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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

AD HOC INTERGOVERNMENTAL TECHNICAL WORKING GROUP ON AQUATIC GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Second Session

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SUMMARY OF THE REPORT OF THE SECOND SESSION OF THE COMMITTEE ON FISHERIES ADVISORY WORKING GROUP ON AQUATIC GENETIC RESOURCES AND TECHNOLOGIES

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I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (Commission), at its Fifteenth session, requested its Secretary to ensure complementarity between the FAO Committee on Fisheries (COFI) and the Commission, especially with regard to aquatic genetic resources.¹ It also reiterated the importance of inviting the COFI Advisory Working Group on Aquatic Genetic Resources and Technologies (COFI WG), when convened, to contribute to the preparation of *The State of the World's Aquatic Genetic Resources for Food and Agriculture* and requested to be informed, through its Bureau, about the contributions of the COFI WG.

2. The COFI WG held its first meeting on 1 and 2 October 2015, and its report was presented to the first session of the Commission's Ad Hoc Working Group on Aquatic Genetic Resources for Food and Agriculture (WG AqGR)² and the Sixteenth Regular Session of the Commission.³

3. This document summarizes the results of the second session of the COFI WG. The full report is available as document CGRFA/WG-AqGR-2/18/Inf.3.

II. BACKGROUND

4. The relevance of the sustainable use, management and conservation of aquatic genetic resources (AqGR) for food and agriculture is relatively well known and documented, but there is still an urgent need to preserve and better manage existing aquatic diversity to enhance its contribution to food security, nutrition and livelihoods. Aquatic genetic resources for food and agriculture include thousands of species, which are found in the world's oceans, seas, lakes, reservoirs, rivers, rice paddies and other wetlands, and also in aquaculture facilities in marine, brackish and fresh waters. Unlike other sectors, all wild relatives of farmed aquatic species still exist in the wild.

5. The establishment of the COFI WG and its terms of reference were approved at the 31st session of COFI in 2014, based on a request from the 7th Session of the FAO COFI Sub-Committee on Aquaculture (COFI:AQ), and in recognition of the opportunities to increase food production and improve livelihoods from the responsible use, management and conservation of aquatic genetic resources and technologies. The terms of reference are contained in Annex 3 to the Report of the First Session of the COFI WG.⁴

6. The COFI WG has assisted and provided advice to FAO on matters concerning aquatic genetic resources and technologies, and in producing the first draft report on *The State of the World's Aquatic Genetic Resources for Food and Agriculture*.

III. DELIBERATIONS OF THE COFI ADVISORY WORKING GROUP

Guidance on the process leading to the SoW AqGR Report

7. The COFI WG endorsed the recommendations from the first session of the ITWG AqGR and provided the following related recommendations:

- 1) The FAO Secretariat should review the regional analysis used in the first SoW AqGR and **consider adopting a smaller number of regions, consistent with FAO regions and existing analyses of fisheries and aquaculture statistics**, in the analysis used in the second draft.

¹ CGRFA-15/15/Report, paragraph 64.

² CGRFA/WG-AqGR-1/16/3; CGRFA/WG-AqGR-1/16/Inf.3.

³ CGRFA-16/17/Inf.14.

⁴ CGRFA/WG-AqGR-1/16/Inf.3.

- 2) The FAO Secretariat should include **an analysis of data by major aquaculture producing countries (12 countries representing >90 percent of global production) and minor producing countries**, and to make the analysis available to the authors of the SoW AqGR.
- 3) The COFI Working Group specifically **endorsed the ITWG AqGR recommendation to develop case studies and discussed some specific subjects (e.g. good policy, successful breeding programmes, *in situ* and *ex situ* conservation) that could be summarized in the SoW AqGR**. Some of these case studies would also be appended to the Framework of Minimal Requirements for Sustainable Management Conservation and Use of Aquatic genetic resources (see below). Potential case studies have been identified with good coverage across regions and economic status.
- 4) The COFI Working Group recognized that **there may currently be a need for a regional/international network specifically focused on AqGR** and recommended that the SoW AqGR act as a catalyst for the identification of the gaps, needs and challenges for establishment and longevity of such networks. Such a process could guide the development of a new network.
- 5) The COFI Working Group recommended that, after publication of the SoW AqGR, **the database developed from the country reports be refined and developed to make the entire dataset available and searchable and that country data be made available in a more accessible and usable form than the original questionnaire**.
- 6) The COFI Working Group **recommended the use of standardized terms** within the SoW AqGR and FAO documents and glossaries, and the promotion of the further use of these terms. The COFI Working Group supported the glossary development process and agreed to **provide boxes for inclusion in the SoW AqGR on key terms and concepts related to AqGR**.
- 7) The COFI Working Group **commended the overall high technical quality of the thematic background studies**. However, the **thematic background paper on farmed freshwater macrophytes is less complete than the other studies and would benefit from a broader geographic coverage**. The existing thematic background papers will provide valuable additional information to support the next draft of the SoW AqGR.

Guidance on definitions and concepts related to AqGR in the SoW AqGR and to be included in FAO glossaries

8. The SoW AqGR exists in a first draft and will be updated following analysis of all the country reports received. The report is drafted by multiple authors and will also include five thematic papers, commissioned and prepared by external authors. Throughout the SoW AqGR there is a need to harmonize the terminology used by all the various authors and also to compile specialist terminology relating to AqGR.

9. FAO hosts a searchable glossary portal containing terms related to fisheries and aquaculture and has a separate glossary relating to biotechnology for food and agriculture. An initial glossary of 66 terms was prepared to support the Asia-Pacific Regional Workshop on Reporting the Status of Aquatic Genetic Resources for Food and Agriculture organized by FAO and NACA in March 2015. The terms in these various glossaries are not consistent nor harmonized.

10. There are a number of other relevant glossaries including one prepared as part of the guidelines for management of fish genetic resources in India by the Indian National Bureau of Fish Genetic Resources,⁵ a glossary linked to the Genetic Guidelines for Fisheries Management⁶ and another within

⁵ ICAR-NBFGR (2016). Guidelines for Management of Fish Genetic Resources in India. ICAR National Bureau of Fish Genetic Resources, Lucknow, India, 64 + xxiii p.

⁶ Kapuscinski, A.R. and Miller, L.M. 2007. Genetic guidelines for fisheries management (2nd Edition) Duluth, Minnesota: Minnesota Sea Grant, University of Minnesota Sea Grant Program.

the Environmental risk assessment of genetically modified organisms.⁷ There are other relevant glossaries of terms available and collectively these are likely to provide pre-existing definitions for the majority of terms within the SoW AqGR.

11. The SoW AqGR and Thematic Background papers have been reviewed with the objectives of harmonizing definitions and producing a full glossary of key terms and concepts to accompany the SoW AqGR. The COFI Working Group will provide feedback on the list of terms and concepts within the glossary. The current review proposed to add over 230 terms to the existing glossary.⁸

12. In reviewing the SoW AqGR documents there were three significant areas of harmonization that need to be addressed:

- 1) The use of terminology to describe different genotypes/phenotypes. The thematic review on “incorporating genetic diversity and indicators into statistics and monitoring of farmed aquatic species and their wild relatives” proposed “species”, “strain” and “farmed type” be the nomenclature used to describe AqGR in aquaculture with “stock” to be used in place of ‘strain’ in the wild. The thematic review includes proposed definitions for these terms which have been added to the glossary. Other terms such as cultivar and variety should not be used to describe AqGR. It is proposed that these definitions be adopted consistently within the SoW AqGR report and the thematic papers (with the possible exception of macrophytes) and all authors be requested to harmonize to these terms.
- 2) Terms about transgenesis vary throughout the document being referred to also as ‘gene transfer’ and ‘transformation’, the latter being applied to macrophytes and microorganisms. There is a need to standardize this terminology throughout the documents. Alternatively, terminology for microorganisms and aquatic plants could be different given the differences in methodology and standard usage amongst plant and microbial geneticists.
- 3) Terms about hybridization, crossbreeding and introgression are most useful if they are distinct (hybrids = between species, crossbreds = within species) and a distinction is made between F1 and F2 crosses, where traits are predictable to some degree, and any further introgression when essentially a pure species/strain is no longer discussed but some degree of species/strain mixing. It would be useful to agree and standardize the use of these terms with reference to farmed types throughout the documents. The use of the term “hybrid” in the macro algae thematic background paper⁹ is particularly unclear. It is proposed to include a box in the SoW AqGR report explaining the interpretation of these terms. There was also a discussion concerning the interpretation of the term “wild relatives” used in the SoW AqGR questionnaire. It was recognized that some ambiguity remains over this term with different interpretations being used in the SoW AqGR and thus that the use of the term needs to be clarified in the report.

13. The COFI WG also provided guidance on current activities and priority needs of FAO in regards to AqGR and on a Framework of Minimum Requirements for Sustainable Use, Management and Conservation of Aquatic Genetic Resources.

14. The COFI WG identified new activities for 2017–2019 related to the responsible use of AqGR: further advising on and promoting the first draft Report on the SoW AqGR, the promotion of genetic improvement programmes in aquaculture, risk/benefit analysis on the use and introduction of new species and strains (native and non-native), and the development of an information system on AqGR. The work plan will be reviewed at the next session of COFI in July 2018.

⁷ Kapuscinski, A.R., 2007. Environmental risk assessment of genetically modified organisms (Vol. 3). CABI.

⁸ www.fao.org/faoterm/collection/aquaculture/en

⁹ www.fao.org/cofi/46056-0e272e19f4b0051d1e1c3b679e5ca8ada.pdf

IV. GUIDANCE SOUGHT

15. The ITWG AqGR may wish to:

- Take note of and review the recommendations of the COFI WG; and
- Request the Commission to invite COFI, the COFI Sub-Committee on Aquaculture and the COFI WG to contribute to the discussion of options for follow-up to *The State of the World's Aquatic Genetic Resources for Food and Agriculture*.