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**PROGRESS REPORT OF THE FAO ON SELECTED ACTIVITIES RELATED TO
AGRICULTURAL BIODIVERSITY**

1. The Executive Secretary is circulating herewith, for the information of participants of the fourteenth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice, the progress report of the Food and Agriculture Organization of the United Nations on selected activities related to agricultural biodiversity, as submitted by the Food and Agriculture Organization of the United Nations. The report is circulated in the form and language in which it was received by the Secretariat.

* UNEP/CBD/SBSTTA/14/1.

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TABLE OF CONTENTS

PURPOSE.....	3
PART I: COMPONENTS OF AGRICULTURAL BIODIVERSITY.....	3
1.1 Plant Genetic Resources for Food and Agriculture.....	3
1.2 Animal Genetic Resources for Food and Agriculture.....	4
1.3 Aquatic Genetic Resources Managed in the Context of Farming Systems.....	5
1.4 Forest Genetic Resources for Food and Agriculture.....	5
1.5 Overview of Micro-organisms and Invertebrates for Food and Agriculture	6
PART II: INTERNATIONAL INITIATIVES.....	6
2.1 International Initiative for the Conservation and Sustainable Use of Pollinators	7
2.2 International Initiative Conservation and Sustainable Use of Soil Biodiversity.....	7
2.3 Cross-cutting Initiative on Biodiversity for Food and Nutrition.....	7
2.4 Access and Benefit-Sharing for Genetic Resources for Food and Agriculture.....	8
PART III: THE CONSERVATION AND SUSTAINABLE USE OF AGRICULTURAL BIODIVERSITY.....	10
3.1 Sustainable agriculture through an ecosystem approach	10
3.2 Climate change.....	11

PURPOSE

The purpose of this paper is to provide additional information on selected aspects of FAO's work on agricultural biodiversity, to complement the Working Paper UNEP/CBD/SBSTTA/14/11.

PART I: COMPONENTS OF AGRICULTURAL BIODIVERSITY

FAO's Commission on Genetic Resources for Food and Agriculture (CGRFA) oversees the publication of state-of-the-world reports on genetic resources in the different sectors of food and agriculture, including plant, animal, forest and aquatic genetic resources for food and agriculture. These reports contribute to the development of the first State of the World's Biodiversity for Food and Agriculture, which will be presented at the 16th Regular Session of the CGRFA, as planned in the CGRFA's Multi-year Programme of Work. These assessment reports also provide the basis for the development of global plans of action for the conservation and sustainable use of biodiversity for food and agriculture. The CGRFA also develops cross-sectoral programme areas that integrate climate change and the ecosystem approach to biodiversity management into the work on agriculture, forestry and fisheries.

1.1 Plant Genetic Resources for Food and Agriculture

The Report on the *State of the World's Plant Genetic Resources for Food and Agriculture* provides a comprehensive overview on the status and trends of the conservation and use of plant genetic resources at the national, regional and global levels. The report is a periodic assessment of the world's plant genetic resources for food and agriculture that is prepared through a participatory, country-driven process that also involves relevant international organizations. It facilitates the analysis of changing needs and gaps and contributes to the adjustment of the rolling *Global Plan of Action for the Conservation and Sustainable Utilization of on Plant Genetic Resources for Food and Agriculture* (Global Plan of Action).

The Commission on Genetic Resources for Food and Agriculture, at its Twelfth Session (Rome, 18-23 October 2009) endorsed the *Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture* (Second Report) as the authoritative assessment of this sector. The Second Report which is based on country reports, information gathering processes and thematic studies focuses on changes that have occurred since 1996 when the *First Report on the State of the World's Plant Genetic Resources for Food and Agriculture* was prepared by FAO.

The Second Report identifies the most significant gaps and needs, in order to provide a sound basis for updating the rolling Global Plan of Action. The report contains up-to-date information on: the state of diversity; the state of *in situ* management; the state of *ex situ* conservation; the state of use; the state of national programmes, training needs, and legislation; the state of regional and international collaboration; access to plant genetic resources, sharing of benefits derived from their use and farmers' rights; and the contribution of PGRFA to food security and sustainable development.

Document UNEP/CBD/SBSTTA/14/INF/32 provides additional information on the preparation of the Second Report on the *State of the World's Plant Genetic Resources for Food and Agriculture*, and on the process for updating the *Global Plan of Action for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture*.

Relevant recent documents that deal with plant genetic resources for food and agriculture include:

- *Report of the Fourth Session of the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture, by the Commission on Genetic Resources for Food and Agriculture (2009)*¹
- *Report of the Twelfth Regular Session of the Commission on Genetic Resources for Food and Agriculture (2009)*²
- *Strengthening information on plant genetic resources in Asia (2009)*³

1.2 Animal Genetic Resources for Food and Agriculture

The *Global Plan of Action for Animal Genetic Resources*, the first internationally agreed framework for the management of livestock biodiversity, was adopted in 2007 at the first International Technical Conference on Animal Genetic Resources for Food and Agriculture held in Interlaken, Switzerland.⁴ It was subsequently endorsed by the 34th FAO Conference. FAO's current work on animal genetic resources for food and agriculture (AnGR) focuses on supporting countries in their implementation of the *Global Plan of Action*. A set of guideline publications addressing various aspects of AnGR management is being prepared. To date, guidelines on *Preparation of national strategies and action plans for animal genetic resources*⁵ and *Breeding strategies for sustainable management of animal genetic resources*⁶ have been endorsed by the Commission on Genetic Resources for Food and Agriculture and published. Guidelines on development of institutional frameworks supporting the implementation of the *Global Plan of Action*, surveying and monitoring, phenotypic characterization, molecular genetic characterization, animal identification and performance recording, cryoconservation and in vivo conservation are being prepared. FAO's capacity-building work includes supporting the establishment of regional focal points for AnGR and providing training based on the various guideline publications as they become available.

In October 2009, at its Twelfth Regular Session, the Commission on Genetic Resources for Food and Agriculture adopted a funding strategy for the *Global Plan of Action* and requested FAO to implement it. The Commission urged donors to enhance financial support for the implementation of the *Global Plan of Action*. The Commission also agreed a schedule for reporting on progress in the implementation of the *Global Plan of Action*. It requested FAO to produce synthesis progress reports on a four-yearly cycle, based on reports provided by individual countries. It also requested FAO to prepare status and trends reports on AnGR for each regular session of the Commission following the template of a first report prepared in 2009⁷. FAO continues to manage and develop the Domestic Animal Diversity Information System (DAD-IS).⁸ Regular updating by countries of their data in DAD-IS is fundamental to monitoring of the status and trends of AnGR globally and a prerequisite for management. This, in turn, requires regular collection of breed population data at country level. A module for describing breeds' production environments is being implemented in DAD-IS.

Other recent FAO publications on the management of AnGR include *Adding Value to Livestock Diversity – marketing to promote local breeds and improve livelihoods*⁹, *Livestock Keepers – guardians of*

¹ <http://www.fao.org/docrep/meeting/018/k5700e.pdf>

² <ftp://ftp.fao.org/docrep/fao/meeting/017/k6536e.pdf>

³ <ftp://ftp.fao.org/docrep/fao/012/aj488e/aj488e00.pdf>

⁴ <http://www.fao.org/docrep/010/a1404e/a1404e00.htm>

⁵ <http://www.fao.org/docrep/012/i0770e/i0770e00.htm>

⁶ www.fao.org/docrep/012/i1103e/i1103e00.htm

⁷ <ftp://ftp.fao.org/docrep/fao/meeting/016/ak220e.pdf>

⁸ <http://www.fao.org/dad-is>

⁹ <http://www.fao.org/docrep/012/i1283e/i1283e00.htm>

*biodiversity*¹⁰ and a forthcoming book on the role of farmers and pastoralists in maintaining biodiversity in the South Caucasus. The *State of the World's Animal Genetic Resources for Food and Agriculture*¹¹ has been translated into Arabic, Chinese, French, Russian and Spanish. In addition, several countries have prepared, or are preparing, local language versions of the *Global Plan of Action*, the “in brief” version of the *State of the World*,¹² or the guidelines on the development of national strategies and action plans.

1.3 Aquatic Genetic Resources Managed in the Context of Farming Systems

FAO's Code of Conduct for Responsible Fisheries uses an ecosystem approach to fisheries and aquaculture, which will help to reach an improved and more sustainable economic, social and environmental contribution of the fisheries sector. One of the main concerns in the aquaculture sector, which contributed 36% of global supplies of fish, crustaceans, molluscs and other aquatic animals in 2008, is genetic in nature. This concern is linked to the creation and use of composite populations of aquaculture species – mixing of two species from the same family of fish. If these species escape or be reintroduced in the wild, they can reproduce with the parent populations and change their genetic composition; this causes a genetic breakdown of wild stocks and the unique genetic diversity.

One of the targets of the FAO Code of Conduct for Responsible Fisheries is to promote the conservation of aquatic genetic diversity, maintaining the integrity of aquatic communities and ecosystems, and responsible use of living aquatic resources at all levels, including the genetic level. Ecosystem approaches to the development of responsible aquaculture and capture fisheries also emphasize management of fish genetic resources.

Recent FAO publications and study papers that are relevant to aquatic genetic resource include:

- *State of the World Fisheries and Aquaculture 2008 (2009)*.¹³
- *FAO Technical Guidelines for Responsible Fisheries: Aquaculture Development: 3. Genetic Resource Management (2008)*.¹⁴
- *The use and exchange of aquatic genetic resources for food and agriculture (CGRFA-2009)*.¹⁵
- *Best practices to support and improve the livelihoods of small-scale fisheries and aquaculture households (2009)*.¹⁶
- *Climate change implications for fisheries and aquaculture: Overview of current scientific knowledge (2009)*.¹⁷
- *Ecosystem approach to fisheries and aquaculture: Implementing the FAO Code of Conduct for Responsible Fisheries (2009)*.¹⁸

1.4 Forest Genetic Resources for Food and Agriculture

Genetic diversity provides the fundamental basis for the evolution of forest tree species and for their adaptation to ever changing conditions. FAO has for many decades acknowledged the importance of forest genetic resources, and activities on these resources are an integral part of the FAO Forestry Programme,

¹⁰ <http://www.fao.org/docrep/012/i1034e/i1034e00.htm>

¹¹ <http://www.fao.org/docrep/010/a1250e/a1250e00.htm>

¹² <http://www.fao.org/docrep/010/a1260e/a1260e00.htm>

¹³ <http://www.fao.org/docrep/011/i0250e/i0250e00.htm>

¹⁴ <http://www.fao.org/docrep/011/i0283e/i0283e00.htm>

¹⁵ <ftp://ftp.fao.org/docrep/fao/meeting/017/ak527e.pdf>

¹⁶ <http://www.fao.org/docrep/012/i0513e/i0513e00.htm>

¹⁷ <http://www.fao.org/docrep/012/i0994e/i0994e00.htm>

¹⁸ <ftp://ftp.fao.org/docrep/fao/012/i0964e/i0964e00.pdf>

including: sustainable forest management, tree breeding and plantation development, and protected areas management, national forest programmes, and the global forest resources assessment.

Forest Genetic Resources was one of the topics during the Twelfth Session of The Commission on Genetic Resources for Food and Agriculture (CGRFA) in 2009. During this meeting the importance of forest genetic resources for food security, poverty alleviation and environmental sustainability were emphasized. The Commission further stressed the urgency to address the need to conserve and sustainably use forest genetic resources and approved the inclusion of The State of the World's Forest Genetic Resources in its Multi-Year Programme of Work, which will be presented during in 2013.¹⁹

Selected FAO publications and study papers that deal with the issue of forest genetic resource include:

- *The use and exchange of forest genetic resources for food and agriculture – Background study paper 44 of CGRFA-12 (2009).*²⁰
- *State of the World's Forests 2009 (2009).*²¹

Additional publications can be found at <http://www.fao.org/forestry/fgr/publications/en/>.

1.5 Overview of Micro-organisms and Invertebrates for Food and Agriculture

Micro-organisms and invertebrates together form the most numerous group of species on our planet. Invertebrates include the diversity of insects, arachnids, springtails, earthworms and several others, micro-organisms comprise yeasts, bacteria and fungi. These species contribute heavily to agricultural production, through for example pollination, symbiosis with roots, and through biological pest control. Two scoping studies have been prepared by FAO for the 12th Regular Session on the Commission on Genetic Resources for Food and Agriculture (CGRFA), namely, on micro-organisms and invertebrates.

The scoping study on invertebrates²² considers the importance of invertebrates for food and agriculture. It briefly describes their main functions and services in agricultural ecosystems, and provides an overview of the current work of international organisations that are actively involved in better understanding and managing invertebrate resources. Another background study paper of the Twelfth Session of the CGRFA is 'The Use and Exchange of Biological Control Agents for Food and Agriculture'²³, and deals with the genetic diversity that provides biological control. The scoping study on micro-organisms²⁴ considers the importance of micro-organisms for food and agriculture. It briefly describes some of their main functions and services throughout the food chain, and gives an overview of the current policies and programmes of international organisations, including culture collections, that are actively involved in the field of microbial genetic resources for food and agriculture.

PART II: INTERNATIONAL INITIATIVES

¹⁹ <ftp://ftp.fao.org/docrep/fao/meeting/017/k6536e.pdf>

²⁰ <ftp://ftp.fao.org/docrep/fao/meeting/017/ak565e.pdf>

²¹ <http://www.fao.org/docrep/011/i0350e/i0350e00.htm>

²² Main functions and services provided by invertebrates relevant to food and agriculture
<ftp://ftp.fao.org/docrep/fao/meeting/017/ak534e.pdf>

²³ <ftp://ftp.fao.org/docrep/fao/meeting/017/ak569e.pdf>

²⁴ Main Functions and Services provided by Micro-Organisms relevant to Food and Agriculture
<ftp://ftp.fao.org/docrep/fao/meeting/017/ak536e.pdf>

2.1 International Initiative for the Conservation and Sustainable Use of Pollinators

Through its Global Action on Pollination Services for Sustainable Agriculture, FAO has been, in collaboration with national and international partners, undertaking instrumental work in furthering the implementation of the International Initiative for the Conservation and Sustainable Use of Pollinators (IPI), and advancing the conservation and sustainable use of pollinators. It is achieving this in all four elements of the IPI Plan of Action (assessment, adaptive management, capacity building and mainstreaming).

Some examples of this work include developing and disseminating: knowledge management of pollination services through the development of the Pollination Information Management System (PIMS); best practice profiles for management of pollination services from around the world (available as the “Initial survey of good pollination practices”); as well as overcoming the taxonomic impediment to pollinator conservation and use (such as through the development of bee keys).

Document UNEP/CBD/SBSTTA/14/INF/31 provides more details of the work of FAO, in collaboration with other partners from the international community, in the implementation of the International Pollinators Initiative.

2.2 International Initiative Conservation and Sustainable Use of Soil Biodiversity

A new soil biodiversity website is currently being developed, to allow for information dissemination of issues related to soil biodiversity, and contributing to the implementation of elements of the Soil Biodiversity Initiative Plan of Action.

Within the context of the FAO/UEP/GEF Land Degradation Assessment in Drylands (LADA)²⁵, the LADA local level land degradation assessment toolbox has one indicator on "presence of earthworms or evidence of soil macrofauna" as an important indicator of soil health.

2.3 Cross-cutting Initiative on Biodiversity for Food and Nutrition

FAO, within the Cross-cutting Initiative on Biodiversity for Food and Nutrition, in collaboration with Bioersity International organized two expert consultations on Nutrition Indicators for Biodiversity: 1. food composition, and 2. food consumption, in Sao Paulo, Brazil, from 24 to 27 October 2007, and Washington DC., on 8-9 June 2009, respectively. The experts defined and agreed on indicators, identified data sources and gaps, and recommended a reporting mechanism. Both reports are published in English, French and Spanish and will be made available as information documents for SBSTTA. These indicators will stimulate the generation and compilation of nutrient composition and consumption data for under-utilized and wild foods and for the different varieties and breeds, and thus provide the basis for many and nutrition activities in the future. FAO and Bioersity International also organized two training courses on “Food composition and biodiversity” in Benin (in French) and Ghana (in English) in 2009. The 29 participants formed a regional network to compile food composition tables including data on biodiversity.

FAO also published the book in 2009 *Indigenous Peoples' Food Systems: the many dimensions of culture, diversity and environment for nutrition and health* (<http://www.fao.org/docrep/012/i0370e/i0370e00.htm>) which describes 12 case studies local food systems with emphasis on biodiversity.

²⁵ <http://www.fao.org/nr/lada/>

FAO published in 2009 the *Food Composition Study Guide* (http://www.fao.org/infoods/publications_en.stm), a self-learning tool for compilers and users of food composition data which includes one module on biodiversity to stimulate compilers and researchers to investigate wild and under-utilized foods as well as food at variety or breed level.

The peer-reviewed papers from the *7th International Food Data Conference: Food Composition and Biodiversity* are published in a special issue of the Journal of Food Composition and Analysis (JFCA) <http://www.sciencedirect.com/science/issue/6879-2009-999779994-1507098>.

The AFROFOODS Regional Data Centre meeting in Senegal in December 2009, noted that the degradation of ecosystems and the loss of food biodiversity is contributing greatly to the increases in poverty and malnutrition in Africa; recognized that returning to local crops and traditional food systems is a prerequisite for conservation and sustainable use of biodiversity for food and nutrition; acknowledged that local foods are the basis for African sustainable diets; and issued “A Call for Action from the House of the Slaves” for a food renaissance with biodiversity at its core.

2.4 Access and Benefit-Sharing for Genetic Resources for Food and Agriculture

In 2009, the FAO Conference adopted Resolution 18/2009 “*Policies and arrangements for Access and Benefit-sharing for Genetic Resources for Food and Agriculture*”²⁶. The resolution is based on resolution 1/2009 which the Commission on Genetic Resources for Food and Agriculture had adopted at its Twelfth Regular Session. The resolution invites the Conference of the Parties “to take into account the special nature of agricultural biodiversity, in particular genetic resources for food and agriculture, their distinctive features, and problems needing distinctive solutions”.

The documents that had been prepared for consideration by the Commission, on the use and exchange of genetic resources for food and agriculture, were made available to the Ninth Session of the Working Group on Access and Benefit-sharing:

- *The use and exchange of microbial genetic resources for food and agriculture*
- *The use and exchange of aquatic genetic resources for food and agriculture*
- *The use and exchange of forest genetic resources for food and agriculture*
- *The use and exchange of animal genetic resources for food and agriculture*
- *The use and exchange of biological control agents for food and agriculture*
- *Framework study on food security and access and benefit-sharing for genetic resources for food and agriculture*²⁷

The Commission, at its Twelfth Regular Session, also expressed the need for intersessional work on access and benefit-sharing for genetic resources for food and agriculture. It encouraged:

- Members of the Commission to work closely with the negotiators of the International Regime on Access and Benefit-sharing in their respective countries;
- its Chair, and as practical, its Bureau Members, to participate in meetings of the Ad Hoc Open-ended Working Group on Access and Benefit-sharing and of the Conference of the Parties of the CBD;
- its Chair and Bureau Members to meet with the Co-Chairs of the Ad Hoc Open-ended Working Group on Access and Benefit-sharing and the Bureau of the Conference of the Parties of the CBD;

²⁶ See document, *Resolution 18/2009 on “Policies and Arrangements for Access and Benefit-Sharing for Genetic Resources for Food and Agriculture” adopted by the Conference of the Food and Agriculture Organization of the United Nations Conference at its Thirty-Sixth Session, on 23 November 2009 (UNEP/CBD/WG-ABS/9/INF/8)*,

²⁷ <http://www.cbd.int/wgabs9/doc/>

- the Secretariat of the Commission (and the International Treaty) to meet with the Secretariat of the CBD; and
- the involvement of the Intergovernmental Technical Working Groups in intersessional work, mindful of the need to avoid duplication of work with regard to the Ad Hoc Open-ended Working Group on Access and Benefit-sharing.²⁸

²⁸ CGRFA-12/09/Report, paragraph 13.

PART III: THE CONSERVATION AND SUSTAINABLE USE OF AGRICULTURAL BIODIVERSITY

3.1 Sustainable agriculture through an ecosystem approach

FAO manages a broad range of programmes and activities to enhance sustainable agricultural systems and management practices, for example the promotion of mixed agricultural systems such as rice-fish farming and agro-forestry; participatory training for integrated pest management; pollination management; advice on soil and water conservation; and promotion of technologies and management options of grasslands and forage resources in arid, semi-arid and humid tropical ecosystems. Managing biodiversity plays a central role in these different agricultural practices.

As an intergovernmental organization where Member Countries negotiate agreements and debate policy related to agriculture, forestry, fisheries, and nutrition within the context of global needs, priorities and change, FAO works to alleviate poverty and hunger by promoting sustainable agricultural development, improved nutrition and food security. One of its global goals is the sustainable management of natural resources. At its 36th Session in 2009, the FAO Conference adopted a new strategic framework which is a clear indication of its work on sustainable agriculture, as reflected in its Strategic Objectives - including on crops, livestock, fisheries and aquaculture resources, forests and trees, land, water and genetic resources – but also addressing other issues related to sustainable agriculture such as improved food security and better nutrition, improved quality and safety of food, and markets.

The promotion of best practices for sustainable agricultural production, using an ecosystem approach (using biodiversity and related biological processes²⁹), is another issue in which FAO is promoting the more efficient use and conservation of biodiversity for food and agriculture, including *in situ* and *ex situ* conservation. This is done through the promotion of the development of national policies and programmes (e.g. Farmers Field Schools) that use the ecosystem approach.

At the 21st Session of FAO's Committee on Agriculture (COAG), it was recognized that an ecosystem approach to agriculture and natural resource management explicitly identifies opportunities and tradeoffs, and that it can preserve or increase the capacity of an ecosystem to produce benefits for society, fairly apportion benefits and costs, and is sustainable over the longer-term. The ecosystem approach to agriculture also requires adjustments in institutional and governance arrangements that ensure informed, balanced, transparent and legitimate decision making in relation to trade-offs and stakeholder participation³⁰.

In its final report³¹, COAG stressed that an ecosystem approach be adopted in agricultural management in order to achieve sustainable agriculture, including integrated pest management, organic agriculture, and other traditional and indigenous coping strategies that promote agroecosystem diversification and soil carbon sequestration.

For the 22nd Session of COAG, a paper was prepared on “Sustainable crop production intensification through an ecosystem approach and an enabling environment: Capturing efficiency through ecosystem services and management”.

²⁹ FAO. “Increasing crop production sustainably: The perspective of biological processes”. November 2009.

³⁰ <ftp://ftp.fao.org/docrep/fao/meeting/016/k4554e.pdf>

³¹ <ftp://ftp.fao.org/docrep/fao/meeting/016/k4952e01.pdf>

Box 1: Land Degradation Assessment in Drylands (LADA)

At the national level, the Land Degradation Assessment in Drylands (LADA) is assessing interrelations between land use management practices in cropping, forestry and pasture-rangeland and mixed systems) and the condition and trends of soil, water and vegetation resources including biodiversity. The biodiversity indicators include change/loss in habitat, vegetation composition, plant species identification and plant indicator species (invasive, toxic, indicators of good and poor soil quality and pasture quality) and dynamics. The local level assessments are undertaken with land users in geographic assessment areas (GAA) selected using national level information and specific land use system (determined on the basis of biophysical and socioeconomic criteria).

Both on site and offsite impacts of Land Degradation (DA) and Sustainable Land Management (SLM) are assessed to the extent possible including impacts on ecosystem services including productive services – production, land availability, water quality and quantity; regulating and supporting services - such as nutrient and carbon cycling, hydrological regime, etc.; and socio-cultural services - products, income, adaptation, knowledge, etc.

It is expected that results of the local and national level assessments will determine interrelations between land degradation, biodiversity loss and socio- economic wellbeing, providing a basis for improved decision making and commitment in SLM including sustainable use and conservation of biodiversity in protected and human managed systems. The effects of markets will be identified to the extent that this is identified as a key driving force of land degradation in the concerned study areas and GAAs.

3.2 Climate change

FAO is working in selected countries towards increasing farmers' resilience to climate change through improved use and management of crop biodiversity. It is expected that results of the local and national level activities will determine interrelations between climate change adaptation, biodiversity use, and socio- economic wellbeing, and food security, providing a basis for improved decision making and commitment in climate change including sustainable use and conservation of biodiversity in agricultural and pastoral systems.

Recent selected FAO publications that deal with climate change and the relation with biodiversity include:

- *FAO Profile for Climate Change*³² (2009)
- *Organic agriculture and carbon sequestration: Possibilities and constraints for the consideration of organic agriculture within carbon accounting systems*³³(2010)
- *Food Security and Agricultural Mitigation in Developing Countries: Options for Capturing Synergies*³⁴ (2009)
- *Food Harvesting agriculture's multiple benefits: Mitigation, Adaptation, Development and Food Security*³⁵ (2009)
- *Low Greenhouse Gas Agriculture. Mitigation and adaptation potential of sustainable farming systems*³⁶ (2009)

³² <ftp://ftp.fao.org/docrep/fao/012/i1323e/i1323e00.pdf>

³³ <ftp://ftp.fao.org/docrep/fao/012/ak998e/ak998e00.pdf>

³⁴ <http://www.fao.org/docrep/012/i1318e/i1318e00.pdf>

³⁵ <ftp://ftp.fao.org/docrep/fao/012/ak914e/ak914e00.pdf>

³⁶ <ftp://ftp.fao.org/docrep/fao/010/ai781e/ai781e00.pdf>

- *FAO and traditional knowledge: The linkages with sustainability, food security and climate change impacts*³⁷ (2009)
- *Climate change implications for fisheries and aquaculture*³⁸ (2009)

³⁷ <ftp://ftp.fao.org/docrep/fao/011/i0841e/i0841e00.pdf>

³⁸ <ftp://ftp.fao.org/docrep/fao/012/i0994e/i0994e.pdf>