

## **SYLLABUS FOR Ph D ENTRANCE EXAMINATION IN AGRICULTURE:**

Objective of such entrance test is to select the best therefore no syllabus can be prescribed however a broad outline is given as follows:

### **1- AGRICULTURAL ECONOMICS**

Basic concepts in economics, theory of consumer demand, theory of production, market classification, theory of perfect and imperfect competition, theory of distribution, national income accounting, banking - central and commercial, functions and problems of recent macroeconomic, policies of Nature and scope of agricultural production economics vis-a-vis farm management; farm business analysis, farm records and farm cost accounting; farm planning and budgeting, cost, profit and supply functions; nature and analysis of risk in farming; systems approach in farming; role of credit in agriculture, principles of agricultural finance, farm financial management. Scope of marketing in a developing economy; practice and problems of marketing agricultural inputs and outputs.

### **02- AGRONOMY**

Principles of crop production, crop plants in relation to environment, concepts involved in growth analysis; quantitative agro-biological principles and their validity; classification of climate, agro-climatic zones of India and Rajasthan. Weed ecology & physiology; methods of weed control; principles and practices of weed management. Introduction, origin, history, production, distribution, cultural practices, varieties, quality, biomass production and bioenergetics of major field crops, forage, vegetable, spices and condiment crops. Soil fertility and its management; essential plant nutrients, their functions and deficiency symptoms in plants; organic farming: concept, principles & components, quality considerations. Cropping systems - principles and practices; changing cropping patterns in different agro-climatic zones; Sustainability - concept and practices; agro-forestry systems - concepts and practices. Principles of experimental designs, analysis and interpretation of data, methods of statistical analysis and statistical designs.

### **03-ENTOMOLOGY**

Position of insects in animal kingdom - their origin, phylogeny and distribution; history and basis of insect classification. Pests of field crops and stored food; principles of pest control; classification, mode of action and metabolism of insecticides; parasites, predators and pathogenic microorganisms of crop pests, biological control. Antifeedants, hormones, host-plant resistance and genetic manipulation, insect quarantine; concept of integrated pest management; non-insect pests and their control.

### **04- HORTICULTURE**

Production technology of fruit crops –mango, banana, citrus, guava, grapes, pomegranate, papaya, aonla, phalsa, ber, apple, pear, peach, Propagation, tissue culture and nursery management of fruit plants. Package and practices of vegetables- tomato, brinjal, chillies, okra, cucurbitaceous vegetables, beans, sweet potato, yam, cole crops, root crops, peas, leafy vegetables, bulb crops. Scope and global scenario of cut flowers in global trade, varietal

wealth and diversity. Cut flower standards and grades, harvest indices Production technology of crop- rose, chrysanthemum, carnation, gerbera, gladioli, tuberose. Landscape designs, types of gardens, Styles of garden, Lawns, Establishment and maintenance, Bio-aesthetic planning, water scaping, xeriscaping, Essential plant nutrients and their uptake in horticultural crops.

#### **05-LIVESTOCK PRODUCTION AND MANAGEMENT**

Management systems for cattle and buffaloes. Establishing Dairy Cattle Enterprise. Breeding Management. Advances in Feeding Management of cattle and buffalo, feeding for milking herd, dry cows, bulls and calves, Management of high yielding animals. Role of sheep husbandry in agriculture, Present development programmes in sheep and goat production. Role of goat in animal agriculture, Goat farming in India, Breeding problems. Common breeds and strains of poultry. Utilization and disposal of animal waste.

#### **06- PLANT BREEDING AND GENETICS**

Origin and evolution of important crop plants like wheat, rice, maize, sugarcane, potato, brassica, cotton, etc. Genetic basis of plant breeding; pure line selection; male sterility and incompatibility and their use in plant breeding; pedigree selection, mass selection and backcross method of selection; heterosis; plant introduction and exploration and their role in plant breeding; breeding for disease, insect and pest resistance; mutation and its role in breeding; use of biotechnology in plant breeding. Molecular markers and their applications in genetic analysis and plant breeding.

#### **07- PLANT PATHOLOGY**

Principles of culturing and preservation of pathogens; characteristic symptoms; host-parasite relationships and its basis; symbiosis; economically important diseases of crop plants induced by fungi and fungi like organism, bacteria, rickettsias, phytoplasma and spiroplasma, viruses and viroids; Molecular methods for detection and diagnosis of Pathogenic microbes like fungi, bacteria and viruses.

### **8 AGRICULTURAL CHEMISTRY AND SOIL SCIENCE**

Classification of soils, major soils of India; Soil fertility evaluation; movement of water; problem soils, soil-related constraints in crop production and remedial measures, soil amendments; soil and water conservation; nitrogen and phosphorus cycles; biofertilizers; phosphate solubilization. Essential plant nutrients; manures; utilization of organic wastes and industrial by-products; fertilizers and their production, properties and usage; secondary and micronutrients.