future prospects. Plant breeder's rights and regulation for plant variety protection, Basic principles of seed production, kinds of seed and Indian seed Act 1966.

Economic importance of insects, General morphology and anatomy of insect, Classification of insects, Apiculture, sericulture and lac culture, Important insect and non-insect pests of important field crops, vegetables, orchard and plantation crops and their management. Storage pests and their management. Integrated pest management. Biological control of pests. Plant quarantine measures, Different categories of pesticides, their formulation and modes of

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action. Insect toxicology and concept of LD<sub>50</sub>/LC<sub>50</sub> MRL and waiting period, Recent techniques of pest management. Plant protection equipment's and its application in pest management. Insecticide act, 1968 & puts, 1971.

Introduction, important plant pathogenic organisms, fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, Spiro plasmas, viruses, viroids, algae, Protozoa and phanerogamic parasites with examples of diseases caused by them. Prokaryotes: classification of prokaryotes according to Bergey's Manual of systematic Bacteriology. General characters, reproduction and classification of fungi. Definition and objectives of Plant Pathology. Survival and Dispersal of Plant Pathogens. Plant disease epidemiology. General principles of plant diseases management. Integrated plant disease management (IDM). Economic importance, symptoms, cause, epidemiology and disease cycle and important diseases of important field crops, vegetables, Horticultural crops and their management. General characteristics of plant pathogenic nematodes its morphology and biology. Classification of nematodes up to family level with emphasis. General symptoms caused by nematodes and their management.

Public Finance—Meaning, Principle, Sources, Direct Tax, Indirect Tax, Nationalized and Commercial Banking System, Agricultural Credit, Agricultural Co-operative Structure and Function. Agricultural Marketing - Definition, classification, marketable surplus & marketed surplus, Marketing Channel, Price-Spread, Market Structure. Agricultural Price Policy. FCI, SWC, CWC, APMC, State Trading, Production Economics, - Classical Production Function. Relationships between output & input. Agri.Business Management, Product Life Cycle, Marketing mix, Capital Management, Balance Sheet, project loss statement, Project Life Cycle.

Definition and importance of horticulture, Classification of horticulture. Area and production of different fruit vegetables and flower crops planting systems, high density planting, planning and establishment of new orchard. Propagation methods and use of growth regulators in horticultural crops. Package of practices of important fruits, vegetables and ornamental crops. Maturity indices, harvesting and postharvest handling of fruits and vegetables. Pre harvest factors affecting quality on postharvest shelf life of fruits and vegetables. Principles of preservation by heat, low temperature, chemicals and fermentation. Preparation of jams, jellies, preserves, pickles, ketchup, sauce.

Agricultural extension, its importance, Extension teaching methods, Etawah Pilot Project, Community Development Programme, Panchayati Raj System, High Yielding Variety Programme. National Demonstration Programme. Krishi Vigyan Kendra, ATMA. Institutional Village Linkage Programme (IVLP). IRDP, Demonstrations, Leadership, Attitude, Knowledge, Skill, Training, Communication skill. Local leaders, Adoption and Diffusion. Innovations and their characteristics, Kisan Call Centers, Entrepreneurship in Agriculture, SWOT analysis.

**Syllabus for Bihar Agriculture Service Category-7 (Horticulture)**  
**Paper-2**

Definition, importance of fruits, status and scope of fruit crops, classification of fruit crops on the basis of climatic zones, different methods of propagation of fruit plants, site selection and layout of the orchards, high density planting, planting system, planning & establishment of orchard, fencing and wind break, use of root stock, production technology of fruits crops like – mango, litchi, banana, citrus, guava, papaya, aonla, pine apple, pomogrenate, ber, strawberry & jackfruit with reference to climate, soil, origin, botany, varieties, propagation, planting distance & time, pruning and training, manurial requirements, irrigation, interculture operations, harvesting and yield.

Definition, importance of vegetables, status & scope of vegetable production in Bihar and India, type of vegetables, gardening, classification of vegetables, nursery & nursery management, production technology of vegetables like – Potato, tomato, brinjal, chillies, onion, garlic, ladies finger (okra), radish, carrot, cabbage, cauliflower, knolkhol, cucurbits, peas, beans, suran, colocasia, sweet potato, yam been, turnip, beetroot, palak and amaranthus with reference to climate, origin, soils, manurial requirements, variety, botany, propagation methods, seed rate & seed treatment, sowing/planting time, spacing & sowing method, irrigation, inter culture operations, maturity, harvesting and yield:

Definition, importance of flowers, status and scope of floriculture, production technology of flower crops like – rose, tuberose, carnation, gladiolus, chrysanthemum, marigold, gerbera, dahlia, jasmine, crossandra with reference to climate, soil, origin, botany, varieties, propagation, planting distance & time, pruning and training, manurial requirements, irrigation, interculture operations, harvesting and yield. Importance of ornamental gardens, types & styles of ornamental gardens, garden layout, garden elements, use of trees, shrubs, climbers palm, cactus and succulents, house plants, seasonal flowers.

Importance and scope of spices and plantation crops, production technology of spices :- ginger, turmeric, coriander, cumin, fenugreek, fennel, nigella and omum (Ajwain), Scientific cultivation of plantation crop :- coconut, arecanut, betelvine, oil palm with reference to climate, origin, soil propagation methods, botany, manurial requirements, variety, sowing/planting time, spacing, irrigation, weeding, harvesting and yield.

Production technology of medicinal & aromatic plants :-

1. Medicinal crops :Diascoria, opium, periwinkle, aloe, guggul, belladonna, aonla.
2. Aromatic crop : Lemon grass, citronella, palmarosa.

Preparation of jams, jellies, marmalades, candies, crystalized and glazed fruits, chutneys, pickles, ketchup, sauce, puree, syrups, juices, squashes and cordials.

Protected cultivation & usage of PGR in Horticultural Crops

PHT-post harvest management

Micro Irrigation

