Agricultural Biotechnology

Capacity Development for Agricultural Biotechnology in Developing Countries

Are Intellectual Property Rights Stifling Agricultural Biotechnology in Developing Countries? Biotechnology offers great potential to contribute to sustainable agricultural growth, food security and poverty alleviation in developing countries. Yet there are economic and institutional constraints at national and international levels that inhibit the poor people’s access to appropriate biotechnological innovations. Agricultural Biotechnology in Developing Countries: Towards Optimizing the Benefits for the Poor addresses the major constraints. Twenty-three chapters, written by a wide range of scholars and stake-holders, provide an up-to-date analysis of agricultural biotechnology developments in Latin America, Africa and Asia. Besides the expected economic and social impacts, the challenges for an adjustment of the international research structure are discussed, with a special focus on intellectual property rights and the roles of the main research organizations. Harnessing the comparative advantages of the public and private sectors through innovative partnerships is the only way forward to optimize the benefits of biotechnology for the poor. The book will be an invaluable resource for both academics and policy-makers concerned with agricultural biotechnology in context of developing-countries.

Agricultural Biotechnology in Developing Countries

Agricultural Biotechnology In The Developing World Written in easy to follow language, the book presents cutting-edge agriculturally relevant plant biotechnologies and applications in a manner that is accessible to all. This book introduces the scope and method of plant biotechnologies and molecular breeding within the context of environmental analysis and assessment, a diminishing supply of productive arable land, scarce water resources and climate change. Authors who have studied how agro ecosystems have changed during the first decade and a half of commercial deployment review effects and stress needs that must be considered to make these tools sustainable.

Robinson Family of Naamans-on-Delaware

Agricultural Biotechnology in Developing Countries

Agricultural Biotechnology in Developing Countries The product of research sponsored by the UK Department for International Development and a May 2000 workshop held in Rome, Italy, this book comprises 11 contributions from experts affiliated with the International Plant Genetic Resources Institute (Rome, Italy) and the Institute for Plant Biology (U. of Zurich, Switzerland), and from academics in agriculture, food economics, law, and land economy affiliated with universities in the UK, US, and Italy. They investigate ways in which industrial changes implicit in new biotechnologies will affect modern agriculture; analyze industrial and distribution impacts, including consequences for developing countries; and look at genetic use restriction technologies and their implications for global agricultural production. Annotation copyrighted by Book News, Inc., Portland, OR.

Plant Biotechnology As the oldest and largest human intervention in nature, the science of agriculture is one of the most intensely studied practices. From manipulation of plant gene structure to the use of plants for bioenergy, biotechnology interventions in plant and agricultural science have been rapidly developing over the past ten years with immense forward leaps on an annual basis. This book begins by laying the foundations for plant biotechnology by outlining the biological aspects including gene structure and expression, and the basic procedures in plant biotechnology of genomics, metabolomics, transcriptomics and proteomics. It then focuses on a discussion of the impacts of biotechnology on plant breeding technologies and germplasm sustainability. The role of biotechnology in the improvement of agricultural traits, production of industrial products and pharmaceuticals as well as biomaterials and biomass provide a historical perspective and a look to the future. Sections addressing intellectual property rights and sociological and food safety

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issues round out the holistic discussion of this important topic. Includes specific emphasis on the inter-relationships between basic plant biotechnologies and applied agricultural applications, and the way they contribute to each other. Provides an updated review of the major plant biotechnology procedures and techniques, their impact on novel agricultural development and crop plant improvement. Takes a broad view of the topic with discussions of practices in many countries.

Agricultural Biotechnology This publication describes the state of biotechnology in the developing regions of the world, namely Africa, Asia and the Pacific, Latin America and the Caribbean and the Near East and North Africa. Regional and selected country analyses review problems and prospects of food and agricultural production and sustainability issues and then examine the actual and potential role of biotechnologies as complements to conventional technologies. Policies, programmes and institutional and infrastructural supports to biotechnology are discussed in detail. Comparison of the different approaches to management of biotechnology taken by the different regions and countries, including some developed countries such as Australia and Japan, provides a basis for learning from each other’s experiences and for planning biotechnology programmes and activities commensurate with the level of development, capability and need of individual countries. It is hoped that the volume will stimulate cooperation among developing countries and between developed and developing countries in harnessing modern biotechnologies for enhanced food security and sustainable agricultural development. Contents Chapter 1: Biotechnology in Agriculture, Forestry and Fisheries-FAO Policy and Strategy; Chapter 2: Biotechnology in the CGIAR System by D L Plucknett and K Wright Platais; Chapter 3: Biotechnology in Agriculture, Forestry and Fisheries in Africa by S N Kassapu, R B Singh; Chapter 4: Agricultural Biotechnology in the Asia-Pacific Region by R B Singh; Chapter 5: Current Status and Future Prospects of Modern Biotechnologies in Latin America and the Caribbean by V M Villalobos; Chapter 6: Status and Prospects of Biotechnology in the Near East and North Africa by I Y Hamdan, V M Villalobos.

Plant Biotechnology and Agriculture Advances in biotechnology are beginning to have a major impact on agricultural productivity in developed countries. This book reviews the prospects for effective application of biotechnology in developing countries and its potential impact on North-South trade.

Integrating Biotechnology in Agriculture

Risk Perception and Communication about Agricultural Biotechnology in Developing Countries

Handbook on Agriculture, Biotechnology and Development Obtaining world food security and food self-reliance for the developing nations is a complex and difficult task, but with increased research and education, agricultural production in developing countries can be improved. Biotechnology applications, integrated into traditional systems, hold much promise in this respect. Realizing the positive impact of biotechnology will depend upon the ability of developing countries to access and generate technology which is suitable to their needs. However, government policies may not encourage investment in public sector agricultural research and the private sector is often underdeveloped. This book is the product of a conference, held in California in April 1997, under the auspices of the Agricultural Biotechnology for Sustainable Productivity (ABSP) project. It provides a broad overview of the latest research and applications and policy requirements for biotechnology in developing countries. The issues of food security, capacity building, intellectual property rights, technology transfer, biosafety and the need for private sector enterprise are addressed. This book is essential reading for policy makers, researchers in agricultural biotechnology, economists, and extension workers.

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International Initiatives in Biotechnology for Developing Country Agriculture Analyzes the nature, scope & impact of initiatives being undertaken to stimulate the development of agricultural biotechnology applications in developing countries. Chapters include biotechnology in the context of a national innovation system; international initiatives in agricultural biotechnology; bilateral aid programmes; & implications for planning & policy. Charts & tables.

Agricultural Biotechnology This study concludes by suggesting that the psychometric, cultural, and moral models do not account for the risk perception of farmers in India. It proposes that any theory or model that purports to explain and predict risk perception of agricultural biotechnology in the developing world may need to include economic benefits, safety concerns and accountability as key variables.

The Socioeconomic Impact of Agricultural Biotechnology on Less Developed Countries

Agricultural Biotechnology for Developing Countries This book is a compendium of knowledge, experience and insight on agriculture, biotechnology and development. Beginning with an account of GM crop adoptions and attitudes towards them, the book assesses numerous crucial processes, concluding with detail.

Agricultural Biotechnology Based on the first scientific conference convened at the Library of Alexandria, 'Biotechnology and Sustainable Development: Voices of the South and North', which was held in Alexandria, Egypt, in March 2002, this book contains overviews of agriculture, health, ethics and the environment. It discusses how dramatic improvements in food security, health, and lifestyle could accrue to the poor people of developing countries through the applications of new technologies.

Emerging Consequences of Biotechnology

Science, Policy and Regulation

Intellectual Property Rights for Agricultural Biotechnology This Book Looks At The Application Of A Variety Of Biotechnologies To

Biotechnology and Sustainable Development Following on from earlier titles in this series, this volume presents further material generated by the World Bank/ISNAR/Australian government biotechnology study.It covers the present status and future prospects for the application of biotechnology to solve agricultural and environmental problems in a number of developing countries. Particular focus is given on to developments that have taken place over the last decade.

Global Challenges and Directions for Agricultural Biotechnology

Economic and Social Issues in Agricultural Biotechnology

Biotechnology Policy for Developing Country Agriculture For more than a century, plant breeders in government-funded research centers have sought out crop varieties with characteristics that might help poor farmers in developing countries grow more food. They have painstakingly bred and cross-bred these varieties through generations to achieve a desirable mix of characteristics. At an accelerating pace in the 1960s and 1970s the work of these breeders changed the developing world -- the higher yielding varieties of wheat, rice, and other food staples they produced helped avert catastrophic famine in Asia -- and their work continues to improve the lives and livelihoods of millions of people. Now, however, critics of the newest tool in the agricultural researchers’ toolbox -- genetic engineering -- argue that the new environment for agricultural research may leave farmers in the developing countries out in the cold. The largely misplaced concerns that patents and other forms of intellectual property are currently severely constraining the freedom to operate in developing countries is divering attention from more crucial issues for agricultural researchers working on staple food crops.

Biotechnology, Agriculture and the Developing World This publication presents the report of the first six e-mail conferences hosted by the FAO Electronic Forum on Biotechnology in Food and Agriculture from March 2000 to May 2001. Each conference was moderated, lasted approximately two months and focused on agricultural biotechnology in developing countries. Four of the conferences dealt with the appropriateness of currently available biotechnologies in the crop, fishery, forestry and livestock sectors for food and agriculture in developing countries; two dealt with the implications of agricultural biotechnology for hunger and food security and the impact of intellectual property rights on food and agriculture in developing countries.
Institutional Constraints for the Success of Agricultural Biotechnology in Developing Countries

Agricultural Biotechnology in International Development
Transgenic crops offer the promise of increased agricultural productivity and better quality foods. But they also raise the specter of harmful environmental effects. In this new book, a panel of experts examines: ¿€‐Similarities and differences between crops developed by conventional and transgenic methods ¿€‐Potential for commercialized transgenic crops to change both agricultural and nonagricultural landscapes ¿€‐How well the U.S. government is regulating transgenic crops to avoid any negative effects. Environmental Effects of Transgenic Plants provides a wealth of information about transgenic processes, previous experience with the introduction of novel crops, principles of risk assessment and management, the science behind current regulatory schemes, issues in monitoring transgenic products already on the market, and more. The book discusses public involvement and public confidence in biotechnology regulation. And it looks to the future, exploring the potential of genetic engineering and the prospects for environmental effects.

Agricultural Biotechnology Research Capacity in Four Developing Countries
Many developing countries are exploring whether biotechnology has a role in addressing national issues such as food security and environmental remediation, and are considering whether the putative benefits of the technology—for example, enabling greater agricultural productivity and stability in the food supply—outweigh concerns that the technology might pose a danger to biodiversity, health, and local jobs. Some policy leaders worry that their governments are not prepared to take control of this evolving technology and that introducing it into society would be a risky act. Others have suggested that taking no action carries more risk, given the dire need to produce more food. This book reports on an international workshop held to address these issues. Global Challenges and Directions for Agricultural Biotechnology: Mapping the Course, organized by the National Research Council on October 24–25, 2004, in Washington, DC, focused on the potential applications of biotechnology and what developing countries might consider as they contemplate adopting biotechnology. Presenters at the workshop described applications of biotechnology that are already proving their utility in both developing and developed countries.

Agricultural Biotechnology in Developing Countries: a Potential Tool for Improving Food Security?
Crop biotechnology could boost global food production in a sustainable way. However, the economic repercussions of biotechnology for developing countries are largely unknown and have been the subject of acute controversy over the last few years. This study deals with the topic and provides some preliminary empirical results. An analytical framework for the ex ante evaluation of biotechnology in smallholder agriculture is developed, which is then used within three different case studies in Kenya and Mexico. It is shown that biotechnology holds great potentials for poor agricultural producers and consumers. Yet appropriate institutional adjustments are required to capitalize on these potentials. Implications for national and international biotechnology policies are discussed.

Agricultural Biotechnology in Developing Countries There are currently many controversial socioeconomic issues concerned with the development and implementation of agricultural biotechnology. This book presents selected revised and edited papers from the fourth and fifth meetings of the International Consortium on Agricultural Biotechnology Research, held in Italy in 2000 and 2001.

Agricultural Biotechnology in the Developing World
Plant biotechnology has become a priority area for technology transfer in developing countries where production of food, feed, and fiber is of vital concern. Many programs now have sufficient experience to permit an in-depth examination of approaches, achievements, controversies, and anticipated benefits. Developing countries are showcased for leading-edge advances, as represented by contributions from South Africa, Kenya, Indonesia, Malaysia, Thailand, China, Mexico, Brazil, and Peru with a foreword from World Food Prize Laureate, M.S. Swaminathan. These presentations are augmented by reviews from organizations facilitating plant biotechnology transfer, including philanthropic foundations, bilateral and multilateral organizations, and other new initiatives. Introductory chapters address the subjects of sustainable development, regulatory concerns, accessibility of resources, environmental issues, and socio-economic research.

Environmental Effects of Transgenic Plants
The principal message of this book is that thermodynamics and statistical mechanics will benefit from replacing the unfortunate, misleading and mysterious term "entropy" with a more familiar, meaningful and appropriate term such as information, missing information or uncertainty. This replacement would facilitate the interpretation of the "driving force" of many processes in terms of informational changes and dispel the mystery that has always shrouded entropy. It has been 140 years since Clausius coined the term "entropy"; almost 50 years since Shannon developed the mathematical theory of "information"—Subsequently renamed "entropy." In this book, the author advocates replacing "entropy" by "information," a term that has become widely used in many branches of science. The author also takes a new and bold approach to thermodynamics and statistical mechanics. Information is used not only as a tool for predicting distributions but as the fundamental cornerstone concept of thermodynamics, held until now by the term "entropy." The topics covered include the fundamentals of probability and information theory; the general concept of information as well as the particular concept of information as applied in thermodynamics; the derivation of the Sackur-Tetrode equation for the entropy of an ideal gas from purely informational arguments; the fundamental formalism of statistical mechanics; and many examples of simple processes the "driving force" for which is analyzed in terms of information.

Plant Biotechnology Transfer to Developing Countries
Potential Impacts of Crop Biotechnology in Developing Countries This book addresses the continuing controversy over the potential impact of genetically modified (GM) crops in developing countries. Supporters of the technology claim it offers one of the best hopes for increasing agricultural production and reducing rural poverty, while opponents see it as an untested intervention that will bring corporate control of peasant farming. The book examines the issues by reviewing the experience of GM, insect-resistant cotton, the most widely grown GM crop in developing countries. The book begins with an introduction to agricultural biotechnology, a brief examination of the history of cotton production technology (and the institutions required to support that technology), and a thorough review of the literature on the agronomic performance of GM cotton. It then provides a review of the economic and institutional...
outcomes of GM cotton during the first decade of its use. The core of the book is four country case studies based on original fieldwork in the principal developing countries growing GM cotton (China, India, South Africa and Colombia). The book concludes with a summary of the experience to date and implications for the future of GM crops in developing countries. This review challenges those who have predicted technological failure by describing instances in which GM cotton has proven useful and has been enthusiastically taken up by smallholders. But it also challenges those who claim that biotechnology can take the lead in agricultural development by examining the precarious institutional basis on which these hopes rest in most countries. The analysis shows how biotechnology's potential contribution to agricultural development must be seen as a part of (and often secondary to) more fundamental policy change. The book should be of interest to a wide audience concerned with agricultural development. This would include academics in the social and agricultural sciences, donor agencies and NGOs.

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Agricultural Biotechnology in Developing Countries

Biotechnology and Agricultural Development "Biotechnology offers the potential for more environmentally-friendly agriculture but the conditions for developing countries to take advantage of that potential should be created." Policy intervention is needed to ensure that biotechnology responds to the priorities set for agriculture." Decisions are urgently needed in two policy areas specific to biotechnology: biosafety and intellectual property rights." Public funding restrictions demand innovative approaches and public/private partnerships." Flexibility and long-term commitment are essential if donor-supported biotechnology initiatives are to succeed

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