

**DETAILED SYLLABUS FOR THE POST OF
AGRONOMIST {KERALA STATE PLANNING BOARD}**

(Cat.No. : 24/2020)

(Total Marks- 100)

Module 1 General Agriculture (10 marks)

Current scenario of agriculture in Kerala- concerns and future prospects- Food security- Agro ecological zones and Agro ecological units of Kerala- Area and production of major crops- modern crop production concepts- GIS, GPS and remote sensing in modern agriculture, precision farming and protected agriculture- use of nanotechnology in seed, water, fertilizer, plant protection for scaling up farm productivity- soil less cultivation, Aeroponics, Hydroponics, Robotics and terrace farming - farm mechanisation

Module 2 Crop husbandry (10 marks)

Scientific principles of crop production; crop response production functions; concept of soil plant relations; yield and environmental stress- geographical distribution, economic importance, soil and climatic requirement, varieties, cultural practices and yield of major groups of Kerala including rice, millets, pulses, oilseeds, tuber crops, forage crops, vegetables, fruit crops, spices, plantation crops, medicinal and aromatic crops etc. yield contributing characters and yield calculations -Weed management in major crops and cropping systems; alien, invasive and parasitic weeds and their management; weed shifts in cropping systems; aquatic and perennial weed control; weed control in non-cropped area-Preparation of balance sheet including cost of cultivation- net returns

Module 3 Soil management (10 marks)

Soils of Kerala –Crop nutrition, manures and fertilizers, nutrient use efficiency- Integrated nutrient management. Chemical fertilizers: secondary & micronutrient fertilizers, Complex fertilizers, nano fertilizers- Soil amendments, Fertilizer Storage, Fertilizer Control Order. Soil fertility evaluation, Soil testing. Critical levels of different nutrients in soil. Forms of nutrients in soil, plant analysis- Indicator plants. Methods of fertilizer recommendations to crops. Soil testing- Nutrient balance sheet- Problem soils – area and distribution; soil conservation techniques and management

Module 4 Water management (10 marks)

Water resources and irrigation development in Kerala, major irrigation projects- soil-plant-water-relationships. Soil moisture constants. Evapotranspiration and consumptive use, Effective rainfall- Water requirement of crops- Methods of determining water requirement- Scheduling irrigation- Methods of irrigation. Irrigation efficiency- Water productivity and water use efficiency- irrigation water quality- criteria and its management. Water management of principal crops of Kerala -causes of water logging and types of drainage. Rain water management and its utilization for crop production. Micro irrigation systems- fertigation- management of water in controlled environments and polyhouses.

Module 5 Cropping systems (10 marks)

Concept of sustainability in cropping systems and farming systems, production potential under monoculture cropping, multiple cropping, alley cropping, sequential cropping and intercropping, mechanism of yield advantage in intercropping systems- Cropping system and pattern, multiple cropping system, Plant interactions- efficient cropping systems and their evaluation, allied enterprises and their importance- Cropping systems of Kerala -Rice based, Coconut based systems- Agro forestry - Tools for determining production and efficiencies of cropping systems

Module 6 IFS (10 marks)

Farming System- importance, and concept, Types and systems and factors affecting types of farming- Farming system components- Integrated farming systems- organic farming and resource conservation technology including modern concept of tillage; Sustainable agriculture- problems and its impact on agriculture, indicators of sustainability - Site specific IFS models for agroclimatic zones- resource use efficiency and optimization techniques- Resource cycling and flow of energy in different farming system, Homestead farming systems- Good Agricultural Practices- Small farm management and farm planning

Module 7 Watershed management (10 marks)

Concept, objective, principles and components of watershed management, factors affecting watershed management. Classification of watershed- importance of small watersheds- watershed area and command area- preparation of watershed management plan- Steps and components of watershed management- Rainfed agriculture- Soil and water conservation techniques, Drought: types, effect of water deficit on physio- morphological characteristics of the plants, Crop adaptation and mitigation to drought; Water harvesting techniques, Efficient utilization of water through soil and crop management practices, Management of crops in rainfed areas, Contingent crop planning for aberrant weather conditions, adaptation and mitigation

Module 8 Crop weather relations (10 marks)

Agriculture and weather relations; Modifications of crop microclimate, climatic normals for crop and livestock production. Weather forecasting- types of weather forecast and their uses. Weather forecasting in Agriculture -crop weather relationships insect pest and diseases -weather and climate related natural disasters -weather modification- Climate change, climatic variability, Weather forecasting- climate change, climatic variability, global warming, causes of climate change and its impact on agriculture. Types of agricultural research

Module 9 Biodiversity (10 marks)

Ecosystems: Structure and function of an ecosystem, types, energy flow- Land resources: Role of individuals in conservation of natural resources. structure and functions of forest, grassland and aquatic ecosystems- Biodiversity- hot spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man -wildlife conflicts-Conservation of biodiversity: In-situ and Ex-situ conservation. Wetland – conservation and Acts- Forestry - farm forestry, social forestry, joint forest management - concepts, programmes and objectives. Important acts and policies related to Indian forests- forestry options for mitigation and adaptation - carbon sequestration.

Module 10 Environment and Pollution (10 marks)

Environmental Pollution: definition, cause, effects and control measures. Air pollution- Water pollution - Soil pollution -Solid Waste Management: causes, effects and control measures of urban and industrial wastes. social Issues and the Environment- Environment Protection Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Wet land management act- Issues involved in enforcement of environmental legislation. Public awareness. Disasters -Natural Disasters- nature, types and effects. Floods, drought, cyclone, earthquakes, landslides etc

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper