
Foreword

Forecasts for the inextricably linked scourges of food insecurity and poverty are bleakly familiar. According to the United Nations, “over the next fifteen years, the world population is expected to increase by 1.1 billion so that by 2030, the global economy will need to support approximately 8.4 billion people ... Africa will account for more than 40 per cent of the global increase in population”. With qualified positivism, in 2015 the Food and Agriculture Organization of the United Nations (FAO) reported that “the number of hungry people in the world has dropped to 795 million ... or around one person out of every nine”. Meanwhile, as the World Bank reported, “17 per cent of people in the developing world lived at or below \$1.25 a day”. Crucially, as the International Fund for Agricultural Development estimates, “there are about 500 million small farms in developing countries, supporting almost 2 billion people”. And these are the people largely involved in those grim statistics. Yet some African countries are now among the world’s fastest growing economies with huge natural resources – the African Development Bank forecasts that the continent’s gross domestic product (GDP) growth rate will strengthen to 5 per cent in 2016. But Africa is still unfortunately lacking in skills, infrastructure and governance. A vast range of issues must be faced if the challenges of food security are to be met.

It was in this context that the John Templeton Foundation, an independent philanthropic organisation, funded the programme Biosciences for Farming in Africa (<http://b4fa.org>), concentrating on crop production by smallholder farmers. Associated with this programme, the Foundation funded selected

projects aimed at investigating the best practices and policies for implementing genetic modification (GM) and other recent advances in genetic technologies in the local crops grown by these farmers. These projects have been carried out by some of the world's leading researchers and their groups from the USA, UK and Africa.

This book summarises many of the key findings and recommendations of 13 of the funded projects in essays intended for readers looking for the principal messages emanating from the research work of each project. The book will be of interest to policy makers and their advisers, educationalists, members of non-governmental organisations and the media, as well as those who take an interest in smallholder agriculture. For those seeking an in-depth analysis of the project outcomes, scientific articles published elsewhere give further detail. Many of the authors have referenced some of the scientific journals that have published such works.

Questions outlined in this book include: what are the scientifically established nutritional, social, environmental and regulatory consequences of crops generated by genetic modification together with other modern genetic techniques, particularly for small landholders; can the use of these crops have economic impacts in less-developed countries; and what are the barriers to acceptance and use of these crops?

The crops represented in this book are those commonly grown by smallholder farmers for staple foods, including maize, cassava, cooking banana, sorghum and rice. The primary focus is Sub-Saharan Africa, but some chapters offer experience from around the world, including China, India, the Philippines and Honduras. All sections of the supply chain are represented by the projects,



from plant genetics, regulatory status, seed supply and agronomy extension services, through to grower and societal perception. Many in-depth interviews and focus group discussions were conducted to ascertain first-hand knowledge and an understanding of the crop production techniques used by growers and stakeholders in the various countries studied.

These essays, summarising the results of wide-ranging expert research, are intended to provide interesting and informative reading, and, in doing so, contribute to balanced, informed and broad discussions as well as political, community and personal decisions.

The book aims to contribute positively to the debate on modern advances in plant genetics and thereby play a small part in alleviating the food insecurity and poverty of many hundreds of millions of people around the world.

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