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# COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

## Item 3.2 of the Provisional Agenda

### INTERGOVERNMENTAL TECHNICAL WORKING GROUP ON ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE

#### Eleventh Session

19 – 21 May 2021

### CRYOCONSERVATION OF ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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## I. BACKGROUND

1. The Commission on Genetic Resources for Food and Agriculture (Commission), at its Thirteenth Regular Session,<sup>1</sup> endorsed the *FAO guidelines – Cryoconservation of Animal Genetic Resources*<sup>2</sup> which were published in 2012. They cover the fundamental issues involved in developing and operating gene banks as elements in comprehensive national strategies for the management of animal genetic resources for food and agriculture, and emphasize the goal of conservation to reconstitute a population that has gone extinct *in vivo*.
2. At its Seventeenth Regular Session, the Commission requested FAO to continue developing and updating guidelines to facilitate the application of new scientific discoveries related to the identification, characterization and conservation of animal genetic resources.<sup>3</sup> It further requested FAO to strengthen partnerships with stakeholders and donors to continue technical and policy support for country implementation of the Global Plan of Action for Animal Genetic Resources (Global Plan of Action).<sup>4</sup>
3. Recent years have seen substantial advancements in biotechnologies for the sustainable use and conservation of genetic resources for food and agriculture.<sup>5</sup> Impacts of these advancements have been particularly important for cryoconservation (*in vitro* conservation), for which new developments in genomics, reproductive biotechnologies and bioinformatics have opened new opportunities for management of animal genetic resources for food and agriculture.
4. Nearly 60 percent of the countries that reported on their implementation of the Global Plan of Action<sup>6</sup> indicated that at least a portion of their breeds are subject to cryoconservation measures, and an additional 20 percent of countries reported that such actions are planned and funding has either been identified or is being sought. Nevertheless, the data in the Domestic Animal Diversity System (DAD-IS) indicate that about 10 percent of local breeds have material stored in gene banks.<sup>7</sup> This proportion has increased from 3 percent in 2018.<sup>8</sup> These results suggest potentially high demand by countries for technical knowledge on cryoconservation of animal genetic resources, including information management, as well as a need for support in application of this knowledge. To support countries in the cryoconservation of their breeds, as the potential uses of cryoconserved material for management of *in situ* populations are increasing, and to facilitate the adoption of recent technological innovations, FAO has developed new guidelines on cryoconservation, which are given in the document *Innovations in cryoconservation of animal genetic resources – Draft technical guidelines*<sup>9</sup> (draft guidelines). The draft guidelines will complement and update the *FAO guidelines – Cryoconservation of Animal Genetic Resources*.
5. The draft guidelines have been prepared through extensive cooperation with collaborators from around the world. From 2016 to 2020, FAO was a partner in the project “Innovative Management of Animal Genetic Resources” (IMAGE),<sup>10</sup> which was supported by the European Union’s Horizon 2020 Research and Innovation Programme. The IMAGE project was coordinated by INRAE, the National Research Institute for Agriculture, Food and the Environment of France. One of the deliverables of IMAGE was a review of the previous FAO guidelines and recommendations for content of a potential new edition.<sup>11</sup> These recommendations were considered in the preparation of the

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<sup>1</sup> CGRFA-13/11/Report, paragraph 79.

<sup>2</sup> <http://www.fao.org/3/i3017e/i3017e00.pdf>

<sup>3</sup> CGRFA-17/19/Report, paragraph 84.

<sup>4</sup> CGRFA-17/19/Report, paragraph 86.

<sup>5</sup> CGRFA/WG-AnGR-11/21/8; CGRFA/WG-AnGR-11/21/Inf.11.

<sup>6</sup> CGRFA/WG-AnGR-11/21/Inf.3.

<sup>7</sup> CGRFA/WG-AnGR-11/21/Inf.7.

<sup>8</sup> CGRFA-17/19/11.2/Inf.4.

<sup>9</sup> CGRFA/WG-AnGR-11/21/Inf.4.

<sup>10</sup> <http://www.imageh2020.eu>

<sup>11</sup> <https://www.imageh2020.eu/deliverable/D7.13.pdf>

new draft guidelines. Multiple experts and partner organizations contributed to the development of the draft guidelines.

6. As mentioned previously, the draft guidelines have been developed not only to facilitate the dissemination and adoption of recent technical advancements, but also to reflect the greater interest in using cryoconserved material for purposes other than insurance against breed extinction. Relative to the previous guidelines, increased emphasis is placed on the active utilization of gene-bank material, especially in the management of *in situ* populations. The draft guidelines address: (i) gene banking strategies; (ii) quality management of gene banks; (iii) choice of genetic material to be stored; (iv) economics of gene-banking; (v) the genetics of gene bank development and utilization; (vi) methods for cryopreservation and utilization of material; (vii) sanitary issues; (viii) information systems; (ix) legal issues; and (x) capacity building and outreach.

## II. GUIDANCE SOUGHT

7. The Working Group may wish to:

- (i) review the document *Innovations in cryoconservation of animal genetic resources – Draft technical guidelines*;
- (ii) recommend that the Commission initiate an informal consultative process to allow Members and observers to provide detailed comments on and inputs to the document; and
- (iii) recommend that the informal consultative process include:
  - the possibility for Members and observers to provide comments and inputs in writing; and
  - an informal online consultation to take place well in advance of the next session of the Working Group for Members and observers of the Working Group to review the consolidated document for consideration by the Working Group and the Commission.

8. The Working Group may further wish to recommend that the Commission:

- request FAO, in partnership with stakeholders and donors, to provide technical support to countries in the development and implementation of strategies for cryoconservation of animal genetic resources for food and agriculture; and
- request FAO to continue developing and updating guidelines and other technical documents to support implementation of the Global Plan of Action.