

# **Natural Resources Management in African Agriculture**

## **Understanding and Improving Current Practices**

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# Preface

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It is no secret that both the land and the people of rural Africa are suffering. In recent years, researchers, practitioners and policy-makers concerned with persistently high rates of rural poverty and food insecurity and declining per capita agricultural productivity in sub-Saharan Africa have begun to attend seriously to the formidable natural resource management problems that are both cause and consequence of these ills. Much has been written about both the vicious circle in which poverty leads to natural resource degradation, which in turn leads to low resource productivity and renewed poverty, as well as about the need for agricultural intensification on existing cultivated and grazed lands. Researchers have dedicated considerable time and resources over the past decade to developing, often in collaboration with farmers, farming technologies and natural resource management practices to break the vicious circle, to facilitate intensification and thereby to increase agricultural productivity, food security and rural incomes across the continent.

Unfortunately, rates of adoption and diffusion of improved natural resource management practices have generally fallen short of expectations. There are no simple answers to the questions of why many African farmers unsustainably exploit soils and water and why many do not adopt or adapt other, seemingly superior technologies already available. A clear understanding of these processes is none the less urgently needed. Any such understanding must also adequately explain important examples of farm- and community-level innovation and careful natural resource stewardship across the continent, or else it will provide a poor platform on which to base future policy and research.

The chapters that follow cultivate such an understanding, developed from detailed reports on both failures and success stories from across the full range of agroecosystems and economic and institutional conditions found on the continent. This volume thereby breaks new ground in identifying important regularities regarding core determinants of and constraints on natural resource management adoption patterns. Perhaps more importantly, the volume's breadth and depth make clear the key policy and research priorities on which new initiatives need to focus in order to foster substantive improvements. Understanding and improving current practices remain a core challenge in the important task of eliminating poverty and malnutrition in rural Africa over the course of the 21st century.

Early versions of most of these chapters were presented at an international conference on 'Understanding Adoption Processes for Natural Resources Management for Sustainable Agricultural Production in Sub-Saharan Africa', held at the headquarters of the International Centre for Research in Agroforestry (ICRAF) in Nairobi, Kenya, 3–5 July 2000. Conference participants included a broad range of social scientists, biophysical scientists, development practitioners and representatives of international agencies, private foundations and

conservation and development organizations. In addition to the presentation and review of earlier versions of these chapters, the conference devoted much time to discussion of the policy and research implications stemming from the papers' results. The editors thank all of the conference participants, especially those whose work is incorporated in this volume, for their contributions both to the conference and to this book.

We are particularly grateful to the Rockefeller Foundation, which sponsored the conference and the subsequent publication of this volume, to ICRAF, which not only hosted the event with its usual grace but also contributed considerable amounts of staff time and resources to the conference and to subsequent editorial work, and to the Danish Agency for Development Assistance (DANIDA), which provided valuable financial support. In this connection, we especially wish to thank Akin Adesina, John Lynam and Ruben Puentes of the Rockefeller Foundation and Pedro Sanchez and Brent Swallow of ICRAF. For unstinting assistance in conference planning and support, we express our sincere thanks to ICRAF staff members Marion Kihori, Oscar Ochieng, Antonia Okono, Justine Wangila and Kijo Waruhiu and to Joyce Knuutila at Cornell. Quinn Avery did a truly extraordinary job organizing and copy-editing the final volume. Joy Learman at Cornell skilfully saw the final product through to publication.

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# Foreword

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Sub-Saharan Africa's agricultural development contrasts markedly with that of Asia and Latin America during the last 40 years. A recent study presented by Hans Gregersen at the Consultative Group for International Agricultural Research (CGIAR) Mid-term Meeting in Durban, South Africa, May 2001, concluded: 'Sub-Saharan Africa stands out as the only region in the world where almost no progress has been made in raising average per capita food consumption or in the incidence of undernourishment.' In hindsight, the overarching reason is quite simple: the natural resource base on which agriculture depends is so depleted that genetic-improvement efforts have been able to bear only limited fruit. In Africa, most farmers are smallholders with 0.5–2.0 ha, earn less than US\$1 day<sup>-1</sup>, face 3–5 hunger months, are malnourished and have large families and 30% are human immunodeficiency virus (HIV)-positive. Women do most of the farming and collect fuel wood and water, while men do off-farm work. The way forward is integrated natural resource management (INRM) to tackle the loss of soil fertility and forested watersheds and to replenish other lost resources. Then, the full weight of genetic improvement and enabling government policies can come into play, as it has in the rest of the developing world.

This book focuses on how farmers, researchers and development workers are tackling these complex issues and presents evidence of substantial progress. Farmers operating under quite varied conditions in Ethiopia, Kenya, Madagascar, Zimbabwe, Mali, Nigeria and elsewhere on the continent are adopting improved fallows, terraces, tied ridges or other improvements that increase yields, conserve scarce soil and water, replenish soil fertility and generate increased profits. Often, improvements are spontaneous adaptations of technologies developed through national and international agricultural research systems. But the scale of these successes remains on the order of thousands of farm families. The pressing challenge is to scale up these promising practices and improved processes of technology adaptation to millions of farmers in order to eliminate this last bastion of hunger and malnutrition from our planet. The authors and editors are to be congratulated for a very useful contribution towards African agricultural development.

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21 June 2001