



# CGRFA Bulletin

Summary of the Special Information Seminar on “Biodiversity for food and agriculture: taking stock for the future”

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## SPECIAL INFORMATION SEMINAR: BIODIVERSITY FOR FOOD AND AGRICULTURE: TAKING STOCK FOR THE FUTURE 13 APRIL 2013

The special information seminar on “Biodiversity for food and agriculture: taking stock for the future” was held at the headquarters of the UN Food and Agriculture Organization (FAO) in Rome, Italy, on Saturday, 13 April 2013, immediately prior to the fourteenth regular session of the FAO Commission on Genetic Resources for Food and Agriculture (CGRFA), held from 15-19 April.

The morning panel discussion addressed the state of the world’s biodiversity for food and agriculture, including presentations on related global environmental challenges, the economic value of biodiversity for food and agriculture, human livelihoods and the importance of global assessments.

In the afternoon, a panel discussion on “The contribution of biodiversity for food and agriculture: taking stock” addressed: the specificities, challenges and achievements of different components of biodiversity for food and agriculture, including animal, plant, forest and aquatic genetic resources; and issues related to information and indicators on biodiversity for food and agriculture. Discussion then focused on challenges and opportunities for biodiversity for food and agriculture and the production of the report on the State of the World’s Biodiversity for Food and Agriculture (SoW-BFA).

genetic resources are critical elements of FAO’s five strategic objectives: eradicating hunger, food insecurity and malnutrition; increasing and improving the provision of goods and services from agriculture, forestry and fisheries in a sustainable manner; reducing rural poverty; enabling more inclusive and efficient agricultural and food systems at local, national and international levels; and increasing the resilience of livelihoods to threats and crises. He emphasized the importance of the preparation of the first SoW-BFA as a tool to elevate the discussion on genetic resources and to show why an integrated presentation of information on the different aspects of genetic resources is important to policy makers. In this regard, he stressed partnership as a key element for the preparation of the SoW-BFA, in terms of participation by countries and collaboration with national and international research institutions, the Convention on Biological Diversity (CBD), and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

Brad Fraleigh, CGRFA and Seminar Chair, emphasized the SoW-BFA as an opportunity to communicate biodiversity issues to a larger community by providing a global overview. He noted the seminar will help delegates prepare for the forthcoming SoW-BFA discussions at the CGRFA session.

Toby Hodgkin, Seminar Facilitator and Coordinator of the Platform for Agrobiodiversity Research, presented the programme for the day and encouraged participants to take advantage of the information-sharing opportunity provided by the seminar.

### OPENING

Linda Collette, CGRFA Secretary, welcomed participants to the seminar. Dan Gustafson, Deputy Director-General for Operations, FAO, opened the seminar and stressed that



**Dan Gustafson**, Deputy Director-General, UN Food and Agriculture Organization

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Bráulio Ferreira de Souza Dias, Executive Secretary, Convention on Biological Diversity

## THE STATE OF THE WORLD'S BIODIVERSITY FOR FOOD AND AGRICULTURE

### BIODIVERSITY FOR FOOD AND AGRICULTURE AND GLOBAL ENVIRONMENTAL CHALLENGES:

Bráulio Ferreira de Souza Dias, CBD Executive Secretary, discussed biodiversity for food and agriculture and related global environmental challenges, such as: increased competition for land and water use; pollution from urban areas and increased demand on land from increased urbanization; climate variability, droughts and floods; declining ecosystem services and how to maintain them; conflicts between large- and small-scale agriculture within the agricultural sector; the increased vulnerability of production systems, which depend on a narrow range of food resources; and the negative environmental impacts of agriculture. He noted that access to food is a key element of food security, and stressed the need for strategies that go beyond increasing agricultural production and aim to enhance the sustainability, security and efficiency of the food supply and create more resilient landscapes and seascapes. Dias also emphasized the importance of *in situ* conservation of genetic resources, maintaining and restoring ecosystem services in agricultural production systems, and focusing on climate change adaptation in agricultural practices. Calling for an integrative approach to reaching environment- and agriculture-related goals, he said biodiversity is part of the solution for sustainable food and agriculture and recalled that several of the Aichi Biodiversity Targets, as set out in the Strategic Plan for Biodiversity 2011-2020, are directly linked to agriculture and food production.

**ECONOMIC VALUE OF BIODIVERSITY:** Pavan Sukhdev, Study Leader of The Economics of Ecosystems and Biodiversity (TEEB) and founder and CEO of the Green Initiatives for a Smart Tomorrow Advisory, presented on the economic value of biodiversity with special reference to biodiversity for food and agriculture. Aiming to explain what the value of biodiversity provides to agriculture, he referred to the example of insect pollination services, the value of which is extremely high for agriculture, and further highlighted that genetic diversity leads to resilience. He stressed the challenge of addressing the “economic invisibility” of biodiversity and TEEB’s role in this regard, noting that the tendency to confuse price with value results in improperly valuing biodiversity and ecosystem services.

Sukhdev then presented a projection to 2050 showing the linkages between biodiversity loss and food insecurity in South Asia and Sub-Saharan Africa, calling for an urgent change of policies. He referred to shared planetary boundary risks, including biodiversity loss, the nitrogen and phosphorous cycles, freshwater use, land-use change and climate change, noting that some of these have reached critical levels within this generation. He stressed the need for differentiated strategies in developed and developing countries, in accordance with their ecological footprint, to reach any sustainable development goals that may be agreed, and concluded that agriculture is vital for achieving green development. Calling for greater focus on small-holder farmers, who are responsible for half of the world’s production, Sukhdev stressed that increasing their yields results in addressing both hunger and poverty concurrently, and that ecologically friendly farming methods in this regard further address ecosystem degradation and biodiversity loss. He presented the example of the rice intensification system in India, which resulted in record yields with reduced labor input and cost, as well as environmental benefits, by using less seed, water and fertilizer and increasing spacing between plants.

**BIODIVERSITY FOR FOOD AND AGRICULTURE, ECOSYSTEMS AND HUMAN LIVELIHOODS:** Maryam Rahmanian, Centre for Sustainable Development and Environment, an Iranian non-governmental organization, discussed biodiversity and livelihoods, presenting experiences on participatory plant breeding in Iran. Highlighting that small farms suffer much stronger shocks from climate change while biodiversity plays an important role in increasing resilience against such shocks, she noted that the participatory plant breeding experience in Iran resulted in quickly increasing biodiversity in the field. She described how farmers use mixtures of seeds and test several different lines of wheat, in order to choose the best ones in the face of climate change. She noted that planting such mixtures of seeds and evolutionary crop populations in harsh conditions shows which seeds need to be saved and resown, and that the experiment was so successful in some of the country’s rain-fed areas that farmers started growing the mixture as their main crop, rather than researching it for future use. Quoting the UN Special Rapporteur on the Right to Food, and referring to corporate concentration in the agricultural sector, she stressed that the expansion of intellectual property rights (IPR) can constitute an obstacle to developing evolutionary crop populations, further noting that the International Union for the Protection of New Varieties of Plants (UPOV) criteria for variety registration



Maryam Rahmanian, Centre for Sustainable Development and Environment



IPBES Vice-Chair Robert Watson, University of East Anglia

do not cover evolutionary populations. In conclusion, Rahmanian said that developing countries should either refrain from joining UPOV or develop an alternative system to support farmers to save seeds and carry out participatory and evolutionary plant breeding.

#### KNOWLEDGE AND GLOBAL ASSESSMENTS:

Robert Watson, Tyndall Center, University of East Anglia, and IPBES Vice-Chair, discussed the value of knowledge and the importance of global assessments. He highlighted the need for: strengthening national multidisciplinary research programmes; coordinating and integrating international scientific programmes; involving the best experts from all stakeholder groups; and integrating indigenous knowledge with modern scientific knowledge. He stressed that assessments must be: demand-driven and co-designed with users and stakeholders; evidence-based and relevant to policy and decision making, but not prescriptive, in view of current ideological debates; and conducted by credible, independent experts, in an open and transparent process with well-defined principles and procedures. He added that a conceptual framework is required, linking environmental change with human well-being, and presented as examples the Millennium Ecosystem Assessment (MA) and the UK National Ecosystem Assessment. He suggested rethinking the way assessments are done, noting the potential usefulness of an electronic, web-based multidisciplinary assessment.

Watson then discussed the impact of international assessments from the global to the national level, including: the International Ozone Assessment, which he said was highly influential and resulted in a global ban of all medium- and long-lived chlorine and bromine chemicals; the reports of the Intergovernmental Panel on Climate Change, which he said have influenced international policy processes, as well as decision making in most countries, with the exception of the US; the MA and the IPBES; and the UK National Ecosystem Assessment, which he said had an immediate impact on policy. He further presented a series of major agricultural assessments undertaken outside FAO, including the 2008 World Bank Development Report focusing on agriculture for development, and the International Assessment of Agricultural Science and Technology for Development, which concluded that no technological advances are needed to address current problems.

On IPBES, Watson noted it will work on assessments, stimulate research and build capacities in both developing and developed countries. He shared his vision that IPBES should conduct multidisciplinary assessments at the regional and global scale, as well as thematic assessments on policy-relevant issues, including emerging issues.

**DISCUSSION:** In the ensuing discussion, participants raised issues related to IPR, balance of power between the corporate sector and small-scale farmers, and policy and legal frameworks to ensure that small farmers benefit from agricultural practices which help biodiversity conservation. Participants also suggested topics to be considered in the SoW-BFA, such as the use of wild biodiversity for food, and the experience gained by programmes integrating scientific and local knowledge.

Responding to the issues raised, Rahmanian stressed the need for supportive policies and access to markets to enhance small farmers' benefits, and the importance of information and capacity building for decision makers. She further indicated that the high-level panel of experts linked to the Commission on World Food Security is currently working on a report on investment in small-holder agriculture for food and nutrition security. Dias underscored the need to evaluate incentive measures and global agriculture production systems in terms of their transportation costs and greenhouse gas emissions, and emphasized the need for better consumer access to information on food. Watson highlighted the critical importance of ecosystem services for small-scale farmers. Sukhdev underscored the importance of economic analysis to communicate to policy makers the value of ecosystem services for the livelihoods of small farmers.

To further stimulate discussion, Chair Fraleigh asked whether it is possible to limit farmers' choices and Facilitator Hodgkin questioned how preparation of the SoW-BFA will respond to different stakeholders. Watson stressed the importance of providing information for people to make informed choices, informing policy makers and the private sector as to why protecting biodiversity is in their best interest, and giving voice to small-holder farmers. Sukhdev drew attention to the effects of mismanaging public wealth due to lack of valuation. Dias called for striking a balance between inducing innovation through IPR and maintaining a diverse agriculture. Responding to a question on the Aichi Biodiversity Targets, he stressed the need for promoting the mainstreaming of environmental concerns into development policies.

## THE CONTRIBUTION OF BIODIVERSITY FOR FOOD AND AGRICULTURE: TAKING STOCK

**DIFFERENT COMPONENTS OF BIODIVERSITY FOR FOOD AND AGRICULTURE: SPECIFICITIES, CHALLENGES AND ACHIEVEMENTS:** Irene Hoffman, FAO, presented on animal genetic resources, highlighting the livestock sector systems and functions, and noting that livestock supports agriculture in many developing countries by providing nutrients, transport and waste recycling, and identified economic and market drivers as the main causes of breed diversity loss. She noted information gaps, including on genetic improvement programmes of locally-adapted breeds and ecosystem services of livestock; and highlighted future challenges, including on reproductive technologies, conservation programmes and the environmental footprint of livestock production.

César Tapia, Ecuadorian Agricultural Research Center, presented on the importance of plant genetic resources for food and agriculture (PGRFA) and the second report on the State of the World's PGRFA, including its key findings, drivers of erosion and information gaps. He highlighted broad participation in preparing the report, and noted as issues of concern that: 45% of accessions are held *ex situ* in only seven countries; traditional cultivars and landraces are subject to genetic erosion due to replacement by modern varieties; and plant breeding focuses largely on major crops and yield

gains. He stressed that plant breeding programmes need to be reoriented to increase use of diversity and develop crops to tackle climate change. He said information gaps exist regarding the quantification of ecosystem services provided by PGRFA, and the degree of diversity and geographical distribution of locally-adapted varieties.

Lolona Ramamonjisoa, Chair of the Intergovernmental Technical Working Group on Forest Genetic Resources, highlighted the many products and services provided by forests, emphasizing that forest management should be aimed at the sustainability of all forest uses, including biodiversity conservation. She said that 3,800 forest species are threatened at different levels, and highlighted forest loss and degradation as negative drivers, but noted existing positive trends in forest and landscape restoration. She also underscored knowledge gaps on forest genetic resources, especially regarding tropical forest species.

Devin Bartley, FAO, reported that aquaculture is the fastest growing food production system and that very soon over half of the fish consumed will come from farming. He highlighted fishing pressure, and habitat degradation and loss, as the main drivers of degradation of marine fisheries and inland fisheries, respectively; and noted market and sustainability issues as drivers for aquaculture development. Bartley emphasized the ecosystem services provided by fisheries, including water quality improvement, nutrient cycling, and disease and disaster resilience. He also underscored the knowledge and information gaps on aquatic genetic resources.

Responding to a question on the extent to which the SoW-BFA will be able to address biodiversity for food and agriculture in a comprehensive manner, all panelists underscored the need for an integrated approach in presenting the situation of each biodiversity component, be it plant, animal, forest or aquatic genetic resources.

**INTEGRATING INFORMATION ON BIODIVERSITY FOR FOOD AND AGRICULTURE:** Ashley Du Val, FAO, shared her insights regarding the integration of relevant information from a variety of sources for the preparation of the SoW-BFA. She said the SoW-BFA aims to go beyond the scope of other reports by addressing linkages, as well as: the overall status of biodiversity for food and agriculture; trends in conservation and use and effects of drivers of change; and ways to improve conservation and use for food and nutrition security and livelihoods. While highlighting that in addition to national reports, other sources of information will be used, she noted information gaps regarding associated components of biodiversity and ecosystem functions and services. She stressed that the challenge of bringing together and synthesizing information varies greatly by sector, and underscored the opportunity of providing a global perspective on the state of associated biodiversity and on ecosystem services.

**BIODIVERSITY, ECOSYSTEM SERVICES AND INDICATORS:** Matt Walpole, UN Environment Programme - World Conservation Monitoring Centre, focused on ecosystem services and indicators and drew attention to the Biodiversity Indicators Partnership, which draws information on indicators from a wide range of sources. Noting that ecosystem

management on and off farm affects services and sustainability, he said linkages and trade-offs between biodiversity and agriculture are also reflected in the Aichi Biodiversity Targets. He said that understanding ecosystem services necessarily includes both the system that provides the services and the society that benefits from them, and underscored challenges related to modeling and mapping a range of ecosystem services, and flowing of benefits and societal implications, including trade-offs between different beneficiary groups. He stressed information gaps regarding the biodiversity changes within the food system, and the need to combine and improve balance between empirical evidence and expert opinion.

**DISCUSSION:** In the ensuing discussion, participants addressed: the need for solutions to address the drivers of biodiversity loss; integration of sectorial elements, future projections, and regional and global assessments within the SoW-BFA; the balance between maintaining scientific precision and communicating effectively to policy makers; and improving the quality of information on drivers. Du Val highlighted that a national approach and a more integrated global process are not mutually exclusive, noting, for instance, that associated biodiversity is by nature location-specific. Tapia noted the need to define who is an expert, as well as to systematize the data existing at the international level. On quantification of drivers, panelists agreed that it is an important aspect and noted various approaches to it, including national data and reports, expert opinion and modeling.

## CHALLENGES AND OPPORTUNITIES FOR BIODIVERSITY FOR FOOD AND AGRICULTURE AND THE PRODUCTION OF THE SoW-BFA

Facilitator Toby Hodgkin asked panelists to comment on the biggest challenges in preparing the SoW-BFA. Challenges identified included: integrating national assessments with sectorial reports; changing the discourse on resolving hunger and poverty by focusing on the small-holder farmer; reaching out to a variety of constituencies and disciplines in order to more fully consider biodiversity components as they relate to agriculture; focusing not only on problems and scenarios but also on solutions; integrating scientific and traditional/local knowledge; and allowing a level of quantification on drivers, ecosystem services and scenarios to build a convincing case.

Participants also highlighted the main opportunities provided by the preparation of the SoW-BFA, including: adopting an integrated, systemic and participatory approach; reaching out beyond the agriculture constituency; reconciling the agriculture and conservation sectors; incorporating the social aspects of biodiversity conservation and use and recognizing the importance of cultural diversity; and providing arguments for policy makers on the value of biodiversity.

Chair Fraleigh thanked all participants for the open and fruitful discussion and the useful insights for deliberations on the SoW-BFA at the upcoming CGRFA session, where he will present a Chair's summary of the seminar. He closed the seminar at 18:01.



From L-R: Matt Walpole, United Nations Environment Programme - World Conservation Monitoring Centre; Ashley Du Val, FAO; César Tapia, Ecuadorian Agricultural Research Center; CGRFA and Seminar Chair Brad Fraleigh, Canada; Lolona Ramamonjisoa, Intergovernmental Technical Working Group on Forest Genetic Resources; Irene Hoffmann, FAO; and Devin Bartley, FAO