

B. Voc. in Agriculture

Fourth Semester

AG6B401T -RAINFED AGRICULTURE AND WATERSHED MANAGEMENT

Rainfed agriculture

Introduction, types, History of rainfed agriculture and watershed in India; Problems and prospects of rainfed agriculture in India; Soil and climatic conditions prevalent in rainfed areas; 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

Importance, its techniques, efficient utilization of water through soil and crop management practices, Management of crops in rainfed areas, Contingent crop planning for aberrant weather conditions, Concept, objective, principles and components of watershed management, factors affecting watershed management.

Practical

Practical Studies on climate classification, studies on rainfall pattern in rainfed areas of the country and pattern of onset and withdrawal of monsoons. Studies on cropping pattern of different rainfed areas in the country and demarcation of rainfed area on map of India. Interpretation of meteorological data and scheduling of supplemental irrigation on the basis of evapo-transpiration demand of crops. Critical analysis of rainfall and possible drought period in the country, effective rainfall and its calculation. Studies on cultural practices for mitigating moisture stress. Characterization and delineation of model watershed. Field demonstration on soil & moisture conservation measures.

DISEASES OF FIELD CROPS & THEIR MANAGEMENT

Introduction

Symptoms, etiology, disease cycle and management of major diseases of crops: Field crop

Rice

Blast, brown spot, bacterial blight, sheath blight, khaira and tungro.

Maize

Stalk rots, leaf blights and downy mildews. Sorghum: Grain smut and anthracnose.

Bajra

Downy mildew and ergot. Groundnut: Tikka, collar rot and peanut clump virus. Soybean: Rhizoctonia blight and bacterial pustule.

Pigeon pea

Sterility mosaic. Moong, urd and moth beans: Web blight and yellow mosaic. Castor: Phytophthora blight and bacterial blight.

Guar

Bacterial blight and Alternaria blight. Sesamum: Stem & root rot and phyllody.

Cotton

Wilt, root rot, bacterial blight and leaf curl.

Practical

Identification and histopathological studies of following selected diseases of field. Field visit for the diagnosis of field problems. Collection and preservation of plant diseased specimens for herbarium. Maize: leaf blights and downy mildews. Sorghum: Grain smut and anthracnose. Bajra: Downy mildew and ergot. Groundnut: Tikka, collar rot and peanut clump virus. Pigeon pea: Sterility mosaic. Moong, urd and moth beans: Web blight and yellow mosaic. Castor: Bacterial blight. Guar: Bacterial blight and Alternaria blight. Cotton: Wilt, root rot, bacterial blight and leaf curl.

POST-HARVEST MANAGEMENT AND VALUE ADDITION OF FRUITS AND VEGETABLES

Introduction

Importance of post-harvest processing of fruits and vegetables, extent and possible causes of post-harvest losses; Pre-harvest factors affecting postharvest quality, maturity, ripening and changes occurring during ripening;

Respiration and factors

Respiration and factors affecting respiration rate; Maturity indices, Harvesting and field handling; Storage (ZECC, cold storage, CA, MA, and hypobaric); Value addition concept;

Principles and methods of preservation

Intermediate moisture food- Jam, jelly, marmalade, preserve, candy – Concepts and Standards; Fermented and non-fermented beverages. Tomato products- Concepts and Standards; Drying/ Dehydration of fruits and vegetables – Concept and methods, osmotic drying. Canning – Concepts and Standards, packaging of products.

Practical

Identification and Applications of different types of packaging, containers for shelf life extension. Identification of important tools/equipments/ machines and chemicals required for PHT laboratory, Demonstration of Zero energy cool chamber, Effect of temperature on shelf life and quality of produce. Demonstration of chilling and freezing injury in vegetables and fruits (drying and dehydration). Extraction and preservation of pulps and juices. Preparation of jam, jelly, Pickles, RTS, nectar, squash, osmotically dried products, fruit bar and candy and tomato products (sauce and ketchup), canned products. Quality evaluation of products - physico-chemical (Moisture, TSS, acidity and ascorbic acid) and sensory. Visit to processing unit/ industry.