
 Book reviews

Geisler, G.: Ertragsphysiologie von Kulturarten des gemäßigten Klimas. Berlin, Hamburg: Paul Parey 1983. 205 pp., 74 figs., 47 tabs. Soft bound DM 68,-.

'Yield physiology' would be the English translation of the German title of the present textbook, which, as indicated in the subheading, is restricted to crops of the temperate climate. Since crop yield is the result of heritable productivity characters as well as of the influences of many different environmental factors, yield physiology refers to nearly all disciplines of pure and applied plant biology and agricultural sciences. Progress in yield physiology research has contributed greatly to the increase in crop production of highly industrialized as well as young developing countries. The author has successfully integrated the main contributions of the different branches of biology and agricultural research to present knowledge on yield formation and its application in practical crop production. His intention is to give students of agricultural sciences and biology, as well as scientists in agronomy and farmers, a basic scientific instruction on yield physiology and thereby to promote an increasingly scientifically founded practical crop production. Consequently, the subject was subdivided with respect to the different types of crops: 1. Cereals (wheat, barley, rye, oat) and corn; 2. oil seeds (rape, poppy, sunflower, oil seed pumpkin); 3. grain legumes (field bean, pea, kidney bean, soybean); and 4. root and tuber crops (beets of the genera *Beta* and *Brassica*, carrots, potatoe). The chapters always commence with information concerning the economic importance, history of domestication, taxonomy, evolution and ecology of the respective crop before focussing on quality characters, the role of different yield components, developmental and nutritional physiology, including the influence of light, temperature, irrigation and fertilizer in yield formation. Finally, practical tips are given on how to influence yield formation of the respective crop by using special factors and applying special measures. References are always given at the end of each chapter. Many well-selected and well-drawn figures, including several chemical formulae as well as tables, didactically supplement the clearly written text.

K. Müntz, Gatersleben

Ball, Chr. (ed.): Genetics and Breeding of Industrial Microorganisms. Boca Raton, Fla: CRC Press 1984. 203 pp., several figs. and tabs.

In a brilliantly written introductory essay, G. Sermonti describes the difficulties in relating the science of microbial genetics with the technology of microbial breeding. The decade 1945 to 1955 was extremely fruitful for genetics, but though breeding of microorganisms for the production of antibiotics started at the same time, the technical application of the biological discoveries remained fragmentary for many years: mutation and selection, the main techniques used, were labelled "prehistoric" by G. Pontecorvo. A revolution occurred about 1978 with the introduction of genetic engineering in the fermentation industry. The result was not only improved antibiotic-producing strains, but also the unexpected possibility of producing animal or plant proteins by microbial metabolism. But, according to Sermonti, since then the situation has not substantially changed, despite the great achievements. For the future "at any rate a collaboration between biochemists and geneticists is the central point".

In the following six chapters the authors give an inside view of the genetics of *Streptomyces*, bacilli, pseudomonads, other bacteria of major industrial significance, yeasts and filamentous fungi. Very useful is a 5 page table "Summary of references available on industrial processes and genetics of a variety of bacteria" with about 120 species. Whoever supposes that genetics and breeding are as equally considered as the title of the book may suggest, however, will be disappointed: by far the greater part of the content concerns genetics. As one may expect, many recent results of molecular genetics are considered. Each chapter is terminated with a long list of references (from 117 items for the bacilli to 364 for the yeasts), including papers from 1983. As usual in books from CRC Press, the references are not listed alphabetically but in the sequence of their enumeration in the text - unhandy when one quickly wants to check the lists for a special paper.

Taken altogether, the book is a comprehensive review of a part of microbial genetics. I recommend it both to geneticists and to technologists in order to stimulate the collaboration, so urgently demanded by Sermonti. C. K. Stumm, Nijmegen