Crop Genetic Diversity in the Field and on the Farm: Principles and Applications in Research Practices
Target audience

The volume is intended as a textbook for graduate and advanced undergraduate university students around the world in courses on genetic resources conservation, sustainable agriculture, agroecology and environmental studies.
Authors’ Vision

To create a volume that links:

• Research principles and practices to assess, access, and value crop genetic diversity in farmers’ fields

• The evolutionary capacity of traditional crop varieties

• The benefits obtained by the farmer or farming community in using this diversity

A common theme throughout the book is the way in which traditional varieties are able to adapt to changing conditions.
Main features of the book

- **Integrated monograph**, rather than an edited volume of separate chapters
- **Evidenced based**: relies on more than 20 years of research globally
- **Multidisciplinary**: genetics, agronomy, ecology, sociology, economy, policy
- **Practical** approaches and methods with concrete examples
- **General overview** of primary literature, for future follow up on specific points
The story behind the book

1990s - the challenges

Ex situ facilities can not accommodate full range of useful diversity and do not conserve dynamic processes of crop evolution and farmer management.

Science and practice of in situ conservation lags behind policy commitments of the CBD to its implementation.

No scientific basis on how “to do” In situ Conservation.

The first 10 years (1995-2005)

“Strengthening the Scientific Basis of In Situ Conservation on Farm”

The second 10 years (2006-2016)

Conservation and use of traditional crop varieties in sustainable agricultural production and agro-ecological resilience.
The authors’ disciplines span the fields of ecology, botany, genetics, agronomy, plant breeding, anthropology, economics, and policy.

Over the last 20 years, the authors have worked in a joint international integrated collaborative program, where partners from developing and more advanced economies have met, organized and managed a program with the common goal of providing tools and methods for tapping the potential of crop genetic diversity on-farm.
What is a traditional variety or landrace, the origin of today’s crops, and the development of international agendas on the conservation and use of their genetic diversity
Basic concepts of genetic diversity and its measurement and the tools and methods in which participatory and conventional data are obtained and analyzed.
Characterizing abiotic and biotic factors and the evolution of crop varieties in stress environments
Characterizing farmers and farmer communities who maintain crop genetic diversity, economic assessment, policies and legal frameworks
Chapters 11 and 12 (Processes and interventions)

Farmer management of evolutionary processes, the partnerships needed among individuals and institutions, and mobilizing CBOs for concrete actions, and a portfolio approach to interventions
Chapter 13 (The future of traditional varieties)

- Productivity in low input environments, extreme temperatures and water, degraded soils
- Unpredictable fluctuations in temperature, rainfall, frost, pest, disease,
- Growing consumer demand for diverse and natural food-based products
- Interested of communities to retain control over their crop resource
Dedication and Acknowledgements

To the many participants whose names and affiliations may not appear in this volume; numerous farmers, communities, development workers, educators researchers, and government officials collaborated in the work presented in this work, and it is only through their efforts that this book is possible.