

Book reviews

Agricultural Biotechnology in International Development, edited by Catherine L. Ives and Bruce M. Bedford. Published by CABI Publishing, Wallingford, UK, 1998, pp. xiii + 354, ISBN 0-85199-278-1.

Several titles have been published in the *Biotechnology in Agriculture* series with the aim of reviewing advances and current knowledge in key areas of biotechnology as applied to crop and animal production, forestry and food science. This book, based on the proceedings of the Biotechnology for a Better World conference held in California in April 1997, is the latest in that series. The conference was coordinated by the US-based Agricultural Biotechnology for Sustainable Productivity project.

The book comprises 25 chapters divided into six sections. Unfortunately for the reader, there was no overall synthesis chapter that brought together all the key issues raised and this makes the book harder to penetrate for the casual reader. However, that is at least partly compensated for by the inclusion of a summary at the start of each chapter and a detailed index to allow selective scanning of the relevant issues. Despite the technical complexity of many of the issues addressed, this well-presented book is generally reader-friendly, with a judicious use of headings and sub-headings in many (but not all) chapters.

This book is written largely by (and for) enthusiasts of biotechnology. It is not a book that fundamentally questions *whether* biotechnology should be used for developing countries, but rather takes the next step of asking *how* it can be achieved. In many of the chapters, the authors are the proponents of biotechnology, so that parts of the book read as promotional material. However, in the end, the key issues that cause concerns are discussed, and the key constraints to a more rapid commercial adoption of biotechnological innovations are examined in some detail.

Apart from biotechnologists themselves, this book will be of most interest to those wanting to establish a policy environment in which the potential of biotechnology can be achieved, and the pitfalls avoided. Its focus is on fostering national and international collaboration in research and development in this area and on the institutional and policy environment needed for these activities. The underlying issues of institution building are central to much of the prescriptive discussion.

The location of most biotechnology capacity in developed countries in the private sector poses special problems for developing countries that conduct most research in the public sector. Whether the potential of bio-

technology can be achieved will depend upon the ability of developing countries to access and/or generate technology suitable to their needs. If developing countries are to use biotechnology, training and policy development are needed to ensure that the policy environment is suitable. The key issues being addressed in that regard are intellectual property rights, biosafety and collaborative networks.

In the section on the needs and potential uses of agricultural biotechnology for developing countries, the success of some developing countries such as Egypt and Indonesia in establishing structures and programs to exploit biotechnology's potential is contrasted with the difficulties encountered in Sub-Saharan Africa. The key issues identified as important in these contrasts are technical capacity building, human resources development, technology transfer mechanisms and intellectual property institutions, and biosafety and regulatory capability. Alvarez-Morales discusses the special considerations that relate to the release of transgenic varieties of crops in their centres of origin, where they may interact with wild relatives.

There are eight chapters devoted to reporting the application of biotechnology to different crops in developing countries, for food security crops (maize, potato, sweet potato and rice) and non-traditional crops (banana, date palm, cucurbits and oil palm). While the technical detail in these chapters may be of interest to specialists, the message for the general readers seems less clear. Although the potential in particular crops is clearly identified, even in the selected case studies there remain considerable difficulties to overcome before that potential can be realised. With the exception of Chapter 12, the discussion centres on research in and/or for developing countries and their problems. The potential for biotechnological techniques to provide considerable benefits to developing countries, especially for crops under the auspices of the international research centres, is clearly identified. In other cases, those improvements mean simply benefits for the multinational companies involved in biotechnology.

Five chapters are devoted to a discussion of the issues surrounding the development, transfer, adaptation and utilisation of agricultural biotechnology for emerging nations. The roles of the international agricultural research system, other international organisations and international collaboration in addressing these issues are highlighted (Chapters 14 and 15). Chapter 18 addresses the unique case of cassava, which is generally under-researched, and the concerted attempts made to establish an international biotechnology capability for such a crop. An excellent discussion (Chapter 16) of the costs and benefits of biosafety regulations provides a valuable review of the issues relating to the need for such regulations, and of the resources and policies needed to implement them. This is one of the areas in which this book can shed light on recent debates in Australia.

The issues relating to developing and accessing agricultural biotechnologies are addressed in five chapters. In Chapter 19 the roles of the public and private sectors in transferring agricultural biotechnology are contrasted, but the analysis is disappointingly narrow in its focus on the US university system. Chapter 20 provides a comprehensive, though brief, summary of issues and implications in intellectual property and genetic resources in agricultural biotechnology. In other chapters, some insights are provided into the development of biotechnology capacity and technology transfer and diffusion systems in selected developing countries.

The discussion of food and environmental safety issues in biotechnology agricultural products (Chapter 23) is, disappointingly, placed firmly and narrowly in a US context. The reader is left wondering about the relevance to other countries. To me, this is the least satisfying part of the book.

The book concludes with a discussion of the ways in which developing countries can turn biotechnology into business. The value of wild biodiversity for developing countries is discussed, as is the development of some bioprospecting to assess the extent to which sustainable uses of native species can be profitably undertaken. The establishment of a biotechnology-based US company seeking to capitalise on the potential for such new products is also outlined.

As already mentioned, unfortunately, the book does not have a final chapter that brings together the disparate strands from the various papers. This detracts from the value of the book, leaving it more as a repository of a set of mixed, but generally interesting and often valuable, papers, than one that helps to resolve some of the issues in agricultural biotechnology and its role in international development.

In early 1999, political debates arose in Australia about the use of Genetically Modified Organisms (GMOs) and Australia's role and capacity to take a lead in biotechnology. Those debates could have been deeper and more productive if all participants had read this book. Interestingly, the term GMO is not used in the book, although many of the issues relating to them are discussed. We are again reminded of the rapid rate at which issues develop in the area of biotechnology.

Overall, this book raises some important issues, and has some significant things to say about those issues as they relate to developing countries. While it is a book that many should read, it should only form part of a library of such books, as it is not the last word on this complex subject.

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Intellectual Property Rights in Agricultural Biotechnology, edited by F.H. Erbisch and K.M. Meridia. Published by CAB International, Wallingford, UK, 1998, pp. xvi + 224, ISBN 0-85199-232-3.

This book grew out of the Agricultural Biotechnology for Sustainable Productivity (ABSP) program run by Michigan State University with the aim of training scientists and other professionals from emerging countries to effectively utilise biotechnology in enhancing agricultural production. As part of that program, over 500 individuals were trained in intellectual property rights issues by means of workshops and internships. The first four chapters of the book are derived from these training programs, while the remaining eleven chapters were provided by regional experts to summarise intellectual property rights and management in a range of countries around the world.

The first chapter introduces readers to some basic facts and general concepts about intellectual property rights (IPS), hopefully in a way that will enable novitiates to recognise the need for expert advice. A brief discussion of the concept of intellectual property rights is followed by a description of US law on copyright, trademark, and patents as well as trade secrets, and with passing mention of plant variety protection. The claim made in this chapter that it also provides sufficient information to enable novitiates to 'handle IPs appropriately' is dubious, to put it mildly. However, this chapter does contain some valuable messages. For instance, while a patent is only enforceable in the country that issues it, products produced in 'non-patent' countries will still infringe the patent if sold in the country where the invention is protected. For most internationally traded commodities, it follows that US and possibly EU patent law will be more important than domestic patent legislation, so the emphasis in the first three chapters on US patent law is not unwarranted.

The second chapter, 'Acquiring Protection for Improved Germplasm and Inbred Lines', is by far the most insightful chapter in the book. The author, John Barton, is an internationally recognised and widely published expert on the topic. A brief account of the likely impact of international treaties on the free flow of germplasm between countries is followed by in-depth discussion of the advantages, problems, and implications under US law of using plant variety protection, utility and/or plant patents, and trade secrets to protect intellectual property in improved germplasm.

In Chapter 3, some of the merits of leasing *vis-à-vis* selling intellectual property rights are discussed, and the basic components of a technology lease agreement are explained in some detail. The title of Chapter 4 is 'Capacity Building in Intellectual Property Management in Agricultural Biotechnology', but most of this chapter simply consists of a description of

aspects of the ABSP project, followed by a mainly pedestrian description of the operation and functions of Intellectual Property and/or Technology Transfer Offices (TTOs) set up by most large US universities. The claim that 'the long-term benefits of TTOs are enormous' is at best questionable, especially given the relatively short period of time that they have been operating. A more realistic assessment would have drawn attention to the fact that many of these offices struggle to generate enough revenue to cover their direct operating costs, and that revenue streams of the more successful offices are dominated by royalty income from one or two very lucrative patents that often pre-dated the establishment of the TTO.

Of the remaining chapters, Chapter 7 by Michael Blakeney, on intellectual property rights in Australia, is most likely to be of interest and relevance to Australian readers, although the chapter on patent law in European Union countries also may be of interest because of potential patent infringement by internationally traded genetically modified commodities. Discussion of the implications of Australian patent law for agricultural biotechnology is disappointingly brief. Most of Chapter 7 is devoted to a description of Australian Plant Variety Protection Laws. Description of features of the Plant Breeders Rights' Act 1994 is very competent, and certainly much easier to comprehend than the alternative of reading the Act. A deficiency for economists interested in policy issues is the lack of interpretation and discussion of the broader significance of specific features of the Act. In this regard, the recent article by David Godden is likely to be more satisfying. One matter, which this reviewer would like to have clarified, is the penalty(s) for infringement. Godden claims that in addition to any damages recovered in the civil courts, 'any proved infringement of PBR carried an enormous and totally unjustified and unjustifiable maximum criminal penalty of \$50 000 for natural persons and \$250 000 for bodies corporate'. Under remedies for infringement, Blakeney only refers to grant of injunction and 'at the option of the plaintiff, either damages or an account of profits'.

The remaining chapters cover intellectual property right laws and management in Egypt, South Africa, China, Japan, India, Russia, the Andean Pact Countries of Latin America, Costa Rica, and Mexico. Treatment of policy issues in these chapters can best be described as uneven, and is unlikely to be of general interest to readers of this journal.

In summary, this book contains useful nuggets of information for scholars interested in the impact of intellectual property rights on plant breeding and the international exchange of plant genetic resources and for that reason, I will be glad to have a copy on my bookshelf. However, I suspect that the needs of most economists and scientists, whose interest in intellectual property rights is limited to a practical 'need to know', will be best served by

borrowing this book from a library for a short time and reading Chapters 1, 2, and 7, and maybe Chapters 3 and 15. University administrators with responsibility for intellectual property matters may glean some useful hints from reading Chapter 4.

Reference

Godden, D. 1998, 'Growing plants, evolving rights: plant variety rights in Australia', *Australasian Agribusiness Review*, pp. 1–54.

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