

RAJASTHAN PUBLIC SERVICE COMMISSION

Syllabus for Screening test for the Post of Agriculture Research Officer (Agronomy) Agriculture Department

Agro-climatic zones of Rajasthan and their characteristics, modern concepts in tillage: zero minimum and conservation tillage, climate change and agriculture, protected agriculture, precision agriculture, plant growth regulators and their role in agriculture, crop growth analysis, cardinal points, source-sink relationship.

Weather forecasting in India, atmospheric pollution and its impact on climate and crop production, solar radiation: characteristic and energy balance in atmosphere, photosynthesis and efficiency of radiation utilization by crops.

Importance of water in crop production, water resources of India and Rajasthan, status of ground water depletion in Rajasthan, soil-water-plant atmosphere relationship, mechanism of water movement in soil, theories and mechanism of water absorption, water requirement of field crops, irrigation: methods, evaluation and scheduling, management of excess soil water and drainage, water saving techniques under irrigated conditions and conjunctive use, fertigation, management of salt-affected soils and brackish irrigation water, consumptive use and water use efficiency.

Criteria of essentiality of plant nutrients, their deficiency symptoms, soil fertility and productivity concept, forms of nutrients uptake, nitrogen: transformation in soil, mineralization of N-compound, losses of N in soil, methods to increase N-use efficiency, slow release fertilization, phosphorus : availability and P-fixation, practices of increasing effectiveness of applied and native phosphorus, potassium : fixation and release of potassium, bio-fertilizers, N, P and K fertilizers and their application methods, inter-relationship of nutrients availability and soil P^H , integrated nutrient management.

Weeds: biology, ecology and classification. Herbicides: history, classification, mode of action, basis of selectivity, weed control principal and management practice in field crops, weed control under specific situation viz. non-cropped area, noxious farm weeds and their control, persistence of herbicide in soil, integrated weed management, herbicide resistance in weed and crops.

Dry land farming: role in economy, problem of crop production in dry land farming, moisture stress, mechanism of crop adaptation for dry land, in situ moisture conservation techniques, contingent planning and mid-season corrections for aberrant weather situations, watershed management, alternate land use system.

Cropping system : Principal and practices, cropping system under irrigated and rain fed situations, assessment of yield advantages, integrated farming system, meaning and scope, crop residue management, crop diversification, organic farming, its certification and accreditation, green farming, sustainable agriculture, natural resources management.

Introduction, origin, history, production, distribution, cultural practices, variety of cereal pulses, oilseeds, fibre, forage and sugar crops.

Principle of experimental design, correlation and regression analysis. Analysis of variance and Analysis of co-variance. Statistical Design used in Agronomical Experiments, transformation of data,

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Pattern of Question Papers:

1. Objective Type Paper
2. Maximum Marks : 100
3. Number of Questions : 100
4. Duration of Paper : Two Hours
5. All Questions carry equal marks
6. There will be Negative Marking

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