

S. Procházka, *et al.*: **Fyziologie rostlin**. [Plant Physiology.] - Academia, Praha 1998. ISBN 80-200-0586-2. Pp. 484, in Czech, 350.- Kč.

A textbook on plant physiology appeared at the end of 1998 in the Czech Republic. The book has been written by twelve expert authors from this country. The topics of the book are grouped into sixteen chapters: 1. Structure and function of plant cells, 2. Water relations, 3. Mineral nutrition, 4. Photosynthesis, 5. Respiration, 6. Assimilate transport, 7. Heterotrophy in plants, 8. Growth and development: growth regulators, 9. Growth and development: irradiation, 10. Plant differentiation, 11. Seed germination, 12. Formation of flowers, fruits, seeds, and tubers, 13. Dormancy and senescence, 14. Plant movements, 15. Physiology of stresses, 16. Genetic basis of physiological processes.

Apart from the principles of modern plant physiology valuable additional information is also emphasized. Particular attention is paid to the correlation between structure and function of plant cells, tissues, and organs, and therefore many anatomical schemes are included into the text. It concerns, for example, the correlation between anatomical structure of roots and utilization of water and inorganic ions, or relationship between anatomical features of shoot and transport of water and solutes, or between leaf anatomical structure and gas exchanges. The data concerning influence of abiotic (low or high temperatures, water deficiency, oxygen deficiency, salinity, active oxygen species) and biotic factors (allelopathic compounds, phytoalexins, pathogens) on plants are clearly discussed. It is of particular interest to find many details concerning molecular mechanisms of adaptation of plants to stress conditions. Many valuable information on ecological plant physiology is also included in the book, predominantly those concerning water relations, influence of external factors on plant metabolism, and others.

Readers also find an overview of molecular genetic approaches to basic physiological processes. Genome size, its organization and complexity as well as gene isolation, mapping of plant genome, gene expression at various developmental phases, and transgenic plants are treated in detail in Chapter 16.

Some essential biochemical topics are described shortly and accompanied with many chemical formulae and schemes of the most essential metabolic pathways. It is important to note that much attention is paid to interpretation of the particular physiological processes on the molecular levels and on the basis of the results obtained with the physical model systems. Of course, some interpretations are hypothetical, *e.g.*, they may concern the phytohormone mode of actions. The authors described also some techniques related to plant physiological studies.

Each chapter is supplemented with essential up-to-date references, including those published by Czech specialists. Some interesting historical information on plant physiology in the Czech and Slovak Republics is included into the Introduction to the book. The text of the book is accompanied with many tables and black and white figures. Readers find also numerical data concerning different topics of plant physiology. The most important symbols and international units are listed in a separate table. In reviewer's opinion this is an excellent and modern textbook on general plant physiology and it may be highly recommended to all students of biology and related fields who are familiar with the Czech language. It should be also useful for young plant physiologists.

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