

down with a cup of one's favourite beverage and read from Truesdell's *An Idiot's Fugitive Essays on Science*. Erudition, wry humour and sharp criticism apart, his superb prose alone will keep you enthralled. What made such a person co-author such a slipshod book? It is particularly sad because Truesdell died on 14 January 2000, aged 80, and this book, which appeared a week before his death, was his last one. The great scholar that he was, his memory deserved to be served by a far better book than this one.

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#### Problems Facing Plant Breeding.

L. D. Vijendra Das. CBS Publishers and Distributors, 4819/11, Prahlad Street, 24, Ansari Road, Darya Ganj, New Delhi 110 002. 2000. 242 pp. Price: Rs 225.

Plant breeding has undergone remarkable changes in recent years, both in scope and techniques used. The main objective of early plant breeders was to increase the yield and quality of crop species. As adequate genetic variability was available within the species, most of the breeding work made use of intraspecific variability. Remarkable success was achieved in increasing the yield in a number of crops. As a result of continued breeding, there has been a great erosion of genetic diversity in crop species over the years. Although the present-day cultivars are capable of high yield under optimal conditions, they have become highly susceptible to a range of biotic and abiotic stresses which bring down the yield markedly. Apart from erosion of genetic diversity, present-day breeders face many addi-

tional constraints such as a significant decrease in the area of agricultural land due to salinity, water logging and industrial contamination, and greater realization of the harmful effects of excessive use of environmentally unfriendly agrochemicals. The present-day plant breeder, apart from increasing the yield and quality, is expected to develop varieties that are resistant/tolerant to a number of stresses, and capable of growing on marginal land with minimum use of environmentally unfriendly chemicals. These challenges are difficult to fulfill using traditional methods of breeding. Emerging biotechnological approaches have to be integrated into the breeding programme. Although some of the approaches are straightforward and are being used in the breeding programme, there are many which pose a number of problems for their effective use. In the light of these problems and potential excitements offered by biotechnology, I found the title of this book very interesting. I expected an objective assessment of the present status of plant breeding, the problems faced by the breeders and possible approaches to solve the problems.

I was disappointed after reading the book. There is no special emphasis on discussing the problems facing plant breeding. According to the preface, the book 'has been designed to provide an outline on the basic and fundamental aspects of plant breeding'. The book does not cover all traditional aspects of plant breeding. It covers areas of wide hybridization, drought resistance, host-plant interaction, mitochondrial genome and cytoplasmic male sterility, genotype-environmental interaction, stability analysis, apomixis and biotechnology. There is no discussion on traditional methods of plant breeding, which are important for gaining fundamental knowledge on plant breeding. Also, there is no uniformity in the depth of coverage in different chapters. The coverage in most of the chapters tends to be example-oriented rather than general exposition of the subject area. The organization of contents in each chapter needs much to be desired. Many of the subtitles under each chapter appear disjointed and often do not have relevance to the main theme. For example, in Chapter 1 on wide hybridization, considerable space is devoted to describe the origin and types of variations, popu-

lation structure and breeding systems, without bringing out their relevance to wide hybridization. Many of the important references in this area have not been included. To mention only a few: Goodman *et al.*, *Science*, 1987, **236**, 48-54; Kalloo and Chowdhury (eds) *Distant Hybridization in Plants*, Springer-Verlag, 1992. Also the coverage on embryo culture has not listed a number of relevant reviews by V. Raghavan on embryo rescue. Many of the recent techniques such as *in vitro* fertilization have been mentioned without giving a single reference.

There are hardly any references of the 1990s in most of the chapters. Although considerable information is presented on cytoplasmic male sterility and mitochondrial genome, the details have been spread in three chapters. Apomixis is one of the frontline areas of research in a number of laboratories. The definition and classification of apomixis presented is very confusing for students. Recent studies on molecular biology of apomixis are not discussed adequately. Many of the embryological details given in this chapter are not accurate. The diagram of a 'normal' ovule given on page 196 is not the normal. Anatroous ovule is the one present in most of the crop species. The ovule presented on this page is circinotropus, present only in a few species, largely cacti. The outer and inner integuments labelled in this figure are in fact parts of the funiculus. In the diagram of the embryo sac on the same page, no distinction has been made between the nuclei and the cells.

The two chapters on Biotechnology for Crop Improvement and Direct Gene Transfer Technology are reasonably comprehensive, although they lack in-depth analyses of problems. Also the use of androgenic haploids which has important applications in plant breeding is confined to a brief mention of hybrid sorting. Many examples have been given in tabulated form although many of the references cited in the tables are without the year. The book is full of subtitles; often each subtitle is followed by the text of just a single sentence.

Sufficient care has not been taken in preparing the book which is almost a compendium of mistakes. Apart from a large number of spelling mistakes, many sentences do not give clear meanings.

## BOOK REVIEWS

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The spellings of many authors cited in the text do not match with those given under the references. Another major limitation of the book is that a large number of papers cited in the text are not included under the references; thus the reader cannot go to the originals. Similarly, many papers given under the

references are not cited in the text. For example in Chapter 6, out of 47 papers cited in the text, 17 are not included under references; in Chapter 10, out of 65 papers cited in the text, only 4 are under the references, the other 40 papers given under the references are not cited in the text.

I am afraid that the volume neither reflects its title nor fulfills the objectives outlined in the preface.

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