



The International Treaty

ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE



Introduction to the International Treaty on Plant Genetic Resources for Food and Agriculture





The International Treaty

ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE



Introduction to the International Treaty on Plant Genetic Resources for Food and Agriculture

常州大学图书馆
藏书章

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome, 2011

First Edition, February 2011

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

The views expressed in this information product are those of the author(s) and do not necessarily reflect the views of FAO.

ISBN 978-92-5-107165-6

All rights reserved. FAO encourages reproduction and dissemination of material in this information product. Non-commercial uses will be authorized free of charge, upon request. Reproduction for resale or other commercial purposes, including educational purposes, may incur fees. Applications for permission to reproduce or disseminate FAO copyright materials, and all queries concerning rights and licences, should be addressed by e-mail to copyright@fao.org or to the Chief, Publishing Policy and Support Branch, Office of Knowledge Exchange, Research and Extension, FAO, Viale delle Terme di Caracalla, 00153 Rome, Italy.

© FAO 2012

Foreword

Humanity is facing the interconnected challenges of food security, climate change and the loss of agricultural biodiversity. Over one billion people are suffering from chronic hunger and malnutrition. At the same time, world population continues to grow and climate change is causing new pressures on agriculture. World food production has to increase by 70 percent by 2050 to meet this increasing demand, while relying on a natural resource base that is about to reach its limits. Plant breeding will be essential to meet the food security challenge in the context of climate change. Crop varieties that achieve significantly higher yields and that are able to withstand new diseases and extreme weather events will have to be developed. For this, it is crucial to conserve the existing crop diversity, and to allow agricultural researchers, breeders and farmers access to it.

With the International Treaty on Plant Genetic Resources for Food and Agriculture (hereafter “International Treaty”) the international community has created a powerful tool to tackle this triple challenge. The International Treaty provides national authorities with the legal framework to take action for the conservation and the sustainable use of their crop diversity. Moreover, it has established a mechanism that facilitates international exchanges of crop genetic material, and a fund that supports projects for the conservation and the sustainable use of crop diversity worldwide.

The translation of the provisions of the International Treaty into effective measures at the national level is fundamental for the International Treaty to live up to its full potential. The need for capacity building and training to that end has been voiced by a large number of Contracting Parties and various stakeholder groups. This educational module is one means by which the Secretariat seeks to strengthen capacities on the operation of the International Treaty.

This introduction module is the first in a series of a total of five educational modules. Its lessons are aimed at a broad target learner group, especially at learners that are new to the International Treaty. The subsequent modules (which are currently under development) will enter into detail about the main components of the International Treaty. Each of these modules will be built up by several self-contained lessons which are designed for specific target learner groups.

This module is the result of a participatory process involving a broad range of experts. A support group has provided guidance in shaping the outline of the different lessons through an electronic consultation process. Its lessons have been prepared by the Secretariat with the help of peer reviewers of different stakeholder groups. The lessons of the subsequent modules are being both written and reviewed by external experts, under the overall coordination of the Secretariat. The final series will include additional support material, including exercises and customizable presentations for trainers.

We are confident that these training materials will substantially contribute to the effective implementation of the International Treaty.


Shakeel Bhatti
Secretary

International Treaty on Plant Genetic Resources for Food and Agriculture

LESSON 1

A Global Treaty for Food Security in an Era of Climate Change

Page 1

This lesson exhibits the importance of the International Treaty as a policy vehicle to tackle some of the major global challenges humanity is currently facing: climate change, food security and the loss of crop diversity. It provides up-to-date overviews of trends and scenarios for all three challenges, and shows how the main components of the International Treaty contribute to cope with these.

LESSON 2

Objectives, Scope and Basic Concepts

Page 27

Lesson 2 is especially designed for learners that are completely new to the International Treaty. It lays down the basics of the International Treaty, including the main advantages of being a Contracting Party. The second part of the lesson provides a glossary of key terms and concepts. This glossary will be useful for the full comprehension of the learning module and the International Treaty, in particular to learners who do not have a technical background in the biodiversity policy area.

LESSON 3

History of the International Treaty

Page 57

For those learners that are interested in a little more background on the origins of the International Treaty, this lesson goes back to the middle of the 20th century. It presents the socio-economic factors that led to the adoption of a first instrument for the conservation and sustainable use of crop diversity in the early 1980s. The lesson then shows how negotiations on this instrument were reopened in the 1990s, in order to culminate after seven long years in the adoption of the International Treaty.

LESSON 4

Main Components and Governance of the International Treaty

Page 89

Lesson 4 provides learners with a solid knowledge base on the four main components of the International Treaty: (1) Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture, (2) Farmers' Rights, (3) the Multilateral System of Access and Benefit-sharing and (4) the Funding Strategy. The lesson thereby also provides the starting point for the subsequent modules of this series, each of which will be dedicated to the in-depth study of one of those main components.

LESSON 5

The Legal Architecture Governing Crop Diversity and Partnerships for Implementation

Page 123

This lesson illustrates the broader international legal framework within which the International Treaty operates. It introduces other international agreements of relevance to the policy area of crop diversity and the International Treaty that deal with conservation and sustainable use, access and benefit-sharing and intellectual property rights. The lesson also presents some of the major partnerships that the Governing Body of the International Treaty and its Secretariat maintain with other international institutions and bodies.



Acknowledgements

The realization of this educational module was possible thanks to the generous funding of Switzerland, Italy and Spain. The module was elaborated under the leadership of the Secretariat. However, its development would not have been possible without the advice and guidance from many people that have shared their technical knowledge and devoted a share of their time on a voluntary basis.

We learned a lot from a number of experts about the conceptualization of training materials and different approaches for their development at the outset of our work. Their inputs were fundamental for the further development of the educational module. In this regard, we would like to thank especially Elizabeth Goldberg from Bioversity International, Carl-Gustav Thornström from the Swedish University of Agricultural Sciences, Kakoli Ghosh from the FAO Plant Production and Protection Division, Mauricio Rosales from the FAO Right to Food Unit and Ruth Charrondière from the FAO Nutrition and Consumer Protection Division.

We were able to set up and actively involve an external support group in the elaboration of the final outline of the module. Our special thanks go to these experts that have been part of this process over several months, providing us with very useful feedback. The members of the support group were Gerald Moore from Bioversity International, Regine Andersen from the Fridtjof Nansen Institute, Kirsty McLean from the United Nations University, Bert Visser from Wageningen University, Wilhelmina Pelegrina from Southeast Asia Regional Initiatives for Community Empowerment and Clair Hershey from the FAO Global Partnership Initiative for Plant Breeding Capacity Building.

We express our gratitude to those experts that have devoted a share of their time to reviewing the lessons of this educational module. Alois Leidwein from the Austrian Agency for Health and Food Safety and David Hegwood from USAID provided comments on lesson 1. Andrew Mushita and Regis Mafuratidze from the Community Technology Development Trust and François Burgaud from the French Association for Seeds and Seedlings provided comments on lesson 2. Lesson 3 was reviewed by Lim Eng Siang, Marie Schloen and Patrick Mulvany. Lesson 4 was reviewed by Grethe Evjen from the Royal Ministry of Agriculture and Food of Norway and François Meienberg from the Berne Declaration. Riccardo Bocci from the Technical and Scientific Branch of the Italian Ministry of Foreign Affairs and Elcio Guimaraes from the International Center for Tropical Agriculture offered comments on lesson 5.

Invaluable support was provided by Désirée Khoury for proofreading and editing, and Nadia Pellicciotta for layout and design.

Finally, we are grateful to all colleagues from the Secretariat for their contribution to the development of this educational module, and for their valuable comments on its contents. Thanks go especially to Francisco López, Mario Marino, Harvey Duthie, Álvaro Toledo, Kent Nnadozie, Daniele Manzella, Juanita Chaves and Xuan Li.

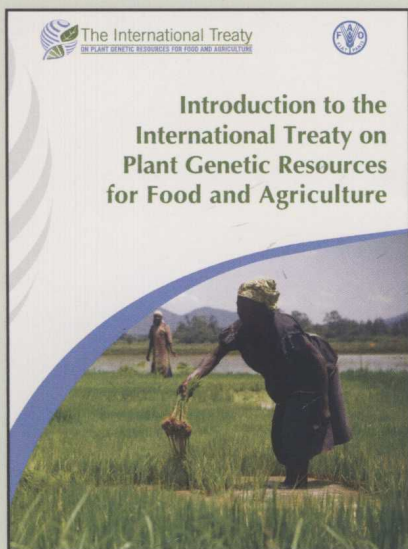
Patrick Mink from the Secretariat was the lead author and editor of the entire module.

Shakeel Bhatti, Secretary of the International Treaty, had the overall responsibility for this publication.

Acronyms and Abbreviations

ABS	Access and benefit-sharing
AGP	Plant Production and Protection Division (FAO)
Bonn Guidelines	Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization
CBD	Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
CGIAR Centres	International Agricultural Research Centres of the Consultative Group on International Agricultural Research
Code of Conduct	International Code of Conduct for Plant Germplasm Collecting and Transfer
Commission	Commission on Genetic Resources for Food and Agriculture (FAO; until 1995 "Commission on Plant Genetic Resources")
Crop Trust	Global Crop Diversity Trust
CWR	Crop Wild Relatives
FAO	Food and Agriculture Organization of the United Nations
GIPB	Global Partnership Initiative for Plant Breeding Capacity Building
Global Plan of Action	Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture
Governing Body	Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture
IFAD	International Fund for Agricultural Development
International Treaty	International Treaty on Plant Genetic Resources for Food and Agriculture
International Undertaking	International Undertaking on Plant Genetic Resources
IPCC	Intergovernmental Panel on Climate Change
IPR	Intellectual Property Rights

Joint Programme	FAO/Bioversity International Joint Programme for Capacity Building
MAT	Mutually agreed terms
Multilateral System	Multilateral System of Access and Benefit-sharing (of the International Treaty on Plant Genetic Resources for Food and Agriculture)
Nagoya Protocol	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity
NordGen	Nordic Genetic Resource Centre
PBR	Plant Breeders' Right
PIC	Prior informed consent
PGRFA	Plant Genetic Resources for Food and Agriculture
Secretariat	Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture
SMTA	Standard Material Transfer Agreement
State of the World Report	Report on the State of the World's Plant Genetic Resources for Food and Agriculture
Strategic Plan	Strategic Plan for the Implementation of the Benefit-sharing Fund of the Funding Strategy
TRIPS Agreement	Agreement on Trade-Related Aspects of Intellectual Property Rights
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UPOV	International Union for the Protection of New Varieties of Plants
UPOV Convention	International Convention for the Protection of New Varieties of Plants
WIPO	World Intellectual Property Organization
WIPO IGC	WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore
WTO	World Trade Organization



Module I - Introduction to the International Treaty on Plant Genetic Resources for Food and Agriculture

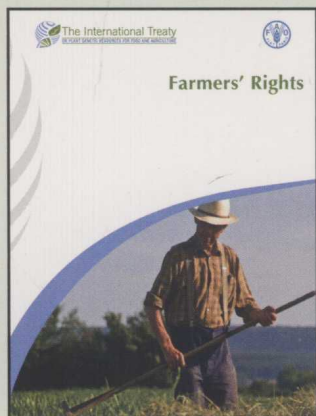
Module I outlines the main components of the International Treaty in the context of current global challenges and the broader legal framework governing crop diversity.

Providing learners with key concepts and historical background, the lessons are especially designed for newcomers to the crop diversity policy area. Module I constitutes a comprehensive introduction to the International Treaty and forms the basis for the lessons of the forthcoming educational modules.

The full series will also comprise the following modules:

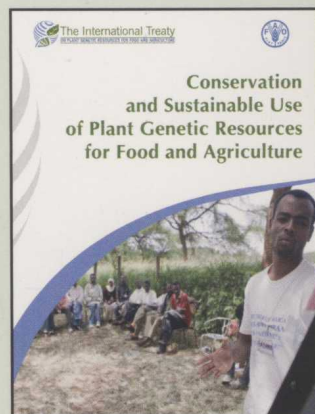
Module II - Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture

This module will elaborate on the measures the International Treaty foresees to promote the conservation and sustainable use of crop diversity and illustrate a number of concrete examples to this end.



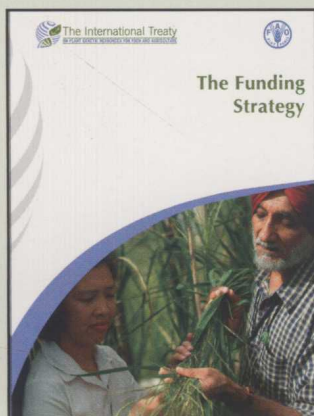
Module III - Farmers' Rights

Module III will present the provisions of the International Treaty that deal with the rights of farmers with regard to crop diversity and provide examples of the realization of Farmers' Rights in different national settings.



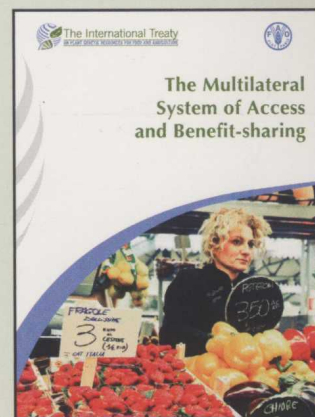
Module IV - The Multilateral System of Access and Benefit-sharing

This module will explain the operation of the Multilateral System of Access and Benefit-sharing, with a special focus on the Standard Material Transfer Agreement used in exchanges of genetic material.



Module V - The Funding Strategy

Module V will present the Funding Strategy for the realization of the objectives of the International Treaty, with a focus on the Benefit-sharing Fund which supports activities for the conservation and sustainable use of crop diversity in developing countries.



This module has been supported by the Governments of Switzerland, Italy and Spain. For information on opportunities to contribute to the realization of the forthcoming modules of this series please contact the Secretariat of the International Treaty. Donor recognition in all produced materials will be guaranteed. See contact details on the back of this publication.

A Global Treaty for Food Security in an Era of Climate Change



LESSON 1



Learning objectives

At the end of this lesson, the learner will:

- have an overview of the global challenges of crop diversity loss, food security and climate change;
- understand how these three challenges are interlinked;
- be familiar with the special nature of crop diversity compared to other components of biodiversity and understand why this calls for a special set of regulations; and
- know how the International Treaty addresses the triple challenge of crop diversity loss and food security in the context of climate change.



Target learner groups

Newcomers to the International Treaty and the policy area of crop diversity from all target learner groups (including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers' organizations and other civil society organizations, media, academia, prospective donors and other interested institutions).



Triticum durum, durum wheat, by Elizabeth Blackwell (1739)

Table of Contents

1.1. Overview of the Lesson 5

PART ONE

1.2. An Introduction to the Global Challenges of the 21st Century 6

1.2.1. Crop Diversity 6

Basic Facts..... 6

1.2.2. Food Security..... 7

Basic Facts..... 7

The Importance of Crop Diversity for Plant Breeding and Food Security 8

1.2.3. Climate Change 9

Basic Facts..... 9

Impacts on Crop Production..... 10

Importance of Crop Diversity for Adaptation to Climate Change..... 11

1.2.4. The Interlinkages of Crop Diversity, Food Security and Climate Change 11

PART TWO

1.3. The International Treaty - a Key Instrument to Cope with Global Challenges 14

1.3.1. The Special Nature of Agricultural Crops..... 14

Reliance on Human Management 14

Countries' Interdependence on Agricultural Crop Varieties..... 15

1.3.2. The Policy Contribution of the International Treaty..... 17

In its Objectives 17

In its Main Components..... 17

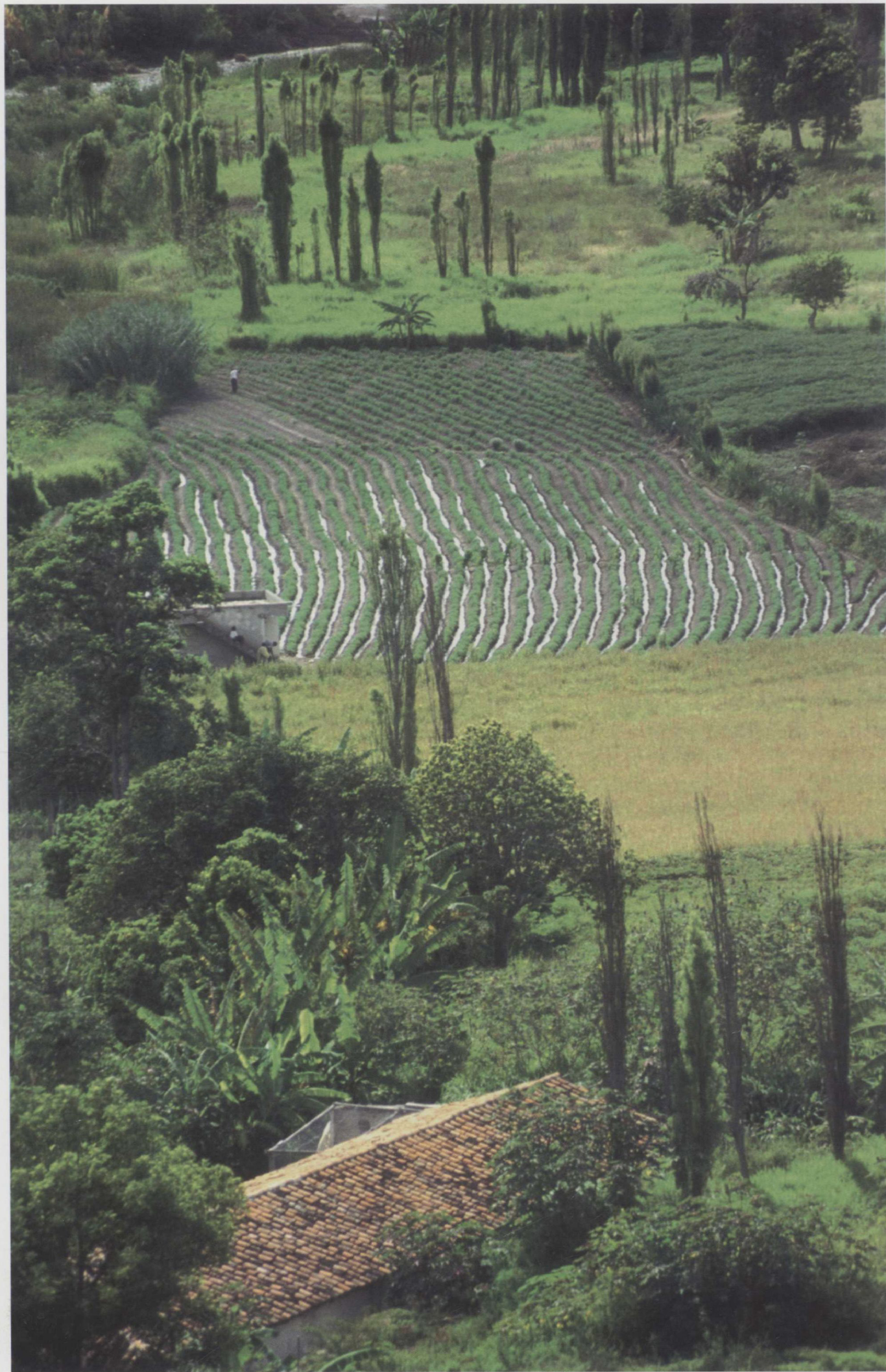
1.4. Conclusive Summary 23

1.5. Bibliographic References 24

WORLD

Introduction to the International Treaty on Plant Genetic Resources for Food and Agriculture





1.1. Overview of the Lesson

This lesson showcases the importance of the International Treaty on Plant Genetic Resources for Food and Agriculture (hereafter “International Treaty”) for coping with the global challenges of crop diversity loss, food security and climate change.

By laying down the importance of the conservation and the sustainable use of crop diversity to food security and therefore to human survival – all the more in the context of climate change – the lesson highlights how the three issues are closely interlinked. It will become clear that a multilateral policy solution is needed to counter these problems that threaten humanity as a whole.

The fact that climate change has far-reaching impacts on agriculture does not yet seem to be fully reflected in climate change discussions and negotiation forums. This lesson therefore focuses on the impacts of climate change on crop production, and on the crucial role of crop diversity for climate change adaptation in agriculture. It further shows how the International Treaty facilitates adaptation through its four main components:

- Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture;
- Farmers’ Rights;
- The Multilateral System of Access and Benefit-sharing; and
- The Funding Strategy.

The first part of the lesson provides an up-to-date overview of trends and scenarios of the three challenges. Building on that, the second part starts by presenting the rationale for a specific multilateral policy framework for crop diversity. The main components of the International Treaty will be introduced to highlight their importance for countering the loss of crop diversity and using it more effectively to achieve and maintain food security under the growing pressures of climate change.

After completion of this lesson the learner will be fully aware of the policy relevance of the International Treaty. He or she will also acquire a notion of the policy tools the International Treaty offers to cope with the global challenges of the 21st century. In addition, the brief overview of the International Treaty’s main components constitutes an introduction to lesson 4 of this module (Main Components and Governance of the International Treaty).



1.2. An Introduction to the Global Challenges of the 21st Century

1.2.1. Crop Diversity

Basic Facts

In the 1950s, plant breeders were the first to start using the term ‘genetic erosion’, indicating the gradual but serious loss of crop diversity. Interestingly enough, the emergence of the term coincided with the adoption of major changes in agricultural production systems globally to keep up with the growing world population. In the course of this process – which came to be commonly referred to as the ‘Green Revolution’ – many traditional crop varieties were replaced by modern improved varieties. In combination with industrial fertilizers and pesticides, these improved varieties brought about the significantly higher crop yields that were urgently needed at that time.

The replacement of traditional crop varieties by modern varieties was and remains one of the major factors affecting crop diversity in production systems.¹ Recent research confirms that genetic erosion did indeed take place at the time of the shift from traditional to more intensified production. In contrast to traditional farming systems where agricultural inputs were mainly produced by farmers, the modern production systems required farmers to purchase improved seeds, fertilizers and pesticides as external inputs. As a consequence, the practice of saving seed for subsequent cultivation was broadly abandoned and many locally adapted varieties were lost. In the decades that followed, other factors directly and indirectly linked to the Green Revolution further contributed to the loss of diversity between and within crops.



Courtesy Flickr/Nicholas T.

¹ FAO (2010), p. 44.





Such factors included the mechanization of production processes, the increasing corporate concentration in the seed industry, the opening of agricultural markets to international trade, uniformity requirements set by the food industry and a growing homogenization of food cultures worldwide.²

According to the Food and Agriculture Organization of the United Nations (FAO), more than 75 percent³ of global crop diversity has disappeared irrevocably over the 20th century!⁴ Some progress has been achieved over the last decade with regard to the conservation of samples of crop varieties in gene banks. The state of crop diversity in farmers' fields and in natural surroundings, however, is far less clear and remains a cause for concern for numerous crops in most countries. Notably, a large number of wild relatives of important food crops are likely to disappear over the next decades due to climate change.⁵

1.2.2. Food Security

Basic Facts

FAO member states define food security as achieved when all people, at all times, have access⁶ to sufficient food to meet their dietary needs and food preferences for an active and healthy life.⁷ A glimpse at the current reality is enough to understand that this goal is still far from being achieved and that food security remains a main challenge over the coming decades: out of a total world population of more than 6.8 billion today, over one billion people suffer already from chronic hunger and malnutrition. And the world population is projected to further grow to reach over 9 billion people by 2050. This population growth, coupled with other trends such as rising incomes in emerging countries and increasing urbanization, implies that global food production will have to grow by as much as 70 percent during the same period!⁸

Key points to remember:

- Genetic erosion describes the loss of genetic diversity – both the loss of specific traits within a variety, as well as the loss of entire varieties and species.
- More than 75 percent of global crop diversity has been lost irrevocably over the 20th century.
- Main factors that contributed to this genetic erosion include the following:
 - Replacement of locally adapted varieties by higher-yielding, more uniform varieties;
 - Shift from traditional to intensified production systems;
 - Seed became an external input in agricultural production;
 - Concentration of the global seed industry;
 - International trade in agricultural markets; and
 - Uniformity requirements of the food industry and homogenization of food cultures.

² Visser (2009), pp. 2-3.

³ FAO (2004).

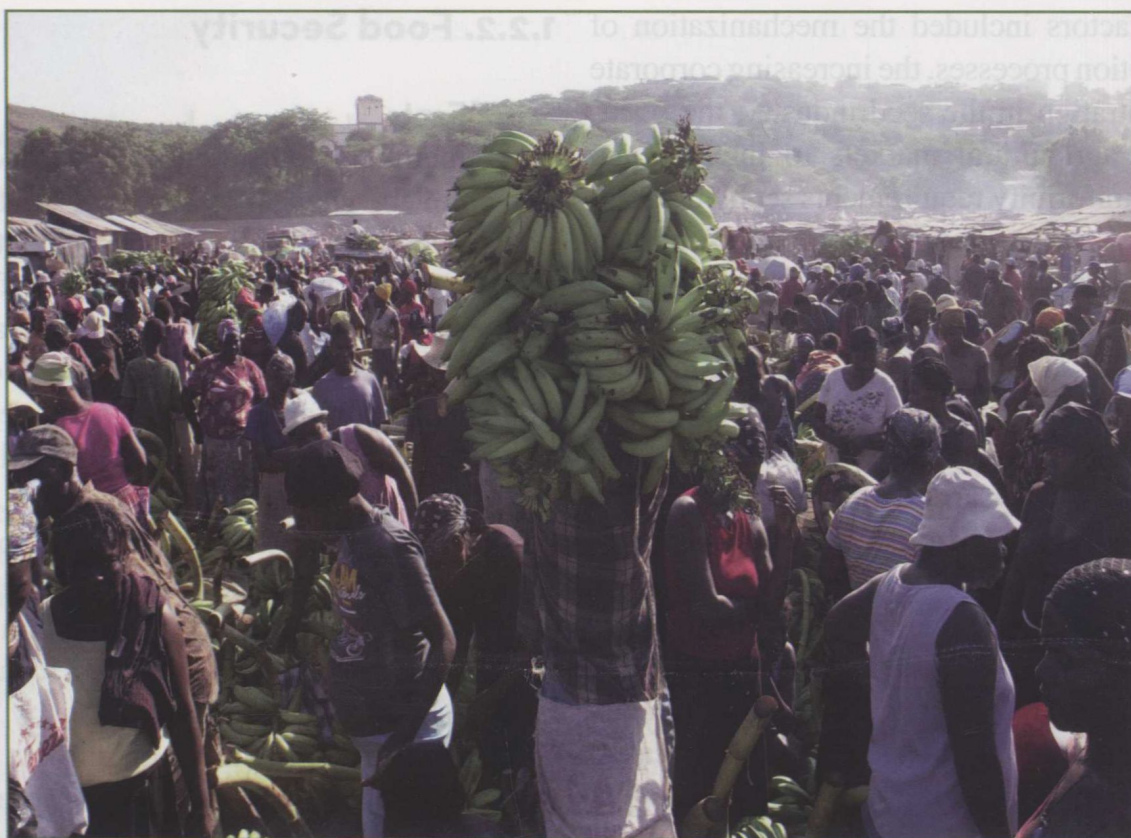
⁴ In South Korea, for example, 74 percent of the most common crop varieties in 1985 had been replaced by 1993, and of the 10 000 wheat varieties in use in China in 1949, only 1000 were still being cultivated in the 1970s.

⁵ FAO (2010), chapter 1, pp. 3-22.

⁶ This includes physical, social and economic access, to food that is both safe and nutritious.

⁷ FAO (2009c), p. 1, footnote 1.

⁸ FAO (2009a), p. 2.



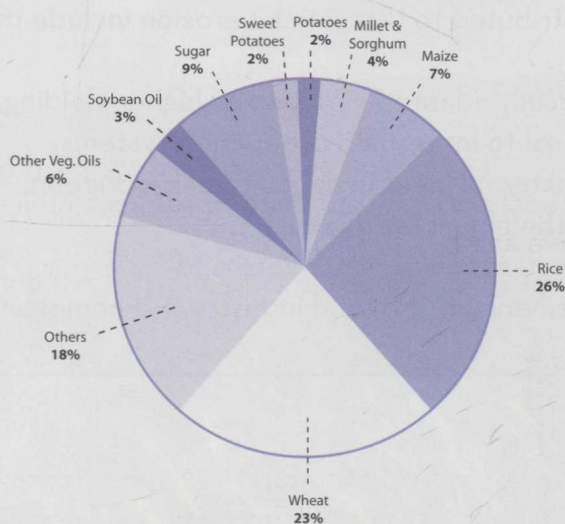
© FAO/Thony Belzair

The Importance of Crop Diversity for Plant Breeding and Food Security

Plant products account for the vast proportion of the world's food supply. Overall, 84 percent of human nutrition comes from plants. In Asia and the Pacific, the Near East and Africa plants provide around 90 percent

of the average human diet. In Latin America and the Caribbean the figure is about 80 percent, and in Europe and North America it tends towards 75 percent.⁹ However, humanity has become dangerously reliant on only a few different crops. Out of the 10 000 to 12 000 known edible plant spe-

Figure 1.1: Most Important Crops for Food Energy Supply



Source: The State of the World's Plant Genetic Resources for Food and Agriculture.¹⁰

⁹ Africa 93 percent, Asia and the Pacific 87 percent, Near East 88 percent, Europe 72.5 percent, Latin America and the Caribbean 81 percent, North America 73 percent. See footnote reference 10.

¹⁰ FAO (2001a).