Journal of Agricultural Science (2007), **145**, 95–96. © 2007 *Cambridge University Press*
Printed in the United Kingdom

Book reviews

Journal of Agricultural Science (2007), **145**.
doi:10.1017/S002185960600671X,

Sugar Beet, ed. A. P. DRAYCOTT. xxi + 474 pp. Oxford: Blackwell Publishing Ltd (2006). £125.

Sugar beet is a major crop and produces one quarter of the world's sugar in temperate climates, where sugar cane cannot be grown. The prospects for sugar beet do not look good from where I write, 4 km from a sugar factory due to close at the end of the current campaign in the drive to improve efficiency. For areas where the crop continues to be grown, World Trade Organisation agreements will lead to lower prices in the future, but an emerging biofuel industry may revive the fortunes of the crop.

This multi-author book aims to update the comprehensive book *The Sugar Beet Crop* edited by Cooke and Scott and published in 1993. The structure of the new book is largely unchanged, and even some of the content is unchanged – but then there is little reason to change well-written text on fundamentals.

A particularly useful addition is the 79 colour plates, which are a huge advantage for showing nutrient deficiency and disease symptoms. The inclusion of a few black and white plates detracts slightly from this advantage, making the caption '… vein yellowing on young leaves …' pointless for the monochrome beet yellow vein virus plate.

One chapter from *The Sugar Beet Crop* is omitted: 'Opportunities for manipulation of growth and development'. This chapter covered potential of plant growth regulators (PGRs) and of genetic manipulation of growth and development. This potential has not been fulfilled in the intervening years and the omission of PGRs from *Sugar Beet* is probably justified. Genetic transformation has a brief mention in the chapter on Genetics and Breeding but, as far as commercial success is concerned, this section covers only the political difficulty of introducing GM beet in Europe. I was left wondering whether other countries, e.g. USA, grow GM beet, since there is a substantial area of GM soybean etc. outside the EU.

Some minor weaknesses include the rather brief coverage of economic and political factors influencing sugar beet production (although this brevity is understandable if the editor's aim is to produce a volume which will not be rapidly outdated), and the lack of discussion of the deleterious effects of sugar on health. The food label 'sugar-free' is proliferating in the UK, and since this aspect could be an important determinant of sugar demand it ought to be included in a future edition.

Detailed treatment of virus yellows is unfortunately split over three chapters (Agronomy, Virus Diseases, Pests), but only draconian editing could have brought them together, at the risk of annoying, and possibly even losing, some authors.

There is detailed consideration of utilization of the co-product, sugar beet pulp, but not of the main product, sugar. Uses as a chemical feedstock and for bioethanol are mentioned only briefly, but would have justified greater coverage.

The review of *The Sugar Beet Crop* by D. S. H. Drennan in 1994 (*Journal of Agricultural Science, Cambridge* **122**, 327) stated '… clearly provides a broad and considered outline …'. This is just as applicable to *Sugar Beet*. Despite a few minor weaknesses, it is an excellent first source of information on almost all aspects of the crop. It will replace *The Sugar Beet Crop* on my reading list for agriculture students.

P. S. KETTLEWELL

Journal of Agricultural Science (2007), **145**.
doi:10.1017/S0021859606006587,

Physiology and Behaviour of Animal Suffering by N. G. GREGORY. viii + 268 pp. Blackwell (2004). £39·99 (US$79.99). ISBN 0 632 06468 4 (Paperback).

There is, globally, rapidly growing concern for animal welfare issues and interest in the prevention of animal suffering. This book is the first specifically to address the physiological and behavioural aspects of animal suffering. Although the title of the book covers both behavioural and physiological aspects of suffering, the book is predominantly given over to the physiology of suffering and pain, with only three chapters dealing specifically with psychological suffering (chapters on Anxiety and Fear; Emotional Numbness and Deprivation; and Aggression, Overcrowding and Discomfort). Nevertheless this book is extremely broad in scope and is a vast, and sometimes disturbing, catalogue of the many ways in which animals suffer, by accident, by interactions with conspecifics and at the hands of humans. Chapters variously cover areas such as cold, heat and burns, thirst and hunger,

pain, trauma, sickness and disease, digestive and respiratory systems, poisoning and death. This ambitious coverage necessarily means that many areas are dealt with only briefly, and the reader would need to look elsewhere for detailed information about any of these subjects. However, as an introduction to animal suffering this book is highly recommended as it provides such a comprehensive overview.

To understand and appreciate fully the suffering of others, particularly animals, is difficult and the author uses argument by analogy from human accounts of pain and suffering to draw inferences about the potential suffering of animals when experiencing similar conditions of disease, trauma or stress. It is, perhaps, this approach that has led to the emphasis on physiological mechanisms, where analogies with human conditions and suffering can most readily be drawn, whereas behavioural responses are varied and species specific. The author's approach, for the most part, is dispassionate and factual, thus readers are left to reach their own conclusions and moral judgements about the acceptability of any of the practices described. Frequently the information is provided as a series of lists. This approach delivers the major points very efficiently, and is helpful to the reader skimming the book for particular information, but contributes to a general feeling of detachment from the subject matter. Nevertheless, the stated aim of the book is to provide technical information relating to the many ways in which animals may suffer and this the book achieves very well. As such the book is likely to be relevant to many in the field of agricultural science, including those concerned about improving animal husbandry, treatment of animal diseases and the acceptability of different methods of pest control. The book is also likely to provide a useful introduction to animal welfare and suffering for undergraduate students. My only real concern with the book is in the quality of the figures and the relevance of many of the colour plates. The figures are rather simple line drawings that were found rarely to contribute to a better understanding of the text, and several of the colour plates were disturbing without adding to the information already given. These points aside, this book is one that I would recommend to students of agriculture, animal science and animal welfare, and will dip into in the future as a source of technical information on a wide range of issues.

C. M. DWYER

Journal of Agricultural Science (2007), **145**.
doi:10.1017/S0021859607006739,

Molecular Markers for Allele Mining, eds CARMEN DE VICENTE & JEAN-CRISTOPHE GLASZMANN. vii + 85 pp. Rome, Italy: IPGRI (2006).
US$ 16. ISBN 92 9043 705 7.

In August 2005 a Workshop took place at the MS Swaminathan Research Foundation, Chennai, India primarily to discuss scientific and managerial issues associated with work on molecular markers for allele mining being carried out within Sub-programme 1 of the Generation Challenge Programme (GCP) established by the Consultative Group on International Agricultural Research (CGIAR). Molecular characterization of core samples in 19 crops has been initiated within the GCP and progress is reported on 11 of these (rice, maize, wheat, sorghum, barley, bean, cowpea, chick-pea, cassava, *Musa* (plantain) and potato). The genetic markers being used are mainly microsatellites (Simple Sequence Repeats, SSRs) selected for their polymorphism and widespread distribution across genomes.

The book contains short abstracts of the presentations made at the Workshop. Mostly these contain little scientific detail or data although there are some interesting nuggets of information such as the quantity of variation found in barley accessions (47 alleles per microsatellite locus) with land races having more alleles than wild barley populations. Rather than for its scientific content the value of the book is in the overview it provides of the state of genomic research across a wide range of crops. It demonstrates the value of genetic markers to assess the extent and structure of genetic diversity in global collections of genetic resources. Molecular characterization is regarded as a major scientific advance for developing plant genetic resource concepts and molecular tools are seen as vital for improving the efficiency of conservation and use of genetic resources. Applying this technology in practice can raise a range of problems as the abstracts illustrate. The technical difficulties encountered in different countries include equipment and SSR primer failures, problems of obtaining consumable supplies and software availability as well as intellectual property right issues.

The experiences reported in the abstracts demonstrate the value and intricacies of having a global vision for plant genetic resources. It provides the reader with an insight into the state of development of different species and countries in utilizing new genetic approaches to safeguard the genetic diversity so valuable to the future of crops that are required to sustain human need. These all face uncertainties in the future with respect to maintaining sustainable land-use in a changing climate and in response to expanding human population growth and demand.

M. O. HUMPHREYS