

Larkins, B.A., Vasil, I.K. (ed.): **Cellular and Molecular Biology of Plant Seed Development.** - Kluwer Academic Publishers, Dordrecht - Boston - London 1997. 649 pp. NLG 550.00. ISBN 0-7923-4645-9.

Understanding how to grow plants from seeds and adaptation of this knowledge for seed production as food supply has represented a turning point in development of human civilisation. Studies of development of plant seeds, especially in the last two decades, have considerably contributed to understanding of molecular basis of developmental processes in plants. Valuable information was obtained about the control of seed development, maturation, desiccation, dormancy, storage and germination. All these aspects of seed development are discussed in this book by invited leading experts in seed biology in review-type contributions.

The first section of the book is devoted to control of seed development, *i.e.* to development of embryo, suspensor and endosperm and hormonal regulation of seed development. The second section deals with the synthesis and accumulation of metabolites like prolamin and other storage proteins, starch, fatty acids and some minerals. Genetic regulation of carbohydrate and protein accumulation is also discussed. Section three is focused on control of seed maturation and germination including the role of lea proteins and desiccation tolerance. The last section deals with biotechnological manipulations towards altering of seed composition.

Isolation and exploitation of specific mutants have promoted studies of developmental processes in plants. This is especially evident in case of seed development. Overviews of interesting mutants, their use and potentials in studies of various aspects of seed development are demonstrated on investigations of embryo development,

starch synthesis, genetic regulation of storage carbohydrates and proteins and seed maturation. Some of them have appeared to be of commercial importance, as, *e.g.*, in sweet corn industry. Many reviews also showed benefits and prospects of the use of transgenic plants in investigation of basic molecular mechanisms of control of seed development. This is clearly demonstrated in case of hormonal regulation of development cereal grains where cytokinins, auxin and abscisic acid are involved in control of division, filling and maturation of endosperm cells. Moreover, it is shown that cereal grains posses their own enzymatic machinery controlling their own hormone levels. Potentials of construction of transgenic plants with programmed and site-specific expression of specific genes for enhancement of plant productivity and improvement of product quality is also extensively discussed. Attention is paid to modification of starch content and starch composition, expression of novel carbohydrates and lipids in plant seeds. However, most seed protein work is focussed on amino acid composition.

The book represents the most comprehensive current review of the field of plant seed development. It is clearly written and well edited. Over 90 illustrations help to understand relationship of different regulatory processes and mechanisms. It can be recommended to advanced students as well as to researchers of physiology, genetics and molecular biology of seed as well as whole plant development. It is also valuable source of information for plant breeders and biotechnologists.

M. KAMÍNEK (*Praha*)