



**Food and Agriculture  
Organization of the  
United Nations**

COMMISSION ON  
GENETIC RESOURCES  
FOR FOOD AND  
AGRICULTURE

**CGRFA/WG-AnGR-11/21/Report**

# **Eleventh Session of the Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture**

**19 – 21 May 2021**



**COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE**

**REPORT OF THE ELEVENTH SESSION**

**OF THE**

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

**19 – 21 May 2021**

**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
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The documents prepared for the Eleventh Session of the Working Group on Animal Genetic Resources for Food and Agriculture of the Commission on Genetic Resources for Food and Agriculture are available on the Internet at the following address:

<http://www.fao.org/animal-genetics/events/events-detail/en/c/1369166>

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## I. INTRODUCTION

1. The Eleventh Session of the Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture (Working Group) was held virtually, from 19 to 21 May 2021. The Members and alternates of the Working Group are given in *Appendix B*. The list of delegates and observers is available on the meeting website.<sup>1</sup>
2. The meeting was convened virtually, on an exceptional basis, in light of the global COVID-19 pandemic and the associated public-health concerns and constraints. This followed consultations by the Commission's Bureau on the arrangements for the holding of the meeting virtually and the endorsement of the arrangements by the Members of the Working Group.
3. Prior to beginning its deliberations, the Working Group confirmed that the virtual meeting constituted a formal regular session of the Working Group. The Working Group agreed to apply its normal rules and practices to the conduct of the meeting and to suspend any rules that may be incompatible with the virtual mode used for the purposes of the meeting. The Working Group also agreed to the application of any special procedures or amended working modalities required for the efficient conduct of the meeting.

## II. OPENING OF THE SESSION AND ELECTION OF THE CHAIR, VICE-CHAIRS AND *RAPPORTEUR*

4. Mr Sipke-Joost Hiemstra (the Netherlands), Chair of the Tenth Session of the Working Group, opened the session and welcomed delegates and observers.
5. Ms Maria Helena Semedo, FAO Deputy Director-General of the Natural Resources and Sustainable Production Stream, welcomed delegates and observers. She reminded participants about the importance of animal genetic resources for food and agriculture and emphasized that the topics for the meeting were timely and highly relevant not only to sustainable development and conservation of animal genetic resources themselves, but also to the livestock sector as a whole. She further stressed the global importance of the livestock sector and its contribution to the UN Sustainable Development Goals (SDGs).
6. Ms Irene Hoffmann, Secretary of the Commission on Genetic Resources for Food and Agriculture (Commission), welcomed delegates and observers. She stressed the importance of the continued implementation and monitoring of the Global Plan of Action for Animal Genetic Resources (Global Plan of Action). She expressed her appreciation of the large number of responses received to the most recent survey of the Global Plan of Action's implementation. She highlighted the need to address animal genetic resources for food and agriculture in the broader context of biodiversity and to implement policies on animal genetic resources in harmony with other policies, including those addressing other genetic resources and the conservation and sustainable use of biodiversity in general.
7. The Working Group, in consultation with the regions, replaced absent Members of the Working Group (Central African Republic, Côte d'Ivoire and Lao People's Democratic Republic) with Namibia, Tunisia and Malaysia, respectively.
8. The Working Group elected Mr Hongjie Yang (China) as Chair, Ms Sahar Ahmed Al-Bayatti (Iraq), Ms Nina Saether (Norway), Mr Roderick Gonzalez-Murray (Panama), Mr M'naouer Djemali (Tunisia) and Mr Harvey Blackburn (United States of America) as Vice-Chairs. Mr Blackburn was elected *Rapporteur*.
9. The Working Group adopted the agenda as given in *Appendix A*.

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<sup>1</sup> <http://www.fao.org/animal-genetics/events/events-detail/en/c/1369166/>

### III. STATUS OF IMPLEMENTATION OF THE GLOBAL PLAN OF ACTION FOR ANIMAL GENETIC RESOURCES

#### *Review of implementation of the Global Plan of Action for Animal Genetic Resources*

10. The Working Group welcomed the document *Review of Implementation of the Global Plan of Action for Animal Genetic Resources*<sup>2</sup> and took note of the information documents *Detailed FAO progress report on the implementation of the Global Plan of Action for Animal Genetic Resources*<sup>3</sup> and *Synthesis progress report on the implementation of the Global Plan of Action for Animal Genetic Resources – 2020*.<sup>4</sup>

11. The Working Group recommended that the Commission call upon countries to continue implementing the Global Plan of Action, to contribute to global food security and sustainable rural development. It highlighted the key role the Global Plan of Action plays towards the achievement of SDGs 2 and 15. It recommended that the Commission request FAO, in partnership with stakeholders and donors, to continue supporting country implementation of the Global Plan of Action, with an emphasis on developing countries and countries with economies in transition, and call upon countries to place particular emphasis on conservation of animal genetic resources through either *in vivo* or *in vitro* methods, as appropriate. It requested FAO to continue its efforts in providing technical and policy support to countries, including training to end-users in the field.

12. The Working Group recommended that the Commission invite donors to contribute to the implementation of the Global Plan of Action, including to a second call for proposals under the FAO Trust Account. Furthermore, it recommended that the Commission request FAO and Members to continue raising awareness on the importance of animal genetic resources and the roles of livestock keepers and of livestock species and breeds and their production systems in the provision of ecosystem services. It also recommended that the Commission invite Members to consider developing national and regional strategies to use livestock in a sustainable way, including genetic resource aspects and the transformation of food systems towards more sustainability and resilience to meet future challenges, according to Strategic Priority Area 2 of the Global Plan of Action and their local, national and regional contexts.

#### *Draft technical guidelines for the implementation of the Global Plan of Action for Animal Genetic Resources*

13. The Working Group took note of the documents *Cryoconservation of animal genetic resources for food and agriculture*,<sup>5</sup> *Genomic characterization of animal genetic resources for food and agriculture*,<sup>6</sup> *Innovations in cryoconservation of animal genetic resources – Draft technical guidelines*<sup>7</sup> and *Genomic characterization of animal genetic resources for food and agriculture – Draft updated technical guidelines*.<sup>8</sup>

14. The Working Group noted the continued validity and application of microsatellite, single nucleotide polymorphism (SNP), and sequence approaches for genetic characterization of animal genetic resources. It recommended to include in the document *Genomic characterization of animal genetic resources for food and agriculture – Draft updated technical guidelines* concrete examples on how researchers would analyse the data in a step-by-step fashion. It further recommended that the section on legal issues in the document *Genomic characterization of animal genetic resources for food and agriculture – Draft updated technical guidelines* should focus on domestic rather than international acquisition, storage and transfer of gene-bank material and that issues regarding safety of gene-bank employees be addressed. The Working Group requested additional time to enable a detailed review of both draft guidelines and invited its Members to provide written comments to FAO by 10

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<sup>2</sup> CGRFA/WG-AnGR-11/21/2.

<sup>3</sup> CGRFA/WG-AnGR-11/21/Inf.2.

<sup>4</sup> CGRFA/WG-AnGR-11/21/Inf.3.

<sup>5</sup> CGRFA/WG-AnGR-11/21/3.

<sup>6</sup> CGRFA/WG-AnGR-11/21/4.

<sup>7</sup> CGRFA/WG-AnGR-11/21/Inf.4.

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



July 2021, in order for FAO to finalize the documents for submission to the Commission at its next Regular Session.

15. The Working Group recommended that the Commission endorse the two draft guidelines and requested FAO to finalize and publish these guidelines and encourage countries to make full use of them.

16. The Working Group further recommended that the Commission request FAO to undertake, subject to availability of financial resources, a feasibility study on the availability of, access to, and optimal use of genomic and/or breed demographic data to estimate parameters that may be suitable to complement breed population size data as indicators for monitoring the genetic diversity within livestock breeds.

17. The Working Group noted the challenges faced by developing countries and countries with economies in transition to apply such methods and recommended that the Commission request FAO, in partnership with stakeholders and donors, to provide technical support to countries in the development and implementation of national and regional strategies and studies involving cryoconservation, genomic characterization and genomic evaluation of animal genetic resources for food and agriculture. It further recommended that the Commission request FAO to continue developing and updating guidelines and other technical documents to support implementation of the Global Plan of Action, and to organize workshops to raise awareness and support regional and subregional networks on *ex situ* conservation.

#### ***Status of the development of the Domestic Animal Diversity Information System***

18. The Working Group welcomed the document *Status of the development of the Domestic Animal Diversity Information System*<sup>9</sup> and took note of the information documents *Status and trends of animal genetic resources – 2020*<sup>10</sup> and *Detailed analysis of the factors influencing the reporting of information in the Domestic Animal Diversity Information*.<sup>11</sup>

19. The Working Group commended the Secretariat on its work in updating the Domestic Animal Diversity Information System (DAD-IS) and recommended that the Commission request FAO to develop a tool allowing automatized translation of DAD-IS content provided by National Coordinators for Animal Genetic Resources from and into English, French and Spanish and to investigate the feasibility of translation across all UN languages.

20. The Working Group recommended that the Commission stress the importance of DAD-IS as the international clearing-house mechanism for animal genetic resources for food and agriculture and requested FAO to continue to provide Regular Programme and technical support to further maintain and develop DAD-IS and to continue to increase its user-friendliness, especially with regard to tools for regular data updating. Furthermore, the Working Group recommended that the Commission request FAO to investigate the potential integration into DAD-IS of data fields related to ecosystem services; production environment descriptors; information on breeders, producers and breeding organizations; and genetic and genomic data and indicators. The Working Group noted that a cut-off of ten years for cryoconserved material is not currently required, but agreed to continue to discuss this matter further at its next regular Session.

21. The Working Group also recommended that the Commission raise awareness of the United Nations Statistical Commission on the necessity to broaden the scope of SDG indicator 2.5.1b to include all breeds, to account for the entire spectrum of animal genetic resources of interest for food and agriculture.

22. The Working Group further recommended that the Commission request FAO to share with Members the methodology developed for collecting and estimating breed population data in a cost-efficient way, and investigate further the rationale behind the population size thresholds for assigning status for risk of extinction. It requested FAO to continue to assist Members in accessing existing data,

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<sup>9</sup> CGRFA/WG-AnGR-11/21/5.

<sup>10</sup> CGRFA/WG-AnGR-11/21/Inf.6.

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

providing technical support to Members on estimation of breed population sizes and entering data into DAD-IS.

23. The Working Group stressed the need for Members to regularly update their national data in DAD-IS or the European Farm Animal Biodiversity Information System Network (EFABIS-net), including information on the conservation of animal genetic resources both *in situ* and *ex situ*, and to continue to work with FAO to improve interoperability of national and regional databases with DAD-IS to ensure that decisions on the implementation of the Global Plan of Action and achievement of SDG Target 2.5 are informed by the most up-to-date data and information available.

24. The Working Group welcomed the addition of honey bees into DAD-IS and stressed the need for Members to provide basic information on their national data for monitoring the diversity of managed honey bees of relevance for food and agriculture in DAD-IS and requested FAO to include in DAD-IS tools for visualizing these data.

#### IV. ACCESS AND BENEFIT-SHARING FOR ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE

25. The Working Group considered the document *Access and benefit-sharing for genetic resources for food and agriculture: Review and outlook*<sup>12</sup> and took note of the information documents *Draft survey of ABS country measures accommodating distinctive features of genetic resources for food and agriculture and associated traditional knowledge* (Draft Survey)<sup>13</sup> and *Inputs by Members on access and benefit-sharing for genetic resources for food and agriculture*.<sup>14</sup>

26. The Working Group reviewed the Commission's past work on access and benefit-sharing (ABS) for genetic resources for food and agriculture (GRFA), and expressed its appreciation of the longstanding efforts and achievements of the Commission in this area. It also took note of relevant developments under other international agreements and instruments relevant to ABS, including the role of ABS in the ongoing negotiations of the post-2020 Global Biodiversity Framework, and emphasized the need to avoid duplication of work and ensure consistency.

27. The Working Group took note of the Draft Survey, provided guidance in its area of expertise with regard to the finalization of the survey and noted that further comments on and inputs to the draft survey may be provided to the Secretariat in writing. In reviewing the Draft Survey, the Working Group took note of the diversity of approaches to ABS for GRFA and traditional knowledge associated with GRFA (TKGRFA). It noted, in this context, that some countries do not restrict access to their genetic resources, exclude GRFA from the scope of their ABS measures or apply special provisions to ABS for (specific subsectors) of GRFA. The Working Group also noted knowledge gaps that still exist with regard to the effects of ABS measures on the exchange, use and conservation of GRFA and the sharing of benefits.

28. The Working Group recommended that the Commission request the Secretariat to develop an annex to the ABS Elements<sup>15</sup> reflecting specific examples of ABS country measures that accommodate the distinctive features of GRFA and/or TKGRFA, for review by the Working Groups and the Commission.

29. The Working Group also recommended that the Commission consider the preparation of a report that, based on a pre-tested questionnaire, explores the practical implementation of ABS country measures in the different subsectors of GRFA, with a view to identifying the actual effects of ABS measures on the utilization and conservation of the different subsectors of GRFA and TKGRFA and the fair and equitable sharing of benefits. It further recommended that the same questionnaire include questions on the usefulness of the ABS Elements for the development and implementation of ABS

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<sup>12</sup> CGRFA/WG-AnGR-11/21/6.

<sup>13</sup> CGRFA/WG-AnGR-11/21/Inf.8.

<sup>14</sup> CGRFA/WG-AnGR-11/21/Inf.9.

<sup>15</sup> FAO. 2019. *ABS Elements: Elements to Facilitate Domestic Implementation of Access and Benefit-Sharing for Different Subsectors of Genetic Resources for Food and Agriculture with Explanatory Notes*. Rome. 84 pp. Licence: CC BY-NC-SA 3.0 IGO. (also available at <http://www.fao.org/3/ca5088en/ca5088en.pdf>).

measures for the different subsectors of GRFA, with the aim of identifying and addressing gaps and weaknesses, and recommend activities for consideration by the Working Groups and the Commission.

30. The Working Group recommended that the Commission consider further activities that raise awareness about the distinctive features of GRFA relevant to national ABS measures and encourage ministries responsible for the different subsectors of GRFA to engage in the development and implementation of ABS policies relating to GRFA. It further recommended that the Commission request FAO to continue to raise awareness among key stakeholders, including breeders, and provide capacity building and training programmes on ABS for GRFA.

## V. “DIGITAL SEQUENCE INFORMATION” ON ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE

31. The Working Group considered the document “*Digital sequence information” on genetic resources for food and agriculture: Innovation opportunities, challenges and implications*<sup>16</sup> and agreed on the importance of “Digital sequence information” (“DSI”) and the opportunities it offers for the characterization, sustainable use and conservation of animal genetic resources for food and agriculture. It also acknowledged the challenges some countries face for accessing and making full use of “DSI”.

32. The Working Group reviewed and revised the actual and potential applications of “DSI” for the conservation and sustainable use of animal genetic resources for food and agriculture, as given in *Appendix C*. The Working Group noted that further written inputs might be submitted by Members until 31 July 2021.

33. The Working Group recommended that the Commission request FAO to analyse the observed impact of existing national measures for, or approaches to, ABS for “DSI” on research and development in the food and agriculture sector, for review by the Working Groups and the Commission. It further recommended that the ABS Elements be complemented by an annex on “DSI” reflecting common practices and experiences with how “DSI” on GRFA is generated, accessed and used.

34. The Working Group recommended that the Commission request FAO to hold an intersessional workshop, in collaboration with relevant instruments and organizations. The workshop should: raise awareness of relevant stakeholders of the role of “DSI” for research and development related to GRFA; address the state of the art of “DSI” on genetic resources; present possible implications related technologies might have on the livestock sector; and consider the challenges for accessing and making full use of “DSI”.

35. The Working Group recommended that the Commission request FAO to support countries, in particular developing countries, in building the necessary technical, institutional and human capacity to generate and to utilize “DSI” on GRFA for research and development of GRFA.

36. The Working Group recommended that the Commission continue monitoring developments relevant to “DSI” in other international fora and consider, at the appropriate point in time, the implications of these developments for the access to, use of and sharing of benefits derived from GRFA, with a view to identifying, as appropriate, key aspects that could be taken into consideration in addressing “DSI” on GRFA.

## VI. THE ROLE OF ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE IN MITIGATION OF AND ADAPTATION TO CLIMATE CHANGE

37. The Working Group considered the document *Climate change and genetic resources for food and agriculture*<sup>17</sup> and took note of the information documents *FAO activities on climate change*<sup>18</sup> and *The role of genetic resources for food and agriculture in climate change adaptation and mitigation*.<sup>19</sup>

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<sup>16</sup> CGRFA/WG-AnGR11/21/7.

<sup>17</sup> CGRFA/WG-AnGR-11/21/ 8.

<sup>18</sup> CGRFA/WG-AnGR-11/21/Inf.10.

<sup>19</sup> CGRFA/WG-AnGR-11/21/Inf.11.

38. The Working Group took note of the scoping study on the role of GRFA in adaptation to, and mitigation of, climate change and noted that Members could submit suggestions in written form and recommended that the Commission request FAO to publish it. The Working Group further welcomed the draft revised Multi-Year Programme of Work (MYPOW) work stream on climate change, as contained in *Appendix I* to the document CGRFA/WG-AnGR-11/21/8.

39. The Working Group reviewed the proposed country survey on climate change and GRFA, as contained in *Appendix II* to the document CGRFA/WG-AnGR-11/21/8, and recommended that the Commission review the country survey on climate change and GRFA. It noted the heavy reporting burden on countries and the need to streamline reporting processes. It emphasized that the future work of the Commission on climate change should build on the current work on GRFA and be complementary to the work of other organizations, such as the Koronivia Joint Work on Agriculture. It further recommended that a shorter version of the survey be developed and tested as a baseline or stocktaking exercise, for subsequent inclusion in future questionnaires for the monitoring of implementation of sectoral global action plans and preparation of future State of the World reports on sectoral GRFA.

40. The Working Group recommended that the Commission request FAO to revise the *Voluntary Guidelines to Support the Integration of Genetic Diversity into National Climate Change Adaptation Planning*, with a view to integrate aspects of mitigation that may be relevant for adaptation, for consideration by the Working Groups and the Commission.

41. The Working Group recommended that the Commission request FAO to increase capacity building and training programmes on climate change adaptation and mitigation in collaboration with existing intergovernmental and international bodies as appropriate, including on increasing efficiency of both genetics and farm management. It noted the need for appropriate and sustainable animal breeding programmes. It further stressed the need to consider the similarities, as well as the differences, between the sectors of GRFA and noted the need for the development of sector-specific guidelines to assist stakeholders in the management of GRFA in view of climate change. In this regard, it suggested that a global workshop with stakeholders from universities, competent authorities and practitioners be held. Furthermore, the Working Group noted the need to harmonize how climate change is addressed across sectors in future assessments and policy instruments. It also recommended that the Commission request FAO to fully consider biodiversity for food and agriculture (BFA) and GRFA in its future work on climate change.

## VII. REVIEW OF THE WORK ON BIOTECHNOLOGIES FOR THE CONSERVATION AND SUSTAINABLE USE OF ANIMAL GENETIC RESOURCES

42. The Working Group welcomed the document *Review of the work on biotechnologies for the sustainable use and conservation of genetic resources for food and agriculture*<sup>20</sup> and took note of the information document *Recent developments in biotechnologies relevant to the characterization, sustainable use and conservation of genetic resources for food and agriculture*.<sup>21</sup> It recalled that many so-called “low” or “traditional” biotechnologies such as artificial insemination, embryo transfer and *in vitro* fertilization continue to be used extensively, and that the level of application of “modern” genomic technologies depends on phenotypes, breeding organizations and infrastructure. It further noted that countries may apply a wide range of biotechnologies for a variety of production methods and systems, and that biotechnologies may become important to promote adaptation or assist mitigation in the face of climate change.

43. The Working Group recommended that the Commission request FAO to develop and strengthen the national and regional capacities of developing countries and countries with economies in transition to apply and develop appropriate biotechnologies for the characterization, sustainable use and conservation of GRFA, taking into consideration relevant benefits and risks, relevant national

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<sup>20</sup> CGRFA/WG-AnGR-11/21/9.

<sup>21</sup> CGRFA/WG-AnGR-11/21/Inf.12.

laws or regulations and regional and international instruments, including those related to risk assessment.

44. The Working Group further recommended that the Commission request FAO to regularly assemble and disseminate updated factual information on the role of biotechnologies in the characterization, sustainable use and conservation of GRFA and on infrastructure and capacity requirements for the implementation of such biotechnologies through its existing databases, networks and newsletters, and to explore mechanisms for future cooperation with relevant international organizations, including for fostering North–South, South–South and triangular cooperation, in promoting appropriate biotechnologies for the characterization, sustainable use and conservation of GRFA.

45. The Working Group noted that countries may wish to conduct socio-economic analyses of the value and potential impacts of biotechnological applications prior to their deployment, as appropriate and in coherence with other relevant multilateral environmental agreements such as the Cartagena Protocol, considering also aspects such as food safety or biotechnologies' impacts on indigenous peoples and local communities.

### **VIII. OPTIONS FOR THE ORGANIZATION OF THE COMMISSION'S FUTURE INTERSESSIONAL WORK**

46. The Working Group welcomed the document *Possible re-organization of the Commission's future intersessional work*.<sup>22</sup> It welcomed with appreciation the progress made in the Commission's intersessional work, based on inputs from its subsidiary bodies, its Bureau and National Focal Points/Coordinators' and Members' submissions. It stressed the need to address, in a coherent, integrated and consistent way, BFA and micro-organism and invertebrate genetic resources (MIGR) and to enhance coordination and communication among the Commission's Working Groups and among National Focal Points/Coordinators.

47. The Working Group welcomed the regular exchange of information through the Domestic Animal Diversity Network (DAD-Net). It recommended that DAD-Net also be used to share information on cross-sectoral matters of relevance for animal genetic resources, including on BFA and MIGR. The Working Group welcomed the new technical possibility of holding informal virtual webinars, consultations or regional workshops for National Focal Points/Coordinators.

48. The Working Group considered and provided guidance on the future organization of the Commission's intersessional work. It recommended that the Commission consider, in its deliberations on the re-organization of its intersessional work, the limited resources available to countries and the Secretariat. It noted the need for synergies with other processes in FAO, such as the COAG Sub-Committee on Livestock and the FAO Strategy on Mainstreaming Biodiversity across Agricultural Sectors.

49. The Working Group considered the advantages and disadvantages of the different options for the re-organization of the Commission's subsidiary bodies. It recommended that the different options be analysed and discussed further before a decision be made. The Working Group did not recommend a specific option; however, it stressed the need to formalize the Commission's intersessional work on MIGR.<sup>23</sup>

50. The Working Group welcomed the initiative to harmonize the expected core tasks of National Focal Points/Coordinators, noting that their implementation is subject to national priorities and capacity.

### **IX. CLOSING STATEMENTS**

51. Mr Badi Besbes, Chief, Animal Production and Genetics Branch, congratulated the Working Group on its accomplishments and on a fruitful meeting. He emphasized that the Animal Production

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<sup>22</sup> CGRFA/WG-AnGR-11/21/10.

<sup>23</sup> CGRFA-17/19/Report, paragraph 95.

and Health Division, and Animal Production and Genetics Branch in particular, are committed to work with Members to continue supporting the implementation of the Global Plan of Action, including through developing and updating guidelines and other technical documents, and raising awareness on the importance of animal genetic resources for food and agriculture. He also noted his appreciation for the work undertaken in updating and further developing DAD-IS to increase its user-friendliness and scope regarding certain data fields. He ended by thanking the Governments of France and Germany for the continual and generous financial support they have provided.

52. Mr Dan Leskien, Senior Liaison Officer, Secretariat of the Commission on Genetic Resources for Food and Agriculture, congratulated the Working Group on its accomplishments and on an effective and successful discussion. He highlighted that the spirit of cooperation of the Working Group plays an important role not only on the work on animal genetic resources but also on the Commission's cross-sectoral items. He concluded by thanking the Working Group and the Chairperson for their guidance during the meeting.

53. The Chairperson thanked all delegates and the *Rapporteur* for their contributions to the success of the session. He concluded with hoping that these three days have also inspired the Working Group to redouble their efforts in guiding the management of local animal genetic resources, with the cooperation of livestock keepers and other stakeholders at all other levels.

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**APPENDIX A**

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**AGENDA OF THE ELEVENTH SESSION OF  
THE INTERGOVERNMENTAL TECHNICAL WORKING GROUP ON  
ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE**

19 – 21 May 2021

1. Election of the Chair, Vice-Chair(s) and *Rapporteur*
2. Adoption of the agenda and timetable
3. Status of implementation of the Global Plan of Action for Animal Genetic Resources
  - 3.1 Review of implementation of the Global Plan of Action for Animal Genetic Resources
  - 3.2 Draft technical guidelines for the implementation of the Global Plan of Action for Animal Genetic Resources
    - 3.2.1 Innovations in cryoconservation
    - 3.2.2 Genomic characterization
  - 3.3 Status of the development of the Domestic Animal Diversity Information System
4. Access and benefit-sharing for animal genetic resources for food and agriculture
5. “Digital sequence information” on animal genetic resources for food and agriculture
6. The role of animal genetic resources for food and agriculture in mitigation of and adaptation to climate change
7. Review of the work on biotechnologies for the conservation and sustainable use of animal genetic resources
8. Options for the organization of the Commission’s future intersessional work
9. Other business
10. Adoption of the report

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**APPENDIX B**


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**MEMBERS AND ALTERNATES OF THE INTERGOVERNMENTAL TECHNICAL  
WORKING GROUP ON ANIMAL GENETIC RESOURCES FOR FOOD AND  
AGRICULTURE, ELECTED BY THE COMMISSION AT ITS SEVENTEENTH REGULAR  
SESSION**

<i>Composition (no. of countries per region)</i>	<i>Country</i>
<b>Africa</b> (5)	Algeria Central African Republic Côte d'Ivoire Kenya Zimbabwe <i>First Alternate:</i> Namibia <i>Second Alternate:</i> Tunisia
<b>Asia</b> (5)	China Lao People's Democratic Republic Philippines Republic of Korea Thailand <i>First Alternate:</i> Bhutan <i>Second Alternate:</i> Malaysia
<b>Europe</b> (5)	France Germany Netherlands Norway Poland <i>First Alternate:</i> Sweden <i>Second Alternate:</i> Switzerland
<b>Latin America and the Caribbean</b> (5)	Argentina Brazil Cuba Panama Uruguay <i>First Alternate:</i> Costa Rica <i>Second Alternate:</i> Jamaica
<b>Near East</b> (4)	Iran (Islamic Republic of) Iraq Lebanon United Arab Emirates <i>First Alternate:</i> Jordan <i>Second Alternate:</i> Qatar
<b>North America</b> (2)	Canada United States of America
<b>Southwest Pacific</b> (2)	Fiji Tonga <i>First Alternate:</i> Vanuatu <i>Second Alternate:</i> Samoa

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## APPENDIX C

### ACTUAL AND POTENTIAL APPLICATIONS OF “DIGITAL SEQUENCE INFORMATION” FOR THE CONSERVATION AND SUSTAINABLE USE OF ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE

#### **Common to all genetic resources**

- “DSI” is used to accurately identify and understand genetic relationships between species from all over the world. For example, databases such as the Barcode of Life (<https://ibol.org/>) allow researchers to identify species, which allows for monitoring and conservation of biological diversity. “DSI” is also used for avoiding the further loss of genetic diversity between and within species. For example, researchers can use “DSI” to identify, understand and mitigate factors that threaten a wide range of populations of vulnerable species.

#### **Animal genetic resources**

##### *Characterization :*

- Use of “DSI” has facilitated improvements to the molecular characterization of breeds and contributed to the identification of genomic regions associated with both production traits and adaptive traits, such as heat tolerance and disease resistance, and to identify the variations responsible for numerous genetic defects.

##### *Sustainable use :*

- “DSI” allows the maintenance of genetic variability within populations for sustainable use of animal genetic resources. Different methods have been developed to manage inbreeding while increasing genetic gain.
- It can be used to advance discovery and development of new livestock breeds, with enhanced outcomes for sustainable and resilient livestock systems and food security.
- “DSI” can improve the rapid understanding of traits of interest for adaptation to new breeding conditions, particularly in the context of climate change, such as adaptability to high altitudes and increasing tolerance to high ambient temperatures and humidity.
- “DSI” is useful for disease diagnosis and prevention, and contributes to the conservation of threatened species, such as endangered breeds or pollinators, contributing to improved food security and is therefore critical in preventing further loss of threatened and endangered species as well as in studying diversity.
- Genomic selection, where genome-wide markers are used for predicting the breeding value of individual animals, is widely used in commercial breeding programmes.
- For “DSI” of the rumen biome and its use in management of animal genetic resources, several significant metagenomic surveys of the rumen microbiome have been completed, creating “DSI” that is applied to the dual challenges of increasing feed efficiency and reducing greenhouse gas emissions.

##### *Conservation :*

- “DSI” is used for development and optimization of *ex situ* collections, sampling strategies and evaluation of collections. “DSI” also allows cryoconservation to be improved by comparing the genotypes of animals with stored material to those of animals in live populations, followed by targeted collection of underrepresented diversity.
- Genomic analysis allows for the evaluation of long-term *in situ* conservation programmes. By genomic analysis, information about breed history and about genetic diversity within and between breeds or populations is available for mating plans.

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**APPENDIX D**


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**LIST OF DOCUMENTS****Working documents**

<b>Document symbol</b>	<b>Title</b>
CGRFA/WG-AnGR-11/21/1	Provisional agenda
CGRFA/WG-AnGR-11/21/1 Add.1	Provisional annotated agenda and timetable
CGRFA/WG-AnGR-11/21/2	Review of implementation of the Global Plan of Action for Animal Genetic Resources
CGRFA/WG-AnGR-11/21/3	Cryoconservation of animal genetic resources for food and agriculture
CGRFA/WG-AnGR-11/21/4	Genomic characterization of animal genetic resources for food and agriculture
CGRFA/WG-AnGR-11/21/5	Status of the development of the Domestic Animal Diversity Information System
CGRFA/WG-AnGR-11/21/6	Access and benefit-sharing for genetic resources for food and agriculture: Review and outlook
CGRFA/WG-AnGR-11/21/7	“Digital sequence information” on genetic resources for food and agriculture: Innovation opportunities, challenges and implications
CGRFA/WG-AnGR-11/21/8	Climate change and genetic resources for food and agriculture
CGRFA/WG-AnGR-11/21/9	Review of the work on biotechnologies for the sustainable use and conservation of genetic resources for food and agriculture
CGRFA/WG-AnGR-11/21/10	Possible re-organization of the Commission’s future intersessional work

**Information documents**

<b>Document symbol</b>	<b>Title</b>
CGRFA/WG-AnGR-11/21/Inf.1	Statutes of the Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture, and Members elected by the Seventeenth Regular Session of the Commission
CGRFA/WG-AnGR-11/21/Inf.2	Detailed FAO progress report on the implementation of the Global Plan of Action for Animal Genetic Resources

CGRFA/WG-AnGR-11/21/Inf.3	Synthesis progress report on the implementation of the Global Plan of Action for Animal Genetic Resources – 2020
CGRFA/WG-AnGR-11/21/Inf.4	Innovations in cryoconservation of animal genetic resources – Draft technical guidelines
CGRFA/WG-AnGR-11/21/Inf.5	Genomic characterization of animal genetic resources – Draft updated technical guidelines
CGRFA/WG-AnGR-11/21/Inf.6	Status and trends of animal genetic resources – 2020
CGRFA/WG-AnGR-11/21/Inf.7	Detailed analysis of the factors influencing the reporting of information in the Domestic Animal Diversity Information System
CGRFA/WG-AnGR-11/21/Inf.8	Inputs by Members on access and benefit-sharing for genetic resources for food and agriculture
CGRFA/WG-AnGR-11/21/Inf.9	Draft survey of access and benefit-sharing country measures accommodating distinctive features of genetic resources for food and agriculture and associated traditional knowledge
CGRFA/WG-AnGR-11/21/Inf.10	FAO activities on climate change
CGRFA/WG-AnGR-11/21/Inf.11	The role of genetic resources for food and agriculture in climate change adaptation and mitigation
CGRFA/WG-AnGR-11/21/Inf.12	Recent developments in biotechnologies relevant to the characterization, sustainable use and conservation of genetic resources for food and agriculture
CGRFA/WG-AnGR-11/21/Inf.13	Information note for participants
CGRFA/WG-AnGR-11/21/Inf.14	List of documents
CGRFA/WG-AnGR-11/21/Inf.15	Lists of delegates and observers

### **Other documents**

FAO guidelines - Developing sustainable value chains for small-scale livestock producers

Domestic Animal Diversity Information System (DAD-IS) – User manual

Domestic Animal Diversity Information System (DAD-IS) – Data entry: A quick guide for National Coordinators

Sustainable Management of Animal Genetic Resources (Special Issue of *Sustainability*)