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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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

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REPORT ON THE STATUS OF THE DEVELOPMENT OF THE DOMESTIC ANIMAL DIVERSITY INFORMATION SYSTEM

TABLE OF CONTENTS

| | Paragraphs |
|--|------------|
| I. INTRODUCTION | 1-2 |
| II. STATUS OF DAD-IS DEVELOPMENT | 3-8 |
| III. STATUS OF REPORTING AND REASONS FOR DATA GAPS | 9-13 |
| IV. INCLUSION OF DATA ON DOMESTICATED HONEYBEES AND OTHER POLLINATORS | 14-18 |
| V. GUIDANCE SOUGHT | 19 |

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I. INTRODUCTION

1. The Domestic Animal Diversity Information System (DAD-IS) was established in 1996 as the tool for the recording of information on the world's livestock breeds and is used as the primary source of data for monitoring the status of the global diversity of animal genetic resources for food and agriculture. The Commission on Genetic Resources for Food and Agriculture (Commission), at its Sixteenth Regular Session,¹ stressed the importance of DAD-IS as the international clearing-house mechanism for animal genetic resources and welcomed the development of its updated version.

2. This document provides a summary of FAO's activities related to DAD-IS since the Commission's Sixteenth Regular Session. During this period, FAO has undertaken a major revision of DAD-IS, which has been the first such revision since 2007. The activities described herein are grouped into three major topics, according to requests by the Commission at its last Regular Session: status of DAD-IS development; status of reporting and reasons for data gaps; and inclusion of data on domesticated honeybees and other pollinators. More detailed information is provided in the documents: *Status and trends of animal genetic resources – 2018*,² *Detailed analysis of the Domestic Animal Diversity Information System with focus on population data*³ and *Report on the Global Survey of honeybees and other pollinators*.⁴

II. STATUS OF DAD-IS DEVELOPMENT

3. FAO continued during the reporting period to further develop DAD-IS and, with extra-budgetary funding from the Government of Germany, to develop a new prototype. The project focused on restructuring the DAD-IS "front-end" (the user interface) without affecting the database structure or its regional European node (EFABIS – European Farm Animal Biodiversity Information System). The activities included: (i) facilitating data synchronization between DAD-IS and EFABIS; (ii) improving the user friendliness of established reports; (iii) developing new reports; and (iv) creating a data export tool allowing the merger of the data on animal genetic resources with various other types of data related to food and agricultural. The new prototype of DAD-IS was launched on 21 November 2017⁵ and has been accessible online⁶ since that time.

4. The Commission, at its Sixteenth Regular Session,⁷ requested FAO to develop options for improving the linkages between DAD-IS and other databases, and to include in future versions of DAD-IS data from genebank databases. The new data export tools of DAD-IS allow for the first time merging DAD-IS data with information from any other database and to create new datasets for analysis. New tools for import of data into DAD-IS as a means to improve linkages with other systems, such as the Animal Germplasm Resource Information Network (Animal GRIN)⁸ of Brazil, Canada and the United States of America, are currently under development. Furthermore, the new DAD-IS allows the storage of certain data from genebank databases. These new features enable countries to insert into DAD-IS relevant data and easily calculate Indicators 2.5.1⁹ and 2.5.2¹⁰ of the Sustainable Development Goals (SDG) related to the maintenance of genetic diversity of farmed and domesticated animals.

5. The new DAD-IS for the first time applies the method and criteria for assigning breeds to risk-status categories according to the guidelines, *In vivo conservation of animal genetic resources*,¹¹

¹ CGRFA-16/17/Report/Rev. 1, paragraph 46.

² CGRFA/WG-AnGR-10/18/ Inf.3.

³ CGRFA/WG-AnGR-10/18/ Inf.6.

⁴ CGRFA/WG-AnGR-10/18/ Inf.7.

⁵ <http://www.fao.org/dad-is/infocus/detail/en/c/1062936/>

⁶ <http://www.fao.org/dad-is/en/>

⁷ CGRFA-16/17/Report/Rev. 1, paragraph 46.

⁸ https://nrrc.ars.usda.gov/A-GRIN/database_collaboration_page_dev

⁹ <https://unstats.un.org/sdgs/metadata/files/Metadata-02-05-01.pdf>

¹⁰ <https://unstats.un.org/sdgs/metadata/files/Metadata-02-05-02.pdf>

¹¹ <http://www.fao.org/docrep/018/i3327e/i3327e.pdf>

which were approved by the Commission at its Fourteenth Regular Session.^{12,13} Detailed results are provided in *Status and trends of animal genetic resources – 2018*¹⁴ and *Detailed analysis of the Domestic Animal Diversity Information System with focus on population data*.¹⁵

6. Due to the cost-efficient implementation of the project, a no-cost extension was agreed upon with the donor until end of February 2018, allowing the undertaking of additional activities such as: (i) the migration of EFABIS under the new technology; (ii) initiating the migration of national European nodes under the new technology; and (iii) beginning the process to establish other, non-European regional nodes of DAD-IS.

7. During the current 2018–19 biennium, the major activities planned for development and maintenance of DAD-IS are: (i) routine bug-fixing, as needed; (ii) development of additional data dissemination and data entry tools; (iii) change of the list of countries or areas into a UN "Standard Country or Area Codes for Statistical Use"¹⁶ commonly referred to as the M49 standard; and (iv) the further consolidation of DAD-IS and EFABIS-net, which includes one subregional system for Nordic European countries (Denmark, Finland, Iceland, Sweden and Norway) and a further 16 national information systems in individual European countries.¹⁷

8. As part of the full implementation of its Revised Strategic Framework, FAO initiated, in 2015, the centralization of major information management activities, including DAD-IS, in its Information Technology Division (CIO), which is therefore fully responsible for the further development and maintenance of the DAD-IS infrastructure.

III. STATUS OF REPORTING AND REASONS FOR DATA GAPS

9. The report on the *Status of animal genetic resources – 2016*¹⁸ revealed that breed-related information still remains far from complete. For almost 60 percent of all reported breeds, risk status was not known because of missing population data or the lack of recent updates. The Commission, at its Sixteenth Regular Session,¹⁹ stressed the need for countries to regularly update their national data in DAD-IS or FABIS-net, including information on animal genetic resources both *in situ* and *ex situ*, and to provide information on breed classifications. The Commission requested FAO to identify possible reasons for the continuing high proportion of breeds with unknown risk status in DAD-IS and potential means of addressing this issue, for consideration by the Working Group at its Tenth Regular Session.

10. The launch event of DAD-IS was followed by a Global National Coordinators' Workshop held in Rome from 21 to 23 November 2017. In total, 68 National Coordinators for the Management of Animal Genetic Resources (National Coordinators) and government statisticians participated, representing 46 countries and the African Union–Interafrican Bureau for Animal Resources (AU–IBAR). During the workshop, the new version of DAD-IS was presented and training on data entry was provided. The workshop particularly focused on the data to be entered into DAD-IS necessary to calculate the two SDG indicators. In this context, one objective of the workshop was to analyse reasons for the high proportion of breeds with unknown risk status, which is specifically critical for SDG Indicator 2.5.2.

11. Information on reasons for the high proportion of breeds with unknown risk status was gathered through two approaches. First, each of the participants was asked to complete an individual

¹² CGRFA-14/13/Report, paragraph 60.

¹³ CGRFA-14/13/12, paragraph 12.

¹⁴ CGRFA/WG-AnGR-10/18/ Inf.3.

¹⁵ CGRFA/WG-AnGR-10/18/ Inf.6.

¹⁶ <https://unstats.un.org/unsd/methodology/m49/>

¹⁷ Austria, Bulgaria, Cyprus, Estonia, Georgia, Greece, Hungary, Ireland, Italy, Moldova, Netherlands, Poland, Slovakia, Slovenia, Switzerland and United Kingdom.

¹⁸ CGRFA-16/17/Inf.15.

¹⁹ CGRFA-16/17/Report/Rev. 1, paragraph 46.

questionnaire on the topic. Second, participants were divided into regional groups for in-depth discussion. Based on the results of the questionnaire and the regional discussions, the lack of breed population data at country level was identified as the most common constraint to reporting breed population sizes in DAD-IS. Problems with access by National Coordinators to existing breed population data were also reported, particularly by respondents from Europe. Smaller numbers of respondents mentioned that (i) they lacked awareness of their duty to perform this task as part of their role as National Coordinator; (ii) that they lacked knowledge on how to enter data into DAD-IS; or (iii) that entering data into DAD-IS was not included in the official terms of reference of their position of employment.

12. The percentage of breeds reported to DAD-IS classified as being of unknown risk status increased from 58 to 59 percent between February 2016 and March 2018.

13. To assist countries to address the lack of breed-level population data, FAO started, in autumn 2017, in collaboration with the *Asociación sobre la conservación de la biodiversidad de los animales domésticos locales para el desarrollo rural sostenible* – Red CONBIAND, the development of a tool that will assist countries to apply cost-efficient methodologies to collect or estimate population size data for their national breed populations. In close collaboration with National Coordinators, the tool will be tested, adapted as appropriate, and implemented in up to six countries in Latin America and the Caribbean. Initial feedback on the utility of the tool is expected by early 2019.

IV. INCLUSION OF DATA ON DOMESTICATED HONEYBEES AND OTHER POLLINATORS

14. Domesticated bees, in addition to being an animal genetic resource that provides provisioning services such as honey and beeswax, also fulfil important regulating services as pollinators. Nevertheless, because they are not a traditional “livestock” species, their status is not currently monitored in DAD-IS. The Commission, at its Sixteenth Regular Session,²⁰ therefore requested FAO to consider including domesticated honeybees, and potentially other pollinators, in DAD-IS. As an initial step, FAO undertook a global survey to gather information on the status of worldwide honeybee and pollinator populations and to evaluate the current scale and scope of population monitoring. FAO also began participating in the ad hoc action on “Indicators for monitoring status and trend of honeybees and pollination ecosystem services” organized by the European Regional Focal Point for Animal Genetic Resources (ERFP).²¹

15. The survey comprised 28 questions and was divided into three sections: (i) general information; (ii) honeybees; and (iii) general pollinators. The first section requested information about respondents and the country they were reporting on, whereas the subsequent two sections requested information on main honeybee and animal pollinator species, their contributions to food and agriculture and threats to their survival, their known or perceived population status, and existing systems for population monitoring conservation. Detailed information is available in the document *Global survey of honeybees and other pollinators*.²²

16. In total, 256 responses from 104 different countries were collected, with 47 percent of responses coming from government representatives. The average number of responses per country was two, with 50 countries having a single response and 30 percent of countries having more than two responses. The greatest number of responses from a single country was 12, from Ecuador, followed by Argentina, Chile and Ethiopia, each with 11 respondents.

17. This survey revealed that the European honeybee, *Apis mellifera*, is overwhelmingly the most common managed pollinator worldwide. A large number of countries collect population data on *Apis mellifera*, and there was general consensus about their main threats (i.e. infections by the *Varroa* destructor parasite and pesticides). Conservation methods are in place in many countries to protect

²⁰ CGRFA-16/17/Report/Rev. 1, paragraph 46.

²¹ <https://www.rfp-europe.org>

²² CGRFA/WG-AnGR-10/18/ Inf.7.

Apis mellifera and other honeybee populations, and in many countries honeybee populations are steady or increasing in numbers. The survey also revealed a wide disparity between honeybees and other pollinators in terms of the resources available for management and information available for monitoring. While some non-honeybee pollinators are utilized and managed, they are nearly all bee species and relatively little is known about other pollinators. These species are less likely to be monitored and conserved than their bee, and specifically honeybee, counterparts. In countries that do monitor their general pollinators, the population trends were reported to be largely decreasing.

18. As the name implies, DAD-IS is focused on domesticated animals for food and agriculture and currently contains information from 38 avian and mammalian livestock species. Pollination services are provided by around 20 000 mainly wild species. Integrating those wild pollinators into DAD-IS at the species level is simply impractical. This fact, and the scarcity of data on wild pollinators, suggests broadening the scope of DAD-IS by first including only data for monitoring the diversity of domesticated honeybees.

V. GUIDANCE SOUGHT

19. The Working Group may review the progress made in the development of DAD-IS and wish to recommend that the Commission:

- stress the importance of DAD-IS as the international clearing-house mechanism for animal genetic resources;
- request FAO to further maintain and develop DAD-IS and to continue collaborating with managers of national databases to develop and refine procedures for exchange of data;
- stress the need for countries to regularly update their national data in DAD-IS or FABIS-net, including information on animal genetic resources both *in situ* and *ex situ*, and to provide information on breed classifications, in order to ensure that decisions on the implementation of the Global Plan of Action for Animal Genetic Resources and achievement of the SDGs are informed by the most up-to-date data and information available;
- request FAO to continue to provide technical support to countries on estimation of breed population sizes; and
- request FAO to include in DAD-IS data fields for monitoring the diversity of domesticated honeybees.