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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Twelfth Regular Session

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SCOPING STUDY ON INVERTEBRATES RELEVANT TO FOOD AND AGRICULTURE

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I. INTRODUCTION

1. At its Eleventh Regular Session, the Commission on Genetic Resources for Food and Agriculture (the Commission) reviewed the status and needs of biodiversity of micro-organisms and invertebrates for food and agriculture. It noted that this component of biodiversity for food and agriculture had not received adequate attention, especially given the many types of micro-organisms and invertebrates that play critical roles in the provision of essential services within the food chain. It further recognized the important role of micro-organisms and invertebrates in relation to food security and sustainable agriculture, and the need to strengthen capacity and knowledge in order to further understand the many roles and functions of these essential resources in relation to sustainable agriculture.¹

2. The Commission recognized that invertebrates and micro-organisms have different characteristics, and decided to consider them separately in its Multi-Year Programme of Work. It agreed to a timeline for organizing future work, which will see issues on micro-organisms and invertebrates being addressed at the Fourteenth Regular Session of the Commission.²

3. The Commission requested that a brief scoping study on micro-organisms and invertebrates be submitted to its Twelfth Regular Session to facilitate discussions on invertebrates, and to provide a basis for further analysis and background studies in preparation for its Thirteenth Regular Session.³ The scoping study should analyze: the functions and services provided by micro-organisms and invertebrates; current policies and programmes of relevant international organizations; and identify policy gaps and options for strengthening international cooperation.⁴

4. The present document considers the importance of invertebrates given the functions and services which they provide in food and agriculture, and options for strengthening international cooperation in this field. Advice is sought on possible future work on invertebrates in the context of the Commission's Multi-Year Programme of Work, and on potential areas for strengthening cooperation among relevant international organisations. The documents, *Main functions and services provided by invertebrates relevant to food and agriculture*⁵ and *Policies and programmes of relevant international organizations working in the field of invertebrates for food and agriculture*⁶ supplement the information provided in this document.

5. The study, *Use and exchange of biological control agents relevant to food and agriculture*,⁷ provides additional information on the use and exchange flows of invertebrate biological control agents used for controlling invertebrates and weed pests. The study will be presented at the Commission's Twelfth Regular Session as an input to the discussion on the cross-sectorial matter: policies and arrangements for access and benefit-sharing for genetic resources for food and agriculture.

¹ CGRFA-11/07/Report, paragraph 65

² CGRFA-11/07/Report, paragraph 66

³ CGRFA-11/07/Report, paragraph 68

⁴ CGRFA-11/07/Report, paragraphs 66 and 67

⁵ CGRFA-12/09/Inf. 15

⁶ CGRFA-12/09/Inf. 16

⁷ Background Study Paper 47

II. THE IMPORTANCE OF INVERTEBRATES RELEVANT TO FOOD AND AGRICULTURE

6. Together with micro-organisms, invertebrates are the most numerous group of species on earth. This document is focused on insects, arachnids, and earthworms that are the most relevant to food security and sustainable agriculture, and can be found in most terrestrial ecosystems and agricultural production environments. However, it is important to note that the variety of invertebrates is extremely diverse, and that it was impractical here to attempt to cover all important groups of invertebrates for food and agriculture. Aquatic invertebrates that positively contribute to the fisheries and aquaculture sectors, such as sea crustaceans and molluscs, are considered within the Commission's programme of work on aquatic genetic resources.

7. The significant roles played by invertebrates in ecosystem functioning and in the provision and enhancement of ecosystem services, are invaluable, especially in terrestrial ecosystems on which food production depends. However, both the economic and the environmental value of the contributions of this so-called "non-planned biodiversity" to sustainable agriculture are still largely unknown and likely under estimated in terms of their overall contribution to food and agriculture.

8. Invertebrates are highly important for the functioning of the world's agriculture ecosystems, and are vital to enable production systems to adapt to changing conditions, including those resulting from climate change. Invertebrates contribute to both yield and quality of agricultural production. The main functional groups of invertebrates relevant to food and agriculture are: pollinators; biological control agents; soil ecosystem engineers and regulators; and, providers of goods, including food and non-timber forest products. An information document has been prepared to provide an overview of the functions and services of invertebrates, which includes examples of the main functional groups of invertebrates and the services they provide.⁸

III. OPTIONS TO STRENGTHEN INTERNATIONAL COOPERATION

9. The Commission requested an analysis of current policies and programmes of relevant international organizations and to identify policy gaps and options for strengthening international cooperation. An information document has been prepared providing an overview of the policies and programmes of relevant international organizations working in the field of invertebrates for food and agriculture.⁹

10. The information document reports on the work being carried out by *inter alia*: the African Insect Science for Food and Health (ICIPE), CAB International (CABI), the Convention on Biological Diversity (CBD), centers of the Consultative Group on International Agricultural Research (CGIAR), the Food and Agriculture Organization of the United Nations (FAO), the International Plant Protection Convention (IPPC), the International Organization for Biological Control (IOBC), and the Organisation for Economic Co-operation and Development (OCDE).

11. This section explores possible options for strengthening cooperation with regard to invertebrate diversity in three areas: global biodiversity syntheses; technical guidelines and management tools; and, international policy such as action plans, codes of conduct and standards.

Global biodiversity synthesis

12. FAO has recently published a global synthesis, which analyzes at the global level, the status and trends of pollinators and pollination services.¹⁰ The synthesis uses case studies and

⁸ CGRFA-12/09/Inf. 15.

⁹ CGRFA-12/09/Inf. 16.

¹⁰ FAO, 2008. *Rapid Assessment of Pollinators' Status*.

technical reports collected from around the world to analyze the status and trends of pollinator diversity, the status of scientific and indigenous knowledge, capacity building and mainstreaming needs in the conservation and management of pollination services. The publication is a contribution to the implementation of the *International Initiative for the Conservation and Sustainable Use of Pollinators* under the CBD.

13. There have been no similar syntheses published on other ecosystem services provided by invertebrates relevant to food and agriculture. FAO, and many of its partners, such as CABI, ICIPE, IOBC, CGIAR, regularly prepare technical reports and reviews on the status of developments in biological control of certain crops and in particular regions, especially in regard to integrated pest management practices. However, there have been no overall publication syntheses produced in a strategic manner to make information available for awareness-raising, capacity-building or to further enable international cooperation. The international initiative for conservation and sustainable use of soil biodiversity recognizes the importance of sharing knowledge and information, but the Contracting Parties to the CBD have so far not programmed any similar synthesis for soil biodiversity as has been done for pollinators.

14. The Commission may wish to request FAO to prepare, together with partner organizations, a global synthesis on the ecosystems services provided by invertebrates relevant to food and agriculture, using case studies and technical reports collected from around the world to enable analysis of trends and challenges in the delivery of ecosystem services by invertebrates. The publication would build on, and not duplicate previous publications such as the *Rapid Assessment for Pollinators' Status*. This approach will allow FAO to initiate steps for the development of a comprehensive understanding of the status and trends in the conservation and sustainable use of invertebrate diversity for food and agriculture. It could also be a contribution of the Commission to the implementation of the programme of work on agricultural biodiversity of the CBD, and in particular, to the international initiative on soil biodiversity, for which FAO provides technical and policy coordination. The synthesis could be prepared for the Fourteenth Regular Session of the Commission, at which time key issues for invertebrates will be reviewed.

Technical guidelines and management tools

15. The conservation and sustainable utilization of invertebrate diversity in agricultural systems plays an important role in the sustainable use of natural resources and the sustainable production of agricultural goods. Conserving the diversity of beneficial invertebrates within agricultural systems and their surroundings, and enabling the provision of ecosystem services, are important for the human well-being of society as a whole, and in particular, agriculture producers. However, while the benefits are relatively easy to predict, the practical implementation of agricultural practices which support the provision of goods and ecosystem services by invertebrate diversity is not straightforward. There is a need to identify and enhance management practices, and the use of technologies and tools that promote the positive contributions of invertebrate diversity to enhanced productivity, sustainable livelihoods, and to enable resilience within agriculture systems to ever changing conditions. There is a need in particular, to support the efforts of developing countries in this regard.

16. FAO and other international organizations, such as CABI, ICIPE, IOBC, CGIAR, undertake technical work in biological control. In the case of pollinators, FAO acts in partnership with national and international organizations, develops guidelines, tools and resources related to pollination, including for example the Pollination Information Management System; monitoring tools; economic valuation of pollinator services on a national scale and best practice profiles for management of pollination services from around the world (Initial Survey of Good Pollination Practices).

17. The Commission may wish to request FAO and partner organizations to maintain and strengthen the technical support to developing countries in their sustainable management of invertebrate diversity, and to request FAO and partners to present at its next Session available

management tools prepared to improve the delivery of ecosystem services by invertebrates in sustainable agriculture.

International policies: plans of action, codes of conduct and standards

18. There are few international policies relevant to the conservation and sustainable use of the invertebrate diversity in relation to food and agriculture. The major intergovernmental forums dealing with aspects of the management of invertebrate diversity are the CBD, the IPPC and now the Commission.

19. The CBD programme of work on agricultural biodiversity includes two international initiatives on soil biodiversity and pollinators which are coordinated and facilitated by FAO. At its last Session, the Commission welcomed FAO's further coordination and implementation of these two initiatives.¹¹

20. The Conference of the Parties to the CBD has endorsed a Plan of Action for pollinators, but there is no similar plan for soil invertebrate diversity or biological control agents.

21. The IPPC is an international treaty that has been dealing with the introduction and release of biological control agents for many years. It provides mechanisms by which countries can prohibit or restrict the movement of biological control agents and other organisms of phytosanitary concern claimed to be beneficial into their territories. Within the framework of the IPPC, an international standard on the transboundary movement of biological control agents was developed in 1995, and was revised in 2005, to include other beneficial organisms: *Guidelines for the export, shipment, import and release of biological control agents and other beneficial organisms* (International Standard for Phytosanitary Measures - ISPM No. 3).

22. The OECD also actively contributes to promoting the wise use of invertebrates as biological control agents. In 2003, the OECD published *Guidance for information requirements for the regulation of invertebrates as Biological Control Agents* within OECD countries. The IPPC and OECD requirements are complementary and both need to be followed, which needs appropriate coordination of import and release activities by relevant agencies.

23. A number of international organizations are active in the field of biological control agents, such as IOBC, ICIPE or CABI, and are currently considering the special needs of biological control agents in relation to access and benefit-sharing policy developments. Background Study Paper 47, *Use and exchange of biological control agents relevant to food and agriculture*, examines the use and exchange flows of invertebrate biological control agents used for controlling invertebrates and weed pests. The study will be presented at the Commission's Twelfth Regular Session as an input to the discussion on the cross-sectorial matter: policies and arrangements for access and benefit-sharing for genetic resources for food and agriculture.

IV. GUIDANCE SOUGHT

24. The Commission may wish to:

- i. Request FAO to prepare, in collaboration with relevant international organizations, a global synthesis on status and trends of the ecosystem services provided by invertebrates relevant to food and agriculture by using case studies and technical reports collected from around the world; and request FAO to present such a global synthesis at its Fourteenth Regular Session;

¹¹ CGRFA-11/07/Report, paragraph 65

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- ii. Request FAO and relevant international organizations to strengthen technical support to developing countries in their sustainable management of invertebrates relevant to food and agriculture;
 - iii. Request FAO and relevant international organizations to present, at its next Regular Session, available management tools prepared to improve the delivery of ecosystem services by invertebrates relevant to food and agriculture;
 - iv. Request FAO to continue coordinating and facilitating the international initiatives on pollinators and on soil biodiversity under the Convention on Biological Diversity, and to reflect such support more clearly in its programme of work and budget;
 - v. Welcome the work being carried out through the FAO International Plant Protection Convention with regard to the introduction and release of biological control agents and other beneficial invertebrates, which is valuable to ensure the sustainable use of beneficial invertebrates and protect biodiversity; and
 - vi. Consider the need for further analysis and background studies on invertebrates relevant to food and agriculture in preparation for its Thirteenth Regular Session.