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 Book reviews
 

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**Goldberg, R.B. (ed.): Plant Molecular Biology. UCLA Symposium on Molecular and Cellular Biology, New Series, Vol. 12.** New York: Alan R. Liss 1983. xxii+498 pp., several figs. and tabs. Hard bound £ 60,-.

The book under review contains about half of the papers presented at the ARCO Solar-UCLA Symposium on Plant Molecular Biology at Keystone, Colorado in April 1983 and represents the latest in the surge of plant molecular biology. Its topics include genetic engineering in plants by *Agrobacterium*, DNA and RNA viruses, host-pathogen relationships, *Rhizobium*, organisation and expression of nuclear genes, and organisation and expression of mitochondrial genes. The book ends with summaries of two workshops, one on genome rearrangements and the other on genome structure and expression. The latter is entitled 'From test tube to farm' which is misleading since the agricultural applications of the findings of molecular biology are mentioned only in the last few lines, stating that the development of enhanced crops through bioengineering is coming closer to reality but is still far away.

The reports on the use of *Agrobacterium* and viruses as vectors to transfer foreign DNA in plant cells and on *Rhizobium* indeed show that bioengineering is just coming within sight. Many of the reports in this volume indicate rapid and exciting progress in several areas of plant molecular biology. The most important developments are at the level of DNA and RNA. Progress, however, is slower at the level of protein, and the same holds for the regulation of developmental processes and the role of phytohormones, among others. It is a pity that the present research in these areas is almost completely left out in the present volume. Nevertheless, the book is very useful and it is welcome news that a series of UCLA-sponsored meetings on plant molecular biology is planned for the future.

G.J. de Klerk, Canberra

**Linser, H.: System und Produkt. Faktoren der pflanzlichen Ertragsbildung.** Berlin, Hamburg: Parey 1983. 78 pp., 33 figs., 2 tabs. Soft bound DM 38,-.

The concept of system and product as an approach for a better understanding of growth and development of a plant has been developed by the author of this booklet and his coworkers over a period of many years. It's rather simple. A plant is thought to consist of a system and a product. Per definition the system is that part of the plant which is metabolically active and therefore responsible for its own growth and, further, the synthesis of a product. The product is the sum of metabolically inactive substances: system (%) + product (%) = 100. The difficulty of obtaining quantitative values of the system is "solved" by using the content of "pure protein" multiplied by a species dependent factor.

In the earlier days of the mathematical modeling of plants' growth and development, the system and product concept surely was a heuristic valuable approach. Meanwhile, highly sophisticated mathematical simulation models have been developed which are characterized by taking into account a lot of biochemical and physiological knowledge about individual processes as photosynthesis, respiration, translocation, energy metabolism, etc. Normally such subsystems are described by submodels, differing in the degree of accuracy in dependence on the present state of knowledge.

Nothing about this is mentioned in "System und Produkt".

Based mainly on the results of the author and his scholars, experimental changes in the system-product-relationship during ontogenesis are described. Further, the efficiency of the system in relation to growth is evaluated. Uptake of minerals is considered as a consequence of the synthesis of a new system. Qualitative changes of the system during the development of a plant are related to the content and distribution of growth substances. It is emphasized that the description of plants' growth and development in terms of system-product-relationships allows a better determination of the physiological stage than other development scales.

The literature index is rather short and does not contain papers dealing with other approaches to a system analysis of plants' growth and development.

P. Apel, Gatersleben