Test Series 2020 Batch-2: Agriculture

Date	Topic	Syllabus	Reference Material
26 Oct 2020	**Soil Science**	Soil- physical, chemical and biological properties. Processes and factors of soil formation. Soils of India, Mineral and organic constituents of soils and their role in maintaining soil productivity. Essential plant nutrients and other beneficial elements in soils and plants. Losses of nitrogen in the soil, nitrogen-use efficiency in submerged rice soils, nitrogen fixation in soils. Efficient phosphorus and potassium use. Principles of soil fertility, soil testing and fertilizer recommendations, integrated nutrient management. Bio fertilizers. Problem soils and their reclamation. Soil factors affecting greenhouse gas emission. Soil erosion and its management.	D K Das
	Agro-ecology	Ecology and its relevance to man, natural resources, their sustainable management and conservation. Physical and social environment as factors of crop distribution and production. Agroecology, cropping pattern as indicators of environments. Environmental pollution and associated hazards to crops, animals and humans. Climate change – international conventions and global initiatives. Greenhouse effect and global warming. Advance tools for ecosystem analysis – Remote sensing (RS) and Geographic Information Systems (GIS).	A.K. Vyas
	Weed Science	Weeds, their characteristics, dissemination and association with various crops; their multiplications; cultural, biological, and chemical control of weeds.	Modern weed management (O. P. Gupta)

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02 Nov 2020	**Agriculture Economics**	Farm management, scope, importance and characteristics, farm planning. Optimum resource use and budgeting. Economics of different types of farming systems. Marketing management – strategies for development, market intelligence. Price fluctuations and their cost; Role of cooperatives in agricultural economy; types and systems of farming and factors affecting them. Agricultural price policy. Crop Insurance.	Subba Reddy V.T Raju
	Agriculture Extension	Agricultural extension, its importance and role, Methods of evaluation of extension programmes, socio-economic survey and status of big, small and marginal farmers and landless agricultural labourer. Farm mechanization and its role in agricultural production and rural employment. Training programmes for extension workers. Role of Krishi Vigyan Kendra's (KVK) in dissemination of Agricultural technologies. lab-to-land programmes. Non-Government Organization (NGO) and self-help group approach for rural development.	Extension education-Adivi Reddy G.L Ray
6 Nov 2020	**Agronomy**	Cropping patterns in different agro-climatic zones of the country. Impact of high-yielding and short-duration varieties on shifts in cropping patterns. Concepts of various cropping and farming systems. Concepts of multiple cropping, multi-storey, relay and inter-cropping, and their importance in relation to food production. Important features and scope of various types of forestry plantations such as social forestry, agroforestry, and natural forests. Propagation of forest plants. Forest products. Agroforestry and value addition. Conservation of forest flora and fauna. Dry land agriculture and its problems. Technology for stabilizing agriculture production in rain fed areas, Rainwater harvesting. Integrated watershed management.	Yellamanda Reddy, S R Reddy

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		Water-use efficiency in relation to crop production, criteria for scheduling irrigations, ways and means of reducing runoff losses of irrigation water. Drip and sprinkler irrigation. Drainage of waterlogged soils, quality of irrigation water. Organic and Precision farming. Package of practices for production of important cereals, pulses, oilseeds, fibers, sugar, commercial and fodder crops	
09 Nov 2020	**Cell Biology and Genetics**	Cell structure, function and cell cycle. Synthesis, structure and function of genetic material. Laws of heredity. Chromosome structure, chromosomal aberrations, linkage and cross-over, and their significance in recombination breeding. Cytoplasmic inheritance, sex-linked, sex-influenced and sex-limited characters. Polyploidy, euploids and aneuploids. Mutations – and their role in crop improvement. Heritability, sterility and incompatibility, classification and their application in crop improvement.	Elements of genetics – Phundan Singh
	Plant Breeding	History of plant breeding. Modes of reproduction, selfing and crossing techniques. Origin, evolution and domestication of crop plants, center of origin, law of homologous series, crop genetic resources conservation and utilization. Application of principles of plant breeding, improvement of crop plants. Molecular markers and their application in plant improvement. Pure-line selection, pedigree, mass and recurrent selections, combining ability, its significance in plant breeding. Heterosis and its exploitation. Breeding for disease and pest resistance. Role of interspecific and intergeneric hybridization.	B.D Singh
16 Nov 2020	**Seed Science**	Seed production and processing technologies. Seed certification, seed testing and storage. DNA fingerprinting and seed registration. Role of public and private sectors in seed production and marketing. Intellectual Property Rights	Seed science and technology (A. K. Joshi, B.D. Singh)

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		(IPR) issues. WTO issues and its impact on Agriculture.	
	Plant Physiology	Principles of Plant Physiology with reference to plant nutrition, absorption, translocation and metabolism of nutrients. Soil – water- plant relationship. Enzymes and plant pigments; photosynthesis- modern concepts and factors affecting the process, C3, C4 and CAM mechanisms. Aerobic and anaerobic respiration; Carbohydrates, protein and fat metabolism. Growth and development; photoperiodism and vernalization. Plant growth substances and their role in crop production. Physiology of seed development and germination; dormancy. Stress physiology – draught, salt and water stress.	Pandey and Sinha
	Horticulture	Major fruits, plantation crops, vegetables, spices and flower crops. Package practices of major horticultural crops. Protected cultivation and high-tech horticulture. Post-harvest technology and value addition of fruits and vegetables. Landscaping and commercial floriculture. Medicinal and aromatic plants. Role of fruits and vegetables in human nutrition.	N. Kumar
23 Nov 2020	**Entomology**	Diagnosis of pests and diseases of field crops, vegetables, orchard and plantation crops and their economic importance. Classification of pests and diseases and their management.	Elements of economic entomology (Vasantharaj David), TNAU material
	Pathology	Integrated pest and disease management. Biological control of pests and diseases. Epidemiology and forecasting of major crop pests and diseases. Plant quarantine measures. Pesticides, their formulation and modes of action. Storage pests and their management. Compatibility with rhizobial inoculants. Microbial toxins.	P. D. Sharma
	Biotechnology	Role of genetic engineering and biotechnology in crop improvement.	Rajeev Kumar

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	Miscellaneous (General Awareness)	Genetically modified crop plants. Somatic hybridization. Food production and consumption trends in India. Food security and growing population – vision 2020. Reasons for grain surplus. National and international food policies. Production, procurement, distribution constraints. Availability of food grains, per capita expenditure on food. Trends in poverty, Public Distribution System and Below Poverty Line population, Targeted Public Distribution System (PDS), policy implementation in context to globalization. Processing constraints. Relation of food production to National Dietary Guidelines and food consumption pattern. Food based dietary approaches to eliminate hunger. Nutrient deficiency – Micronutrient deficiency: Protein Energy Malnutrition or Protein Calorie Malnutrition (PEM or PCM), Micro nutrient deficiency and HRD in context of work capacity of women and children. Food grain productivity and food security.	Yojana/Kurukshetra, government programmes
30 Nov 2020	**Paper One Full Syllabus**		
07 Dec 2020	**Paper Two Full Syllabus**		