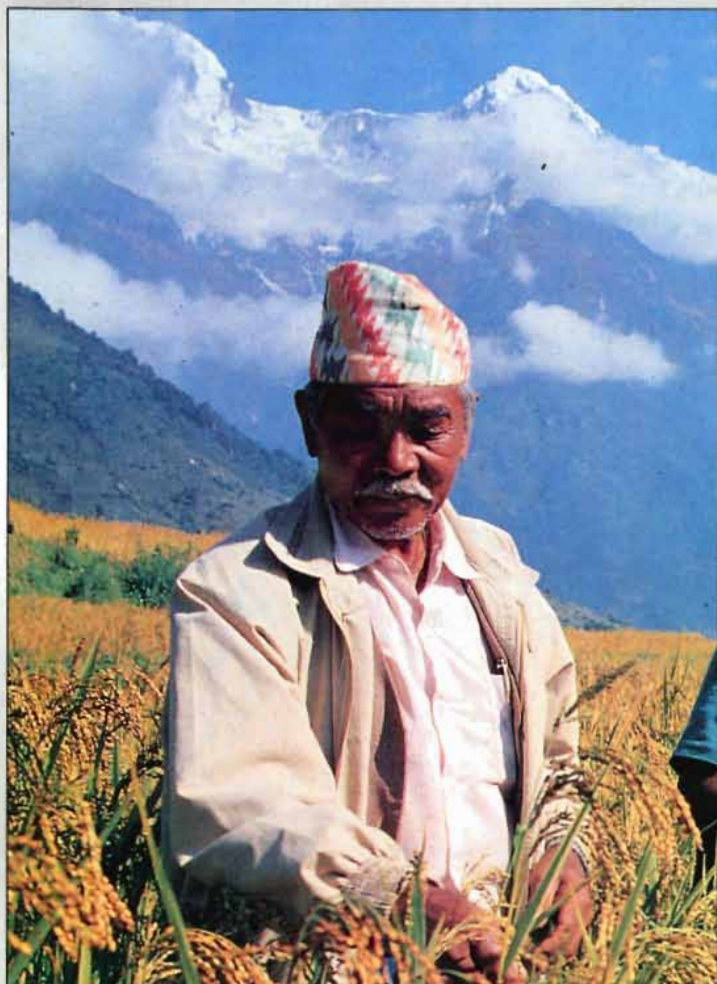
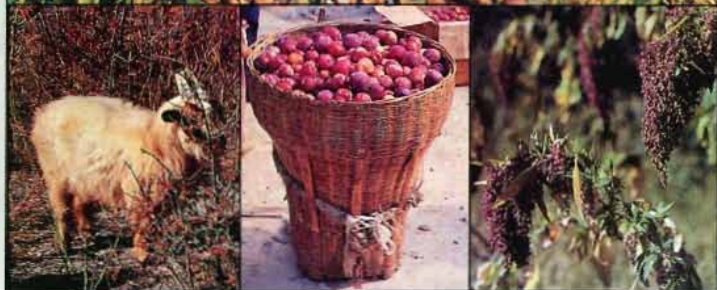


Managing Agrobiodiversity

Farmers' Changing Perspectives and Institutional Responses
in the Hindu Kush-Himalayan Region



Tej Partap
B. Sthapit



Managing Agrobiodiversity

Farmers' Changing Perspectives and Institutional Responses in the HKH Region

Editors

Tej Partap & B. Sthapit

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High altitude rice (main photo)

A Pashmina mountain goat, a basket of plums, and grain *Chenopods*

by Tej Partap

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Foreword

In the present paradigm of sustainable development, conservation of agricultural biodiversity is a prerequisite to sustaining agricultural production for both global and local food security. Nowhere is this more apparent than in the Hindu Kush-Himalayas which cover an altitudinal range of from 200-8,800m. The Hindu Kush-Himalayan region encompasses diverse environments throughout its span of 3,500km and is one of the important centres of origin and diversity of crop genetic resources. The agroecological diversity of the region has been important in the evolution of diverse farming systems that are built on distinct knowledge systems which the native farming communities tried and refined over generations. These farming communities also developed conservation and management strategies to ensure sustainable use of bioresources.

Subsistence farmers, by maintaining crop diversity and varietal diversity, are the main custodians of local, national, and global wealth in agricultural biodiversity. Indigenous knowledge about management of indigenous agrobiodiversity has been overlooked in the past, but it is now acknowledged as the cornerstone of conservation approaches. The mountains of the region, with their ecological, biological, and cultural diversity, are probably the largest storehouses of indigenous knowledge on agrobiodiversity in the world.

Today, various forces are at work that may result in genetic erosion. These are population pressure, increased aspirations for a better quality of life, urbanisation, and the available modern technologies. They have set in motion a chain reaction for transformation of mountain agriculture — that is now widespread — and only the degree and stages vary among areas. While acknowledging the positive impact these trends may have on absolute and short-term productivity, the unfortunate outcome of this process is likely to have a negative impact on the agrobiodiversity of native agriculture. Therefore, ways have to be found to mitigate this negative impact, and an obvious place to start is with the farmers themselves.

This is not easy, with market mechanisms pushing farmers towards specialisation and monoculture. Incentives have to be created or reinforced to encourage the maintenance of farm biodiversity, even if this means leasing parts of farm holdings for traditional crops. There is an equal concern among many organizations and individuals that indigenous knowledge and local genetic diversity are inadequately valued and reimbursed when used for the development of products elsewhere. In this connection, the term, *biopiracy*, has been used.

In situ conservation of wildlife and natural plant resources in the Hindu Kush-Himalayan region has made considerable progress over the last 10-20 years, and is reflected in the establishment of many national parks and other protected areas. However, there is a risk that these will become islands of conservation in deserts of genetic degradation.

While conventional institutional efforts for *ex situ* conservation of agricultural biodiversity must continue for mountain crops also, what is important is to find innovative ways of *in situ* conservation. Local initiatives, people's participation, and combining conservation with use are some of the important concepts in developing appropriate approaches that can combine maintenance of agricultural biodiversity with sustainable mountain agricultural development. In particular, the knowledge of rural women about plant species should be cherished and their involvement in managing agro-ecosystems sought.

This publication is comprised of commissioned studies and deliberations from a series of mountain agrobiodiversity meetings held jointly by the International Centre for Integrated Mountain Development (ICIMOD) and the International Plant Genetic Resources' Institute (IPGRI) in China, India, Nepal, and Pakistan. We are pleased that this publication will make available the state of the art knowledge and information about agrobiodiversity in the Hindu Kush-Himalayan region, about which so much is heard but little written. The two editors, Dr Tej Partap of ICIMOD and Dr B.Sthapit of IPGRI, had a difficult task in presenting voluminous information in a concise form and we put on record appreciation of their efforts.

We hope this joint publication of ICIMOD and IPGRI will be a valuable step towards creating greater awareness about the global importance of conserving agrobiodiversity and that it will encourage national governments, NGOs, scientific, and donor communities to develop and support mechanisms to maintain agrobiodiversity for the benefit of the world at large and the mountain people of the HKH in particular.

Egbert Pelinck
Director General
ICIMOD

K.W Riley
Regional Director, Asia & Pacific
IPGRI, Malaysia

Editors' Note

The Hindu Kush-Himalayan region is home to unique agricultural systems, crop species, and livestock which help the mountain farming communities living therein to sustain themselves. There can be little doubt that the agrobiodiversity of this region has great potential to provide a fundamental and resilient base for the regeneration necessary for sustainability of not only mountain agriculture and the standards of living of mountain people, but also for the global community in general. Whether these potentials have been properly harnessed so far is debatable. Agrobiodiversity is dynamic, and environmental setting, population and social organization, modern technologies, capital investments, and other kinds of interventions are known to trigger processes that can replace, deplete, or replenish any of its major components, i.e., genetic resources, species, or agroecosystems.

The reports available indicate that agriculture in the Hindu Kush-Himalayan region is in transition. On the one hand, people and institutions are faced with a predominant situation of deteriorating conditions in subsistence farming in which the farm economy, ecological environment and agrobiodiversity—all the three components—are adversely affected. Agrobiodiversity, particularly, faces threats from habitat destruction and replacement through changing land use. Another trend is the adoption of new cash crops by farmers, replacing old ones—leading to commercialisation of farming. In between a range of changing scenarios can be counted. Based on these past reports, it has been our supposition that the HKH region may be experiencing all of the processes described above on different scales and in different areas. Due to the lack of adequate knowledge and information, it is difficult to indicate the extent of loss, replacement, or replenishment of agrobiodiversity in this region. The implication also is that, unless we acquire this information, it is all the more difficult to proceed to discuss approaches to conserve and manage agrobiodiversity in the region.

It was in this context that the Mountain Farming Systems' Programme of the International Centre for Integrated Mountain Development (ICIMOD) and the International Plant Genetic Resources' Institute (IPGRI) launched an initiative to document knowledge and information about the status of management issues concerning agricultural biodiversity in the Hindu Kush-Himalayan region. There were three themes: one—the perspective of agricultural biodiversity and assessment of diversity at sub-species, species, and agroecosystem levels; two—assessing the risks to the agrobiodiversity of the region from agricultural transformation processes;

and three—alternative strategies for sustainable conservation and management of agrobiodiversity.

Having identified the themes, sub-regional reviews and micro-level field studies were commissioned on key topics. The findings were presented and deliberated upon at the National Expert Meetings held in China, India, Nepal, and Pakistan. It was an interesting exercise in which different dimensions of the same issue were presented in different countries. Several institutions, viz. research, development, policy, local NGOs, and farmers themselves cooperated in gathering information on several issues. It is time to thank all of them collectively—without naming each one individually. The following national institutions played leading roles in monitoring the studies and organizing the national meetings: i) Local Initiatives for Biodiversity, Research and Development (LIBIRD), Pokhara, Nepal; ii) National Bureau for Plant Genetic Resources (NBPGR) of the Indian Council of Agricultural Research (ICAR) Delhi, India; iii) Chengdu Institute of Biology of the Chinese Academy of Sciences (CIB-CAS), Chengdu, China; and iv) Pakistan Agricultural Research Council (PARC) and Balochistan Agricultural Department, Quetta, Pakistan.

The outcome of country studies and expert meetings was a collection of 67 papers with more than 2,500 pages of text, each one of them unfolding new information about agrobiodiversity in the HKH region. Each author had done a good job in putting together as much information as possible. The challenge was to compile it into a readable volume in which relevant issues are explained in a crisp and concise manner. It was a challenge to shape the document into the present form of less than 500 pages. In the process we may have disappointed some authors. Some papers were eliminated and key information contained in other papers was presented in boxes inserted into other chapters. Authors will also find that, in almost all papers, background and recommendations have been omitted. Some authors have made liberal use of vernacular and Latin names of crops and animals in place of English names. We decided to compromise by retaining these as such. In some chapters, there are little or no references. Readers may still find references that are not properly cited and we wish to apprise you of this beforehand. In this region, finding reliable references is difficult; and because of this we were unwilling to forego any we had. Our intention in doing so is to present critical information to the reader. The perspectives and recommendations have been discussed in the introductory chapter in which we have tried to synthesise the issues raised by various authors. The 40 chapters in the book are grouped into seven themes presented as seven parts of the book. In addition, the introductory chapter provides an overview of the issues presented by various authors. The idea is not to give advice on how to conserve and manage agrobiodiversity in the HKH region but to improve our understanding of it and what is happening to it.

The book has come into this shape because of the cooperation, encouragement, advice and support the project received from several people and institutions. We thank the authors and participants in the expert meetings for contributing to our knowledge and information about mountain agrobiodiversity. It is an area into which few, so far, have travelled. This made the task of the authors more difficult than we could have imagined at the outset. Country initiatives largely succeeded because of the patronage and interest of some key personalities, namely, in Pakistan, Dr. Zafar Altaf, Secretary, Food, Agriculture, Livestock & Cooperatives and ICIMOD Board Member, Dr. Qazi Azmat Isa, Director, Balochistan Rural Support Programme, Mr. Zulfikar Ali, Director of Agriculture, Govt of Balochistan; in India, Dr. R.S. Paroda, Director General ICAR, Dr. K.P.S. Chandel, Director National Bureau of Plant Genetic Resources and Dr. T.N. Khushoo; and in Nepal Dr. J. C. Gautam, the then Executive Director of NARC and Mr. R.B. Rana, Chairman Executive Board of LIBIRD. Dr. R. K. Arora, Coordinator of IPGRI's South Asia Office in Delhi was very helpful all along and we are especially grateful for his help in identifying people for the studies commissioned. Dr. Tang Ya, Dr. Shaheena Hafeez and Mr. Ajay Rastogi, three ICIMOD colleagues, were very helpful in organizing the national workshops in China, Pakistan and India. We would like to place on record the work of the copy editor and the Publications' Unit, DITS, ICIMOD for the hard work they undertook in bringing the document into shape for publishing. Both of us feel obliged to express our thanks to Mr. Egbert Pelinck, Director General, ICIMOD, and Dr. K. W. Riley, Regional Director, Asia Pacific Office of IPGRI for their constant support and encouragement to us in accomplishing this task.

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