
Book reviews

Genetic Resources, Chromosome Engineering and Crop Improvement, Volume 1 Grain Legumes, eds R. J. SINGH & P. P. JAUHAR. 366 pp. Boca Raton, FL: CRC Press (2005). £93.50 (US\$149.95). ISBN 0-8493-1430-5.

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This multi-authored volume on grain legumes is the first in a proposed series by the editors under the same general title. There are 11 chapters starting with an introductory chapter by the senior editor, followed by 10 further chapters, each covering a grain legume of significance either in world-wide terms as in the case of common *Phaseolus* beans, or in a limited geographical area, well exemplified by Azuki bean, which are culturally important in Japan.

The opening chapter is succinct, but perhaps too much so. A theme is not explicitly stated in readiness for the chapters to come. The concept of gene pools (GP1, GP2 and GP3), as described by Harlan & Wet is mentioned but not emphasized. This concept is, however, the underlying theme of many of the chapters. The potential of molecular methods, including genetic transformations, to assist in the inclusion of germplasm material from GP2 and GP3, presently unavailable using conventional breeding methods, would seem to be a unifying idea behind this volume. As it is, the first chapter is a summary of the chapters to come and Table 1.1 provides a valuable summation of crop origins and gene pools for all the 10 crops.

The editors have been successful in bringing together authors from universities and international and national research centres in Australia, North America, Japan, India, Spain and Nigeria. The chapters on individual crops (common bean, pea, pigeon pea, cowpea, faba bean, chickpea, lentil, lupin, mungbean and azuki bean) have a similar, but not rigidly fixed structure. Each chapter covers the botany, taxonomy, crop origin and use, a description of germplasm resources, sections on crop improvement through conventional breeding and the use of molecular methods, and, finally, a look to the future.

The chapters are informative and well referenced by scientists authoritative in their field. As such the book provides a useful reference for researchers, university teachers and students interested specifically in these crops and for those interested more

generally in the use of genetic resources in crop improvement. The theme of the book is well illustrated in most of the chapters, particularly so for chickpeas.

There are considerable differences in the length of chapters. Some are more than 30 pages long (cowpea and lupin) and others (mungbean, lentil and azuki bean) less than half that length. The differences are down to the amount of detail presented. The cowpea chapter includes 18 tables, eight of which are on the performance and release of varieties bred at the International Institute for Tropical Agriculture. Their inclusion does not always add to the objectives of the chapter in the context of the book. The chapter on lupins contains fewer tables (13), but two are over two pages and one goes over four pages. This amount of detail, including one table of germplasm accessions reproduced from an IPGRI directory, is, in this reviewer's view, excessive. The usefulness and readability of the chapter is hindered by such detail. More attention to highlighting and editing down would have improved the presentation greatly. It is to be hoped that the editors in their future four volumes have a stronger influence on individual chapters to produce a more balanced volume.

Another instance of the need for editorial influence is the inclusion of black and white photographs. Most do not illustrate significant points and are hardly referred to in the text. Some of the black and white photographs are repeated as coloured versions (p. 178) and only these show the pigmentation in flowers and seeds mentioned in the text. Inclusion of photographs and tables that are not useful to the reader detracts from the overall impression, which is unfair on the many well-researched and well-written chapters that are enjoyable to read.

No doubt because of computer compilation, there are some glaring errors in the index. Under A, we have *A. pinodes* (p. 66), *A. godmanii* (p. 31) and *A. vogelii* (p. 127, 133), along with three other A. species. The *A. pinodes* is a fungus, genus *Ascochyta*, *A. godmanii* is a bean pod weevil, genus *Apion*, and *A. vogelii* is a weed, genus *Alectra*. All are presented as if they are the same genus. Similar errors are seen under B, C, E, H, L and so on.

As a source for the breeding objectives, achievements and possibilities in the grain legumes, this book is a useful contribution. The editors are

to be congratulated for the idea behind the project of this and future volumes, but stronger directions to the authors and publishers would greatly improve the finished product.

S. MATTHEWS

Forage Legumes for Temperate Grasslands, by J. FRAME, xviii + 309 pp. Enfield (NH) USA: Science Publishers Inc. and Rome: Food and Agriculture of the United Nations (2005). US\$59 (paperback) ISBNs (SPI):1-57808-3 and (FAO) 92-5-105043-0.
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There is increasing interest amongst agronomists and livestock specialists in increasing the role of legumes to support ruminant production. The nitrogen (N)-fixing potential of legume crops and their often superior feed value compared with grass, and cost advantages compared with using artificial N fertilizers and feed grains, has led many researchers to the view that global agriculture will become increasingly dependent on exploiting legume-based forages. At present relatively few forage legume species are grown on significant areas – lucerne (alfalfa), red clover and white clover are the most well known, and varieties of these have been bred for a range of geographical and environmental conditions – but there are many other related genera and species whose characteristics and agricultural potential are little understood. While there has been considerable progress with breeding and agronomic evaluation in recent years, much of this information remains relatively inaccessible. The author of this book, an acknowledged authority on the subject, is to be congratulated on having thoroughly researched the international literature, including numerous conference proceedings and technical reports, to

provide a useful reference source on the range of forage legumes that are grown in the world's temperate zones. The temperate range here includes Mediterranean and some other seasonally dry areas as well as mid-latitude maritime zones.

The first 50 pages comprise a series of short chapters giving concise and well-referenced background information on legume plant biology, including germination, N-fixation, and aspects of agronomy such as establishment, nutrient requirements, weeds and pest/disease problems, feed value and utilization. This section alone is a useful introduction, particularly for students new to the subject. The main part of the book profiles over 35 legume species, including 15 species of *Trifolium*, and others including species of *Lotus*, *Galega*, *Hedysarum*, *Onobrychis*, *Astragalus*, *Ornithopus* and *Vicia*. Many of these are currently of minor agricultural importance; for some there is very limited information available, while others have been the subject of considerable research effort, leading to inevitable differences in detail for the species profiled. Descriptions of each species include growth characteristics, breeding and varieties, agronomy, nutritive value, utilization and animal performance, and their main attributes and shortcomings. Colour photographs of each species are included. Over 700 references will guide the reader to original sources for more detailed information.

The book is primarily a reference book, reasonably priced, and one which addresses the needs of a potentially large international community. Students, researchers, educationists, consultants and advisers seeking information on any one of the species covered will find here an invaluable starting point, and perhaps gain inspiration for investigating the many knowledge gaps that currently contribute to the under-use of legumes in world agriculture.

A. HOPKINS