

Educational Objectives:

1. The principal aim of this course is to acquaint the students with concepts in plant physiology. The course will emphasize the important perspectives in plant systems and functions. The main objective is to gain an understanding of general physiological processes that occur in most of the plants. The students will gain knowledge about various key areas in plant physiology through lecture-based as well as practical sessions.

Course Outcomes:

2. Knowledge on the plant physiological processes will explicit experimental justification of the different pathways involved. The students would also be able to develop strategies for genetic engineering of plants and their use as biotechnology.

3. **Course Contents:**

- a. Plant physiology and its significance in agriculture; physical properties and chemical constitution of protoplasm
- b. Plant cell water relation - imbibition, surface tension, diffusion, osmosis
- c. Absorption and translocation of water and nutrients
- d. Transpiration
- e. Guttation
- f. Mineral deficiencies and their symptoms,
 - (1) Physiological disorders
 - (2) Correction hydroponics
- g. Foliar nutrition aerobic and anaerobic respiration
- h. Photosynthesis- modern concept and the factors affecting photosynthesis
 - (1) Photo respiration

- (2) Factors affecting respiration and Photo- respiration.
- i. Nitrogen fixation growth development and differentiation
 - (1) Growth hormones
 - (2) Growth retardants
 - (3) Growth inhibitors and their use in agriculture; tropism in plants photoperiodism and vernalization
- j. Seed dormancy and germination; fruit ripening process and its control.

Recommended Books:

1. **Plant Physiology** by P.L. Kochhar and H.N.Krishnamoorthy. Publisher: Atma Ram and Sons, India.
2. **Plant Physiology**, 4th Edition by Lincoln Taiz and Eduardo Zeiger.
3. **Introduction to Plant Physiology** by William Hopkins and Norman Hüner.
4. **Biochemistry and Molecular Biology of Plant** by Buchanan B.B., Gruissen W. and Jones R.L.