

# **RAJASTHAN PUBLIC SERVICE COMMISSION**

## **Syllabus for screening test for the Post of**

### **Assistant Agriculture Research Officer (Agronomy)**

#### **Agriculture Department**

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

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

Water resources of India and Rajasthan, importance of irrigation, its statistics in India and Rajasthan, soil-water-plant atmosphere relationship, mechanism of water movement in soil, theories and mechanism of water absorption, soil moisture measurement, water requirement of field crops, irrigation: methods, evaluation and scheduling, moisture stress and its mitigation, management of excess soil water and drainage, water saving techniques under irrigated conditions and conjunctive use, micro irrigation and fertigation, management of salt-affected soils and brackish irrigation water, consumptive use and water- use efficiency.

Criteria of essentiality of plant nutrients, functions and their deficiency symptoms, soil fertility and productivity concept, forms of nutrients uptake, nitrogen: transformation in soil, mineralization of N-compounds, losses of N in soil, methods to increase N-use efficiency, 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, secondary and micro nutrients, integrated nutrient management.

Weeds: iology, ecology and classification. Herbicides: history, classification, mode of action, basis of selectivity, weed management practices in common field crops, weed control under specific situations viz. non-cropped area, noxious farm weeds, parasitic weeds and their control, persistence of herbicides in soil, integrated weed management, herbicide resistance in weed and crops.

Dry land farming: role in economy, constraints 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, water harvesting, watershed management, improved dryland technology, alternate land use system, soil erosion: types and management and land capability classification.

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

Introduction, origin, history, production, distribution, cultural practices, plant protection and varieties of cereals, pulses, oilseeds, fibre, forage sugar and commercial crops.

Principles of experimental design, correlation and regression analysis. Analysis of variance and co-variance. Statistical Designs 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 question : 100
4. Duration of paper : Two hours
5. All question carry equal marks
6. There will be negative marking.

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