

W. G. Hopkins (ed.): **Introduction to Plant Physiology**. - J. Wiley & Sons, New York - Chichester - Brisbane - Toronto - Singapore 1995. 464 pp. ISBN 0-471-54547-3.

This book represents elementary introduction to plant physiology for undergraduate students. It covers basic knowledge on all processes occurring in a plant. The text is divided into 4 parts containing together 22 chapters. As an introduction, a chapter describing important cell components and organs of a plant is included. Part I concerns plant, water and minerals. It begins with description of physical and chemical characteristics of water and pointing to water relations in a whole plant. Further, mineral nutrition is dealt with, including nitrogen as a sole chapter 6. Also the intake process is described separately in the chapter 5. Part II is called Plants, energy and transport. There is an introduction to physical nature of light, to absorption process and photoreceptors. Further, mechanism of photosynthesis, a basic process in plants, is described. In next chapter light-dependent energy transformation is explained along with a very basic thermodynamics. This is followed by chapter on Calvin cycle, its mechanism and regulation. Moreover, C_4 and CAM mechanisms are compared. Chapter 11 covers translocation and distribution of photoassimilates with description of phloem structure and function. Next chapter 12 deals with all ways in a cell to gain energy from chemical substances - oxidative respiration, glycolysis, pentose pathway, and alternative electron pathway, very specific for plants. The closing chapter in this part summarizes the relations between carbon assimilation and plant productivity. Part III is called Regulation of plant development. Chapter 14 begins with several aspects of developmental control - genetic, hormonal, environmental. It further describes whole plant development from seed germination till flower and fruit development. Only senescence stage is missing. In chapter 15 more detailed role of hormones in plant development is involved, individual hormones are classified and characterized there. Even polyamines are discussed. Chapter 16 continues with description of biochemistry and mode of action of these substances. This means their biosynthesis, metabolism, transport, and mechanism of their action. Further chapters deal with other developmental processes regulated by extrinsic stimuli - photomorphogenesis, movement and orientation in space, photoperiodism and rhythmic phenomena, and finally temperature influence on plant development. The last part concentrates on stress physiology and biotechnology. Chapter 21 includes definition of stress factors and their influence on plant metabolism and composition of cell components. Also effect of environmental pollutants is described. Final chapter summarizes our basic knowledge of biotechnological methods and points out to their employment for improving plant metabolism in order to increase production, and for disease resistance. The book is very comprehensible, each chapter begins with necessary background either physical or chemical, it is supplemented with sufficient number of pictures and completed with brief summary or important topics related to the respective chapter. Each topic is also supplemented by fundamentals of principal methods used in the field described which is very valuable. This book can be highly recommended to undergraduate students as a suitable introduction to plant physiology.

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