

• **Tropical and Dry Land Fruit Production**

Commercial varieties of regional, national and international importance, eco-physiological requirements, recent trends in propagation, rootstock influence, planting systems, cropping systems, root zone and canopy management, nutrient management, water management, fertigation, role of bioregulators, abiotic factors limiting fruit production, physiology of flowering, pollination fruit set and development, honeybees in cross pollination, physiological disorders- causes and remedies, quality improvement by management practices; maturity indices, harvesting, grading, packing, storage and ripening techniques; industrial and export potential, Agri. Export Zones(AEZ) and industrial supports for crops viz. mango, banana, citrus, papaya, guava, sapota, jackfruit, aonla, pomegranate, phalsa, ber, pineapple, annonas, avocado, apple, pear, grape, litchi, grape and strawberry.

• **Biodiversity and Conservation of Fruit Crops**

Biodiversity and conservation; issues and goals, centers of origin of cultivated fruits; primary and secondary centers of genetic diversity. Present status of gene centers; exploration and collection of germplasm; conservation of genetic resources – conservation *in situ* and *ex situ*. Germplasm conservation- problem of recalcitrancy - cold storage of scions, tissue culture, cryopreservation, pollen and seed storage; inventory of germplasm, introduction of germplasm, plant quarantine. Intellectual property rights. GIS and documentation of local biodiversity, Geographical indication.

Crops

Mango, sapota, citrus, guava, banana, papaya, grapes, jackfruit, custard, apple, ber, aonla, malus, *Prunus* sp, litchi, nuts, coffee, tea, rubber, cashew, coconut, cocoa, palmyrah, arecanut, oil palm and betelvine

• **Canopy management**

Canopy management - importance and advantages; factors affecting canopy development.

Canopy types and structures with special emphasis on geometry of planting, canopy manipulation for optimum utilization of light. Light interception and distribution in different types of tree canopies.

Canopy development and management in relation to growth, flowering, fruiting and fruit quality in temperate fruits, grapes, passion fruits, mango, sapota, guava, citrus and ber.

• **Propagation and Nursery Management for Fruit Crops**

Introduction, life cycles in plants, cellular basis for propagation, sexual propagation, apomixis, polyembryony, chimeras. Principles factors influencing seed germination of horticultural crops, dormancy, hormonal regulation of germination and seedling growth. Seed quality, treatment, packing, storage, certification, testing. Asexual

propagation – rooting of soft and hard wood cutting under mist by growth regulators. Rooting of cuttings in hotbeds. Physiological, anatomical and biochemical aspects of root induction in cuttings. Layering – principle and methods. Budding and grafting – selection of elite mother plants, methods. Establishment of bud wood bank, stock, scion and inter stock, relationship – Incompatibility. Rejuvenation through top working – Progeny orchard and scion bank. Micro-propagation – principles and concepts, commercial exploitation in horticultural crops. Techniques - in vitro clonal propagation, direct organogenesis, embryogenesis, micrografting, meristem culture. Hardening, packing and transport of micro-propagules. Nursery – types, structures, components, planning and layout. Nursery management practices for healthy propagule production

• **Breeding of Fruit Crops**

Origin and distribution, taxonomical status - species and cultivars, cytogenetics, genetic resources, blossom biology, breeding systems, breeding objectives, ideotypes, approaches for crop improvement - introduction, selection, hybridization, mutation breeding, polyploidy breeding, rootstock breeding, improvement of quality traits, resistance breeding for biotic and abiotic stresses, biotechnological interventions, achievements and future thrust in the following selected fruit crops.

Crops

Mango, banana and pineapple Citrus, grapes, guava and sapota Jackfruit, papaya, custard apple, aonla, avocado and ber litchi, jamun, phalsa, Apple, pear and strawberry.

• **Growth and Development of Horticultural Crops**

Annual, semi-perennial and perennial horticultural crops, environmental impact on growth and development, effect of light, photosynthesis and photoperiodism vernalisation, effect of temperature, heat units, thermoperiodism. Assimilate partitioning during growth and development, influence of water and mineral nutrition during growth and development, biosynthesis of auxins, gibberellins, cytokinins, abscissic acid, ethylene, brassinosteroids, growth inhibitors, morphactins, role of plant growth promoters and inhibitors. Developmental physiology and biochemistry during

dormancy, bud break, juvenility, vegetative to reproductive interphase, flowering, pollination, fertilization and fruit set, fruit drop, fruit growth, ripening and seed development. Growth and developmental process during stress - manipulation of growth and development, impact of pruning and training, chemical manipulations in horticultural crops, molecular and genetic approaches in plant growth development.

• **Production Technology of Vegetable Crops**

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roduction, botany and taxonomy, climatic and soil requirements, commercial varieties/hybrids, sowing/planting times and methods, seed rate and seed treatment, nutritional and irrigation requirements, intercultural operations, weed control, mulching, physiological disorders, harvesting, post-harvest management, plant protection measures and seed production of tomato, brinjal, hot and sweet peppers, okra, peas and broad bean, green leafy cool season vegetables.

potato, cole crops, carrot, radish, turnip and beetroot, Bulb crops: onion and garlic, Peas and broad bean, green leafy cool season vegetables, cucurbitaceous, tapioca, sweet potato and colocasia.

• Breeding of Vegetable Crops

Origin, botany, taxonomy, cytogenetics, genetics, breeding objectives, breeding methods (introduction, selection, hybridization, mutation), varieties and varietal characterization, resistance breeding for biotic and abiotic stress, quality improvement, molecular marker, genomics, marker assisted breeding and QTLs, biotechnology and their use in breeding in vegetable crops-Issue of patenting, PPVFR act.

Crops :Potato ,tomato, brinjal, hot pepper, sweet pepper , okra ,Peas and beans, amaranth, chenopods and lettuce ,Gourds, melons, pumpkins and squashes ,Cabbage, cauliflower, carrot, beetroot, radish, sweet potato and tapioca

• Growth and Development of Vegetable Crops

Physiology of dormancy and germination of vegetable seeds, tubers and bulbs; Role of auxins, gibberellins, cytokinins and abscissic acid; Application of synthetic hormones, plant growth retardants and inhibitors for various purposes in vegetable crops; Role and mode of action of morphactins, antitranspirants, anti-auxin, ripening retardant and plant stimulants in vegetable crop production. Role of light, temperature and photoperiod on growth, development of underground parts, flowering and sex expression in vegetable crops; apical dominance. Physiology of fruit set, fruit development, fruit growth, flower and fruit drop; parthenocarpy in vegetable crops; phototropism, ethylene inhibitors, senescence and abscission; fruit ripening and physiological changes associated with ripening. Plant growth regulators in relation to vegetable production; morphogenesis and tissue culture techniques in vegetable crops. Definition of seed and its quality, new seed policies; DUS test, scope of vegetable seed industry in India.

• Seed Production Technology of Vegetable Crops

Genetical and agronomical principles of seed production; methods of seed production; use of growth regulators and chemicals in vegetable seed production; floral biology, pollination, breeding behavior, seed development and maturation; methods of hybrid seed production. Categories of seed; maintenance of nucleus, foundation and certified seed; seed certification, seed standards; seed act and law enforcement, plant quarantine and



Quality control. Physiological maturity, seed harvesting, extraction, curing, drying, grading, seed processing, seed coating and pelleting, packaging (containers/packets), storage and cryopreservation of seeds, synthetic seed technology. Agro-techniques for seed production in solanaceous vegetables, cucurbits, leguminous vegetables, cole crops, bulb crops, leafy vegetables, okra, vegetatively propagated vegetables.

• **Organic Vegetable Production Technology**

Importance, principles, perspective, concept and component of organic production of vegetable crops. Methods for enhancing soil fertility, mulching, raising green manure crops. Indigenous methods of compost, Panchagavya, Biodynamics, preparation etc Pest and disease management in organic farming; ITK's in organic farming. Role of botanicals and bio-control agents. GAP and GMP- Certification of organic products; organic production and export -opportunity and challenges.

• **Production of Plantation, spices, medicinal and aromatic Crops**

Role of crops in national economy, export potential, IPR issues. Systems of cultivation, multitier cropping, photosynthetic efficiencies of crops at different tiers, rainfall, humidity, temperature, light and soil pH on crop growth and productivity, high density planting, nutritional requirements, physiological disorders, role of growth regulators and macro and micro nutrients, water requirements, fertigation, moisture conservation, shade regulation, weed management, training and pruning, crop regulation, maturity indices, harvesting. Cost benefit analysis, organic farming, management of drought, precision farming.

Crops: Coffee, tea, cashew, betel vine, cocoa, rubber, palmyrah palm

• **Production Technology of Spice Crops**

Introduction, importance of spice crops-historical accent, present status - national and international, future prospects, botany and taxonomy, climatic and soil requirements, commercial varieties/hybrids, site selection, layout, sowing/planting times and methods, seed rate and seed treatment, nutritional and irrigation requirements, intercropping, mixed cropping, intercultural operations, weed control, mulching, physiological disorders, harvesting, post harvest management, plant protection measures and seed planting material and micro-propagation, precision farming, organic resource management, organic certification, quality control, pharmaceutical significance and protected cultivation of: turmeric, ginger garlic, black pepper, Cardamom, clove, coriander, fenugreek, cumin, fennel, ajowain, dill, celery, cinnamom, nutmeg, allspice

• **production Technology for Medicinal and Aromatic Crops**

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Production technology for Senna, Periwinkle, Coleus, Aswagandha, Glory lily, Sarpagandha, *Dioscorea* sp., *Aloe vera*, *Phyllanthus amarus*, *Andrographis paniculata*, Medicinal solanum, Isabgol, Poppy, Safed musli, *Stevia rebaudiana*, *Mucuna pruriens*, *Ocimum* sp.

Production technology for palmarosa, lemongrass, citronella, vetiver, geranium, artemisia, mentha, ocimum, eucalyptus, rosemary, thyme, patchouli, lavender, marjoram, oreganum.

Influence of biotic and abiotic factors on the production of secondary metabolites, Regulations for herbal raw materials, Phytochemical extraction techniques.

Institutional support and international promotion of essential oil and perfumery products.

• Breeding of Plantation Crops and Spices

Species and cultivars, cytogenetics, survey, collection, conservation and evaluation, blossom biology, breeding objectives, approaches for crop improvement, introduction, selection, hybridization, mutation breeding, polyploid breeding, improvement of quality traits, resistance breeding for biotic and abiotic stresses, molecular aided breeding and biotechnological approaches, marker-assisted selection, bioinformatics, IPR issues, achievements and future thrusts. Coffee, tea, cashew, betel vine, cocoa, rubber, palmyrah palm, Black pepper, cardamom, Ginger, turmeric, Fenugreek, coriander, fennel, celery, ajwain, Nutmeg, cinnamon, clove and allspice

• Breeding of Medicinal and Aromatic Crops

Plant bio-diversity, conservation of germplasm, IPR issues, Major objectives of breeding of Medicinal and Aromatic Crops, Scope for introduction; cytogenetic background of important Medicinal and Aromatic Crops; Scope for improvement of Medicinal and Aromatic Crops through selection, intra and interspecific hybridization, induced autotetraploidy, mutation breeding and biotechnological approaches.

Breeding for yield and quality improvement in medicinal plants, Breeding for high herbage yield, essential oil and quality components, secondary metabolites in medicinal and aromatic crops; Genetics of active principles and assay techniques useful in evaluation of breeder's material. Breeding problems in seed and vegetatively propagated medicinal and aromatic crops.

Achievements and prospects in breeding of medicinal crops, viz. *Cassia angustifolia*, *Catharanthus roseus*, *Gloriosa superba*, *Coleus forskohlii*, *Stevia*, *Withania somnifera*, *Papaver somniferum*, *Plantago ovata*, *Dioscorea* sp.

Prospects in breeding of medicinal crops, viz. *Chlorophytum* sp, *Rauvolfia serpentina*, *Aloe vera*, *Ocimum* sp, *Phyllanthus amarus*, *Solanum* sp.

Prospects in breeding of aromatic crops viz., Geranium, vettiver, Lemon grass, Palmarosa, citronella, Rosemary, Patchouli, Eucalyptus, Artemisia and Mint.

• **Processing of Plantation Crops, Spices Medicinal and Aromatic Crops**

Commercial uses of spices and plantation crops. Processing of major spices - cardamom, black pepper, ginger, turmeric, chilli and paprika, vanilla, cinnamon,

clove, nutmeg, allspice, coriander, fenugreek, curry leaf. Extraction of oleoresin and essential oils. Processing of produce from plantation crops, viz. coconut, arecanut, cashewnut, oil palm, palmyrah, date palm, cocoa, tea, coffee, rubber etc.

Processing of medicinal plants- dioscorea, gloriosa, stevia, coleus, ashwagandha, tulsi, isabgol, safed musli, senna, aloe, catharanthus, etc. Different methods of drying and storage. Microbial contamination of stored product. Influence of temperature and time combination on active principles.

Extraction and analysis of active principles using TLC / HPLC / GC. Distillation, solvent extraction from aromatic plants- davana, mint, rosemary, rose, citronella, lavender, jasmine, etc. Study of aroma compounds and value addition. Nano-processing technology in medicinal and aromatic plants.

• **Organic Spice and Plantation Crop Production Technology**

Organic production of spice crops and plantation crops, viz. pepper, cardamom, turmeric, ginger, cumin, vanilla, coconut, coffee, cocoa, tea, arecanut. GAP and GMP-

Certification of organic products; organic production and export - opportunity and challenges.

• **Breeding of Flower Crops and Ornamental Plants**

Principles -- Evolution of varieties, origin, distribution, genetic resources, genetic divergence- Patents and Plant Variety Protection in India. Genetic inheritance -- of flower colour, doubleness, flower size, fragrance, post harvest life. Breeding methods suitable for sexually and asexually propagated flower crops and ornamental plants-- introduction, selection, domestication, polyploid and mutation breeding for varietal development, Role of heterosis, Production of hybrids, Male sterility, incompatibility problems, seed production of flower crops. Breeding constraints and achievements made in commercial flowers - rose, jasmine, chrysanthemum, marigold, tuberose, crossandra, carnation, dahlia, gerbera, gladioli, orchids, anthurium, aster, heliconia, lilliums, nerium.

Scope of cut flowers in global trade, Global Scenario of cut flower production, Varietal wealth and diversity, area under cut flowers and production problems in India- Patent rights, nursery management, media for nursery, special nursery practices. Growing environment, open cultivation, protected cultivation, soil requirements, artificial growing media, soil decontamination techniques, planting methods, influence of environmental parameters, light, temperature, moisture, humidity and CO₂ on growth and flowering. Cut flower standards and grades, harvest indices, harvesting techniques, post-harvest handling, Methods of delaying flower opening, Pre-cooling, pulsing, packing, Storage & transportation, marketing, export potential, institutional support, Agri Export Zones. Flower production – water and nutrient management, fertigation, weed management, rationing, training and pruning, disbudding, special horticultural practices, use of growth regulators, physiological disorders and remedies, IPM and IDM, production for exhibition purposes.

Cut rose, cut chrysanthemum, carnation, gerbera, gladioli, tuberose, orchids, anthurium, aster, lilioms, bird of paradise, heliconia, alstroemeria, alpinia, ornamental ginger, bromeliads, dahlia, gypsophilla, limonium, statice, stock, cut foliages and fillers.

Flower forcing and year round flowering through physiological interventions, chemical regulation, environmental manipulation.

Cut flowers

Cut rose, cut chrysanthemum, carnation, gerbera, gladioli, tuberose, orchids, anthurium, aster, lilioms, bird of paradise, heliconia, alstroemeria, alpinia, ornamental ginger, bromeliads, dahlia, gypsophilla, limonium, statice, stock, cut foliages and fillers.

Loose flowers

Jasmine, scented rose, chrysanthemum, marigold, tuberose, crossandra, nerium, hibiscus, barleria, celosia, gomphrena, non-traditional flowers (Nyctanthes, Tabernaemontana, ixora, lotus, lilies, tecoma, champaka, pandanus).

Land Scaping and Ornamental Gardening

Landscape designs, types of gardens, English, Mughal, Japanese, Persian, Spanish, Italian, Vanams, Buddha garden; Styles of garden, formal, informal and free style gardens. Urban landscaping, Landscaping for specific situations, institutions, industries, residents, hospitals, roadsides, traffic islands, damsites, IT parks, corporates. Garden plant components Lawns, Establishment and maintenance, special types of gardens, vertical garden, roof garden, bog garden, sunken garden, rock garden, clock garden, colour wheels, temple garden, sacred groves. Bio-aesthetic planning, eco-tourism, theme parks, indoor gardening, therapeutic gardening, non-plant components, water scaping, xeriscaping, hardscaping.

Protected Floriculture

Prospects of protected floriculture in India; Types of protected structures – Greenhouses, polyhouses, shade houses, rain shelters etc., Designing and erection of protected structures; Low cost/Medium cost/High cost structures – economics of cultivation; Location specific

designs; Structural components; Suitable flower crops for protected cultivation. Environment control – management and manipulation of temperature, light, humidity, air and CO₂; Heating and cooling systems, ventilation, naturally ventilated greenhouses, fan and pad cooled greenhouses, light regulation. Containers and substrates, soil decontamination, layout of drip and fertigation system, water and nutrient management, weed management, physiological disorders, IPM and IDM. Crop regulation by chemical methods and special horticultural practices (pinching, disbudding, deshooting, deblossoming, etc.); Staking and netting, Photoperiod regulation. Harvest indices, harvesting techniques, post-harvest handling techniques, Precooling, sorting, grading, packing, storage, quality standards.

• Value Addition in Flowers

Types of value added products, value addition in loose flowers, garlands, veni, floats, floral decorations, value addition in cut flowers, flower arrangement, styles, Ikebana, morebana, free style, bouquets, button-holes, flower baskets, corsages, floral wreaths, garlands, etc.; Selection of containers and accessories for floral products and decorations. Dry flower making – Drying, bleaching, dyeing, embedding, pressing


• Turfing and Turf Management

Turf grasses - Types, species, varieties, hybrids; Selection of grasses for different locations; Grouping according to climatic requirement-Adaptation; Turfing for roof gardens. Preparatory operations; Growing media used for turf grasses – Turf establishment methods, seeding, sprigging/dibbling, plugging, sodding/turfing, turf plastering, hydro-seeding, astro-turfing. Turf management – Irrigation, nutrition, special practices, aerating, rolling, soil top dressing, use of turf growth regulators (TGRs) and micronutrients, Turf mowing -- mowing equipments, techniques to minimize wear and compaction, weed control, biotic and abiotic stress management in turfs.

समूह-1 उप समूह-1 के अन्तर्गत

प्रबंधक (गुणवता नियंत्रक) पद के संबंधित विषय पर आधारित पाठ्यक्रम

1. Agriculture, its importance in national economy, agro-climatic and agro-ecological zone, geographic distribution of crop plants. Agriculture heritage, Sustainable agriculture.
2. Important crop of India and M.P. Package of practices for cultivation of cereal, Pulses, oilseeds, Sugar, Fiber and forage crops; Different cropping systems, Farming system, Crop rotations, multiple and relay cropping, intercropping, mixed cropping and sequence cropping. Integrated crop management, Geoinformatics, Nano technology and precision farming
3. Crop weather relationship, floods, Cold waves and frosts, Meteorological services to agriculture. Climate change and climate resilient agriculture, Remote sensing, contingent crop planning.
4. Soil as a medium for plant growth and its Composition, minerals and organic constituents of the soil and their role in crop production, Soil types of India and M.P. Chemical, Physical and microbiological properties of soils, Essential plant nutrients, their functions and deficiency symptoms, Occurrence and Cycling in soils, Straight, complex and mixed fertilizers and bio-fertilizers manufactures and marketed in India, Integrated nutrient management for plant. Management of problem soils such as saline, alkali and acid soils. Soil and water management Irrigation methods, soil erosion, its causes and control measures, Rain Water conservation; Watershed development, Rainfed farming principles and practices.
5. **Bio-chemistry/Physiology/Microbiology/Environmental Sciences:**
Fundamentals of Plant biochemistry and biotechnology, fundamentals of crop physiology, agricultural microbiology, environmental studies and Disaster management ,Introduction to forestry.
6. Elements of genetics and plant breeding as applied to improvement of crops, development of plant hybrids and composites, important hybrid and composites varieties of crops.
7. Important fruits and vegetable crops of M.P. and India, their package of practices Crop rotation, intercropping and companion crop. Role of fruits and vegetables in human nutrition. Post harvest management and value addition of fruits and vegetables.
8. Integrated weed management(IWM), Serious weeds and their control.


Com:-

Principles of plant protection measures integrated control of pests and diseases. Pests and diseases affecting major crops. Storage pests management, rodents managements.

9. Principles and objective of surveying. Contouring, Farm development, land capability classification, Farm machinery and equipments. Bullock drawn and power driven Farm implements, Mechanization and its relevance and scope in India. Seed bed preparation land shaping, seeding and intercultural tools or equipments, plant protection equipments, harvesting and threshing machines, post harvest machinery, Care and maintenance before and after use of farm implements and machinery. Protected cultivation and secondary agriculture.
10. Economics with reference to agriculture Farm planning and management for enhanced production, Factors of Crop production and production relationships, marketing of agricultural produce and regulated markets in M.P. Price of agricultural produce and its role in agricultural development. Impact of economic reforms on agriculture business. Principle and objectives of agricultural extension. Extension organization at the district and block levels, their structure, functions and responsibilities. Methods of Communication role of farm organizations in extension services. Women in agriculture, Women entrepreneur, Women empowerment; Opportunities for agriculture entrepreneurship and Rural enterprise.



Management Concepts Business Environment Managerial Economics Statistical Analysis & Operations Research Financial and Cost Accounting Financial Management Marketing Management	Accounting for Managerial Decisions Computer Application-1 Sales Management Consumer Behaviour Agricultural and Rural Marketing Marketing Research Advertising Management
Corporate Strategy Retailing Entrepreneurship Development Service Marketing and CRM Product and Brand Management E-Commerce	International Business Strategic management Logistics and Supply Chain Management Legal Aspect of Business Management Information System Industrial Marketing
Management Concepts Business Environment Managerial Economics Statistical Analysis & Operations Research Financial and Cost Accounting Financial Management Marketing Management Second Year Syllabus	Accounting for Managerial Decisions Computer Application-1 Sales Management Consumer Behaviour Agricultural and Rural Marketing Marketing Research Advertising Management
Corporate Strategy Retailing Entrepreneurship Development Service Marketing and CRM Product and Brand Management E-commerce	International Business Strategic Management Logistics and supply Chain Management Legal Aspect of Business (s) Management Information System Industrial Marketing



1. Schools of management thought- Scientific Management School, Human Relations School, Behaviour School, System Approach
Function of Management-Planning :types, steps, organising
Direction, Control, Coordination, Communication.
2. Personnel Management : Functions, Structure of Personnel Department, Line and staff, job Analysis, Manpower Planning, New Challenges.
Recruitment and selection, placement and Induction.
Wage and salary Administration, Job evaluation, Methods of Wage payment linking wages with productivity.
Grievance handling and disciplinary action.
3. HRD concept, Importance Evolution, Function, Organisation of HRD Function.
Performance appraisal, Training and Development, Quality of Worklife, Career planning, quality circles.
Training Programmes for workers, Management Development Programmes
Evaluation of training
4. Organisational Behaviour : Concept, Importance, Evolution, Role Group dynamics
Motivation, Leadership, Job satisfaction, Morale, Fatigue and monotony.
Motivation, Leadership, job satisfaction, Morale, Fatigue and monotony.
Organisational change and development, Organisational effectiveness.
5. Industrial Relation: concept, Scope, Approaches, Industrial Relations System
Industrial disputes: Causes, Effects, Trends, Methods and machinery for the settlement of Industrial disputes
Worker participation I Management, code of discipline, Tripartite bodies ILO.
Industrial relations and the new economic reforms.



**समूह-2 उप समूह-1 संयुक्त भर्ती परीक्षा के के संबंधित विषय पर आधारित
पाठ्यक्रम**

1. General Agriculture

Agriculture and its importance in national economy.

2. Agronomy

Major Crops of MP, Agrotechniques of major field crops of MP.

Farming systems and sustainable Agriculture.

Introductory Agro Meteorology, Agro-climatic and Agro-ecological zones .

3. Soil Science

Soil and its composition and its role in crop production, physical, Chemical, and biological properties of soil. Essential plant nutrients, their function and dynamics. Integrated nutrient management, Problem soils and their management.

4. Soil and water conservation, Watershed management

5. Plant Physiology

Absorption, translocation and metabolism of nutrients, Photosynthesis and respiration, Growth and development, growth regulators.

6. Crop Improvement

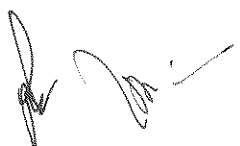
Elements of genetics and plant breeding as applied to crop improvement.

7. Horticulture

Package of practices of important fruit vegetable Spices and economically important flowering plants, Nursery management and propagation methods of horticultural crops. Problems (unfruitfulness, alternate bearing, fruit drops etc.) and physiological disorders and their management. Post-harvest management and value addition of fruits and vegetables.

8. Plant Protection

Important insect pests and diseases affecting important crops and their management. Components of integrated pest and disease management. Spray equipments, their selection



and maintenance. Rodent management. Safety precautionary measures during pesticide usage.

9. Agricultural Economics

Meaning, principles of economics as applied to agriculture, Farm planning and resource management for optimal production. Farming systems and their economic role. Marketing of agricultural produce and regulated markets in MP including initiatives like (e -chaupal) Price of agricultural produce and its role in agricultural production.

10. Agricultural Extension Education

Philosophy, objectives and principles of extension. Extension organizations at the state, district and block levels, their structure, functions and responsibilities. Methods of communication. Role of farmer's organizations in extensions services. Role and importance of trainings. Important rural development programmes in India.

