CBO-2003

PLANT PHYSIOLOGY

Unit -I Growth and Development

Latent Life-Dormancy: Introduction and types of Dormancy; Causes and overcoming of Seed Dormancy; Bud Dormancy, factors affecting dormancy.
Seed Germination: Physiological aspects of Seed germination, Seedling emergence.
Senescence and Programmed Cell Death (PCD) :Basic Concepts , Mechanisms and Types Cell Death , PCD in life cycle of plants , metabolic Changes associated with senescence and its regulation , Influence of Hormones and Environmental Factors on Senescence.

Unit –II Physiology of Mineral Transport and Stress

Mechanism, regulation and transport of Macronutrients (K, P) and Micronutrients (Zn, Fe) in Plants
Physiological effects, mechanism and theories to explain:
Stress and stressful environments, Water and Salt stress, Light and Temperature stress, Biotic stress.
Development of stress resistant plants: Oxidative stress, Salt stress, Senescence tolerance.

Unit -III Photo-physiology

Photochemistry and Photosynthesis: General Concepts, Historical background, Photosynthetic Pigments systems and Light harvesting Complexes, Photo oxidation of water, Photophosphorylation and mechanisms of electron transport, C_3 Cycle, C_4 Cycle, CAM Pathway .

Respiration: Definition and types of Respiration, Glycolysis, The TCA Cycle, Electron Transport and ATP Synthesis, Pentose Phosphate Pathway, Gluconeogenesis, Glyoxylate Cycle. Chemiosmotic regeneration of ATP during respiration, model of Fo-F1 ATPase and its role in ATP synthesis.

Sensory Photobiology: History and discovery of Phytochromes and Cryptochromes and their Photochemical and Biochemical Properties.

Unit -IV Plant hormones and flowering

Plant Growth Regulators and Elicitors : Physiological Effects and Mechanisms of Action of Auxins , Gibberellins, Cytokinins, Ethylene , Abscisic Acid, Brassinosteroide, Polyamines, Jasmonic Acid and Salicylic Acid, Hormone Receptors, Signal Transduction and Gene Expression.

The Flowering Process: Photoperiodism and its significance, Floral Induction and Development-Genetic and Molecular analysis; Role of Vernalization.