

Book reviews

Kuckuck, H.; Kobabe, G.; Wenzel, G.: Grundzüge der Pflanzenzüchtung. 5th renewed and extended edn. Berlin, New York: de Gruyter 1985.

The fifth edition of the textbook "Principal Features of Plant Breeding" has many outstanding features. What first springs to attention is that the first author, who was the only author of the earlier versions, has found two younger associates as co-authors for the present edition. Both Gerd Kobabe and Gerhard Wenzel are known to be excellent scientists in the field of applied genetics: Kobabe is a breeder and teaches plant breeding at the University of Göttingen; Wenzel is director of the Institute of Resistance Genetics of the Federal Institute of Biology at Grünbach. In addition, the format of the book has been changed: it has a more attractive lay-out, larger tables which are easier to read, and improved reproduction of the figures. This edition is, therefore, easier to read than the earlier ones.

The larger part of this book is written by the senior author, and in it, he presents an excellent outline of the fundamentals of plant breeding – both of agricultural plants and horticultural plants. It is most evident that Kuckuck, himself a student of Erwin Baur and educated in that early period of breeding that was dominated by Mendelian principals, still remains receptive to the progress made in both areas to which he personally has contributed so much. It is no exaggeration to say that Kuckuck is a unique person who represents the unification of theory and practice. Therefore, he is more than qualified to present this sound base on the fundamentals of plant breeding: the reader is guaranteed a presentation which is logical, reliable, and clearly arranged.

As a PhD student in the 1920s, Kuckuck became interested in the history of cultivated crops. Later on, travelling in the regions where these crops originated and in developing lands, he continued his study of these plants. The cover illustration of the present edition shows us this side of the author – it is the evolution of rye from its wild form to its cultivated form. The two final chapters on "Maintenance and use of natural variability of forms" and "Plant breeding in developing countries" are hot topics and worthwhile reading.

The manner in which the material is presented is slightly changed with respect to the earlier edition. The book now begins with three main chapters on selection, combination, and hybrid breeding, followed by a separate, new fourth chapter on "Special breeding and selection techniques". The material of this last chapter was formerly spread throughout the first three, and this new presentation is a real improvement. New material, such as the use of mutants and the application of periclinal chimeras, has been added. It is here that the influence of the second author and his teaching experience are evident. The replacement of the original crossing schemes by wider, more clearly arranged ones is a further improvement over the earlier edition. Quite a number of figures have been replaced by more didactical ones, but new illustrations have also been added, e.g., series of schemes of dioecious and monoecious flowers demonstrating their mechanisms of protection against self-pollination. All these changes are linked to the purpose of extending the text and bringing it in line with the present state of the science.

In this context, special attention must be given to the contribution of the third author. The findings of the last 15 years,

especially those in cell and developmental biology, on the one hand, and molecular genetics on the other, have provided new possibilities for plant breeding. Wenzel has integrated these new methods with the more conventional ones, and since he works in this field, he can show that the aims of many breeding programs can be reached in a faster or easier way. The creation of haploids, as well as the application of haploids in combination breeding and the creation of inbred lines, is discussed in great detail in a separate chapter complete with micro- and macro-photographs. Special attention is given to androgenesis with regard to breeding programs in potato. Cell and tissue culture as additional methods for use in vegetative propagation have been integrated in the chapter on "Production and utilization of mutants".

The manufacture and analysis of species and genus hybrids has always been an important aspect of breeding. To this end, protoplast fusion is presented and documented by excellent figures. Most interesting is that hitherto unknown fusion products have now been obtained. A highlight in the presentation of new breeding techniques is the chapter on "Gene technology". This technology promises new breeding results as soon as the processes responsible for the manifestation of newly transferred genes into the new cellular environment are better understood. As the application of these methods requires laboratory facilities, the necessary instrumentation and protocols are given in a supplement. The preparation of the substrate and of the staining solutions are described in detail so that even beginners can handle it.

The fifth edition of the Kuckuck textbook has developed into a standard text. Anyone wishing to penetrate deeper into the principles of plant breeding or working in the field will profit from reading this text. The authors as well as the publisher can be congratulated with this edition. Unfortunately, those reading it will have to be able to handle the German language, and given the great potential of this book, this is a regrettable shortcoming. It is to hope that a remedial action will be taken, and the book will be translated into English, which has become the language of science. Those reading this book should express this wish to the authors and publisher. It seems to me that at this moment this text in its integrated and up-to-date version is without peers on the international book market.

J. Straub †

Coconut Industry Board, Jamaica, West Indies: Twenty-second report of the research department for the calendar years 1983 and 1984. (C. I. Barrant). 60 pp, 28 tabs, 17 figs. Kingston 1988.

The director's report shows that the main activity of this research institute is on lethal yellowing and new hybrids in an attempt to broaden the genetic base of the coconut industry and to achieve higher yields. The lethal yellowing disease has been survived by some individual palms (Indian Green Dwarf, Ceylon Yellow Dwarf, King Coconut, Cuban Dwarf), and these have been allowed to multiply for more extensive testing on a larger scale. Thus, the possibility of developing resistant lines is coming a bit closer. For the more advanced tissue culture work, cooperation with Wye College was continued.

H. F. Linskens, Nijmegen