



## CONVENTION ON BIOLOGICAL DIVERSITY

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### SUBSIDIARY BODY ON SCIENTIFIC, TECHNICAL AND TECHNOLOGICAL ADVICE

Tenth meeting

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Item 6.2 (b) of the provisional agenda\*

### AGRICULTURAL BIODIVERSITY: FURTHER DEVELOPMENT OF THE INTERNATIONAL INITIATIVE FOR THE CONSERVATION AND SUSTAINABLE USE OF SOIL BIODIVERSITY

*Note by the Executive Secretary*

1. In paragraph 13 of decision VI/5, the Conference of Parties established an International Initiative for the Conservation and Sustainable Use of Soil Biodiversity as a cross-cutting initiative within the programme of work on agricultural biodiversity, and invited the Food and Agriculture Organization of the United Nations (FAO), and other relevant organizations, to facilitate and coordinate this initiative.
2. In response to this decision, the FAO has established the soil biodiversity portal to promote the conservation and management of soil biodiversity and its role in sustainable agriculture. 1/ The site includes news bulletins, a description of the subject, background information on the International Soil Biodiversity Initiative (cross referenced to decision VI/5, paragraph 13), links with relevant programmes, information on relevant meetings, documents and other information resources and a database of relevant case studies. 2/ The portal is regularly updated.
3. In collaboration with partner organizations, and supported by the host institution – the Brazilian Agricultural Research Corporation (EMBRAPA), FAO organized the International Technical Workshop on Biological Management of Soil Ecosystems for Sustainable Agriculture, in Londrina, Brazil, from 24 to 27 June 2002. Forty-five participants from 18 countries, representing a diverse range of scientists and practitioners from each region, joined efforts to review and discuss the concept and practices of integrated soil management, share successful experiences and identify priorities for action. 3/

\* UNEP/CBD/SBSTTA/10/1.

1/ <http://www.fao.org/ag/agl/agll/soilbiod/default.stm>.

2/ <http://www.fao.org/ag/agl/agll/soilbiod/cases.stm>.

3/ See the report of the International Technical Workshop organized by EMBRAPA-Soybean and FAO, Londrina, Brazil, 24 to 27 June 2002 (FAO World Soils Report No.101, FAO, Rome, 2002). Also available at:  
<http://www.fao.org/ag/agl/agll/soilbiod/docs/WSRR%20101%20Complete.pdf>

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4. The workshop described the objectives of the International Initiative for the Conservation and Sustainable Use of Soil Biodiversity (contained in annex I below) and developed a strategy and actions for its implementation (contained in annex II below) as an integral part of the programme of work on agricultural biodiversity. The framework has three objectives each with various activities: (i) sharing of knowledge and information, and awareness raising (through case-studies, networking, developing information systems and enhancing public awareness, education and knowledge); (ii) capacity-building for the development and transfer of knowledge of soil biodiversity and ecosystem management into farmers' practices (through evaluating capacity-building needs, development of indicators, assessment and monitoring tools, promoting adaptive management and participatory research and development); and (iii) strengthening collaboration among actors and institutions and mainstreaming soil biodiversity and biological management into agricultural and land management and rehabilitation programmes (through mainstreaming and the development of partnerships and collaborative activities). The aforementioned workshop report <sup>4/</sup> should be consulted for full details, including the rationale and further background technical information on each of the identified actions.

### SUGGESTED RECOMMENDATIONS

The Subsidiary Body on Scientific, Technical and Technological Advice may wish to recommend that the Conference of the Parties:

(a) *Welcomes* with appreciation the progress made by the Food and Agriculture Organization of the United Nations, and other collaborators, with the International Initiative for the Conservation and Sustainable Use of Soil Biodiversity;

(b) *Welcomes* the report of the International Technical Workshop on Biological Management of Soil Ecosystems for Sustainable Agriculture (EMBRAPA-Soybean and FAO, Londrina, Brazil, 24-27 June 2002);

(c) *Endorses* the framework for action of the International Soil Biodiversity Initiative, as a basis for its immediate implementation, as contained in annex II below;

(d) *Invites* Parties, other Governments, international organizations, non-governmental organizations and other interested stakeholders to implement the International Soil Biodiversity Initiative;

(e) *Invites* Parties, other Governments, international organizations, non-governmental organizations and other interested stakeholders to supply further case-studies on soil biodiversity to the International Soil Biodiversity Initiative in order to further strengthen the Initiative.

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<sup>4/</sup> <http://www.fao.org/ag/agl/agll/soilbiiod/docs/WSRR%20101%20Complete.pdf>

## Annex I

### CONTEXT, STRATEGIC PRINCIPLES AND OBJECTIVES <sup>5/</sup>

#### A. Context

1. Many thousand species of animals and micro-organisms live in soils, ranging in size from the almost invisible microbiota (e.g. bacteria, fungi and protozoa) to the more conspicuous macrofauna and megafauna (e.g. earthworms, termites, millipedes, moles and rats). The activities of this wide range of soil biota contribute to many critical ecosystem services. These services include: soil formation; organic matter decomposition, and thereby nutrient availability and carbon (C) sequestration (and conversely greenhouse gas emissions); nitrogen (N<sub>2</sub>) fixation and plant nutrient uptake; suppression or induction of plant diseases and pests; and bioremediation of degraded and contaminated soils (through detoxification of contaminants and restoration of soil physical, chemical and biological properties and processes). The effects of soil organisms also influence water infiltration and runoff and moisture retention through effects on soil structure and composition and indirectly on plant growth and soil cover. These services are critical to the functioning of natural ecosystems and constitute an important resource for sustainable agricultural production.

2. There is increasing recognition that the sustainability of agricultural systems depends on the optimal use of the available natural resources, including the soil biotic community. Thus, there is a need to acquire a proper understanding of the influence of agricultural practices on the soil communities and their functions and, in turn, of the effects of the diverse organisms on agricultural productivity. The adaptation of management practices can minimize the negative impacts on soil biological populations and diversity and can maximize the positive effects on agricultural productivity for the benefit of humankind. The health of soil resources is a primary indicator of the sustainability of land-management practices.

3. A recent change for addressing declining soil fertility, land degradation and drought, and other land-related constraints has been a move away from the conventional focus on overcoming soil chemical and physical constraints (such as nutrient deficiencies, salinity and erosion) to a focus on soil health through an approach centred on soil biological management, and interactions among components of the system (soil, water, plant and livestock) and human management practices. Such an ecosystem approach requires attention to the wider socio-economic considerations and the farming context.

4. As agricultural intensification occurs, regulation through chemical and mechanical inputs progressively replaces the regulation of functions through soil biodiversity. There is an accelerating loss of biological diversity both above- and below-ground. Among the causes of this loss are: increasing homogenization of agricultural systems and use of monocultures; the use of agrochemicals; and excessive soil disturbance through repetitive tillage.

5. Current knowledge in the area of soil health and soil biodiversity is fragmented and remains largely in the research domain with limited practical application by farmers. Various reasons for this situation include: the difficulty of observation and limited local understanding of below-ground interactions and processes; a specialized research focus (on individual species or functions) and the lack of holistic or integrated solutions for specific farming systems; and insufficient institutional capacity and support services to enable a concerted resource management approach.

#### B. Strategic principles

6. The strategy for the implementation of the International Initiative on Conservation and Sustainable Use of Soil Biodiversity should adhere to the following principles, many of which have already been emphasized through other processes and/or forums:

- (a) Focus on food security and improvement of farmers' livelihood;

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<sup>5/</sup> The text of this annex is essentially extracted from the report of the International Technical Workshop on Biological Management of Soil Ecosystems for Sustainable Agriculture (EMBRAPA-Soybean and the FAO, Londrina, Brazil, 24-27 June 2002).

- (b) Build on previous experience and knowledge, through combining the skills and wisdom of farmers with modern scientific knowledge;
- (c) Focus on integrated holistic solutions and technical adaptation to local contexts within a clear framework that builds on the principles for application of the Ecosystem Approach;
- (d) Use participatory technology development and adaptive approaches to develop agricultural systems and land resource management practices for specific situations and farmer typologies that are technically and environmentally appropriate, economically viable, and socially and culturally acceptable;
- (e) Develop partnerships and alliances that demonstrate multi-disciplinarity and foster synergies and ensure multi-stakeholder participation;
- (f) Promote cross-sectoral approaches to address different perspectives (social, political, environmental) through association and flexibility;
- (g) Prioritize actions on the basis of country goals and the needs of direct beneficiaries and locally validate such actions through the full participation of all actors;
- (h) Promote innovative and flexible solutions that are adapted to local conditions.

### *C. Objectives*

7. Taking into account the above principles there are two main objectives for the Soil Biodiversity Initiative:

- (a) Promoting awareness raising, knowledge and understanding of key roles, functional groups and impacts of diverse management practices in different farming systems and agro-ecological and socio-economic context; and
- (b) Even more important, promoting ownership and adaptation by farmers of integrated soil biological management practices as an integral part of their agricultural and sustainable livelihood strategies.

8. The Initiative is to be implemented as a cross-cutting initiative within the programme of work on agricultural biodiversity, through the coordination, and with the technical and policy support, of FAO with appropriate links to other thematic programmes of work of the Convention, particularly those on the biodiversity of dry and sub-humid lands, mountain and forest biological diversity, and with relevant cross-cutting issues, particularly the Global Taxonomy Initiative, and work on technology transfer and cooperation. The Initiative provides an opportunity to apply the ecosystem approach and the Addis Ababa Principles and Guidelines for Sustainable Use.

9. Progress could be made through focusing on the following strategic areas of action:

- (a) Increasing recognition of the essential services provided by soil biodiversity across all production systems and its relation to land management, through:
  - (i) Information sharing and networking;
  - (ii) Public awareness, education and capacity-building;
  - (iii) Adoption of integrated approaches for the sustainable use of soil biodiversity and enhancement of agro-ecosystem functions; in particular in FAO's context focusing on three categories of outputs: assessment, adaptive management and advocacy and training.
- (b) Partnerships and cooperation through mainstreaming and cooperative programmes and actions.

## Annex II

### **FRAMEWORK FOR ACTION AS A BASIS FOR THE IMPLEMENTATION AND FURTHER DEVELOPMENT OF THE INTERNATIONAL SOIL BIODIVERSITY INITIATIVE <sup>6/</sup>**

#### **Objective 1 – Sharing of knowledge and information and awareness raising**

Activity 1.1 – Compilation and dissemination of case-studies for use in awareness raising and capacity-building.

Activity 1.2 – Creation and strengthening of networking arrangements for sharing of information, experiences and expertise with a focus on supporting local initiatives on the ground rather than institution building.

Activity 1.3 – Enhancing public awareness, education and knowledge on integrated soil management and agro-ecological approaches.

Activity 1.4 – Development of information systems and databases.

#### **Objective 2 – Capacity-building for the development and transfer of knowledge of soil biodiversity and ecosystem management into farmers’ practices**

Activity 2.1 – Evaluating capacity-building needs of farmers and other land managers, researchers and development programmes for integrated soil biological and ecosystems management.

Activity 2.2 – Development of soil bio-indicators and tools for assessment and monitoring of soil health and ecosystem functioning.

Activity 2.3 – Promote adaptive management approaches for the development and uptake of improved soil biological management practices, technologies and policies that enhance soil health and ecosystem function and contribute to sustained agricultural productivity and livelihoods.

Activity 2.4 – Mobilize targeted participatory R&D in order to enhance understanding of soil biodiversity functions and ecosystem resilience in relation to land use and sustainable agriculture.

#### **Objective 3 – Strengthening collaboration among actors and institutions and mainstreaming soil biodiversity and biological management into agricultural and land management and rehabilitation programmes**

Activity 3.1 – Mainstreaming soil biodiversity and ecosystem management in agricultural and land management programmes and policies.

Activity 3.2 – Develop partnerships and collaborative activities for the development and implementation of the International Soil Biodiversity Initiative as a partnership between the FAO and the Convention on Biological Diversity.

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<sup>6/</sup> As proposed by the Report of the International Technical Workshop on Biological Management of Soil Ecosystems for Sustainable Agriculture (EMBRAPA-Soybean and the FAO, Londrina, Brazil, 24-27 June 2002).