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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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STATUS OF DEVELOPMENT OF A GLOBAL INFORMATION SYSTEM FOR FARMED TYPES OF AQUATIC GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (Commission), at its Nineteenth Regular Session, welcomed the development of AquaGRIS, FAO's global information system for aquatic genetic resources for food and agriculture (AqGR). It requested FAO to finalize the development of the full version of AquaGRIS, taking into account the importance of the interoperability of AquaGRIS with other operational information systems related to AqGR in order to avoid duplication of efforts and to facilitate the smooth exchange of information.¹ The Commission recommended that FAO prepare a manual explaining in detail how data should be entered into AquaGRIS² and requested FAO to provide specific support to the National Focal Points, including through training workshops, either virtual and/or in-person, to ensure that Members are able to provide reliable data to AquaGRIS.³

2. This document summarizes the progress made in the finalization of AquaGRIS since the last session of the Commission and discusses current and future activities aimed at building countries' capacity to use AquaGRIS for the development of national registries of AqGR and for future reporting by countries on the status of conservation, sustainable use and development of AqGR.

II. STATUS OF DEVELOPMENT OF AQUAGRIS

3. A prototype of AquaGRIS was developed, with support from the Government of the Federal Republic of Germany, in consultation with Members, and released in May 2021. The prototype was developed under a third-party platform (Survey Solutions) and dealt only with data on farmed types of AqGR. The prototype was pilot-tested by a group of National Focal Points and other experts in several countries and for different species, to generate feedback to be used in developing the full version of the information system.

4. During the reporting period, FAO continued the development and finalization of AquaGRIS. Having determined that the Survey Solutions platform did not have the flexibility required and was not considered sufficiently user-friendly, the full system of AquaGRIS was developed by FAO under a purpose-built platform. The full version was released on the FAO website in June 2024 and officially launched on 17 September 2024, in Rome, Italy, the day before the Fifth Session of the Intergovernmental Technical Working Group on Aquatic Genetic Resources (Working Group).

5. The full version of AquaGRIS was finalized by: (i) reflecting feedback received from the National Focal Points and other experts who had pilot-tested the prototype version and/or field-tested a pre-release of the new version; (ii) incorporating new questions pertaining to information on wild stocks of cultured species identified by an expert workshop held in August 2022;⁴ (iii) reviewing some of the original questions, when needed, to enable the generation of data for a set of quantifiable *resource indicators* that will be incorporated into AquaGRIS;⁵ and (iv) improving both the data-entry and the data-dissemination user interfaces (UIs) to make them more user-friendly.

AquaGRIS structure

The full version of AquaGRIS consists of an online user interface for data-entry and a user interface for data-dissemination described in detail below and summarized in

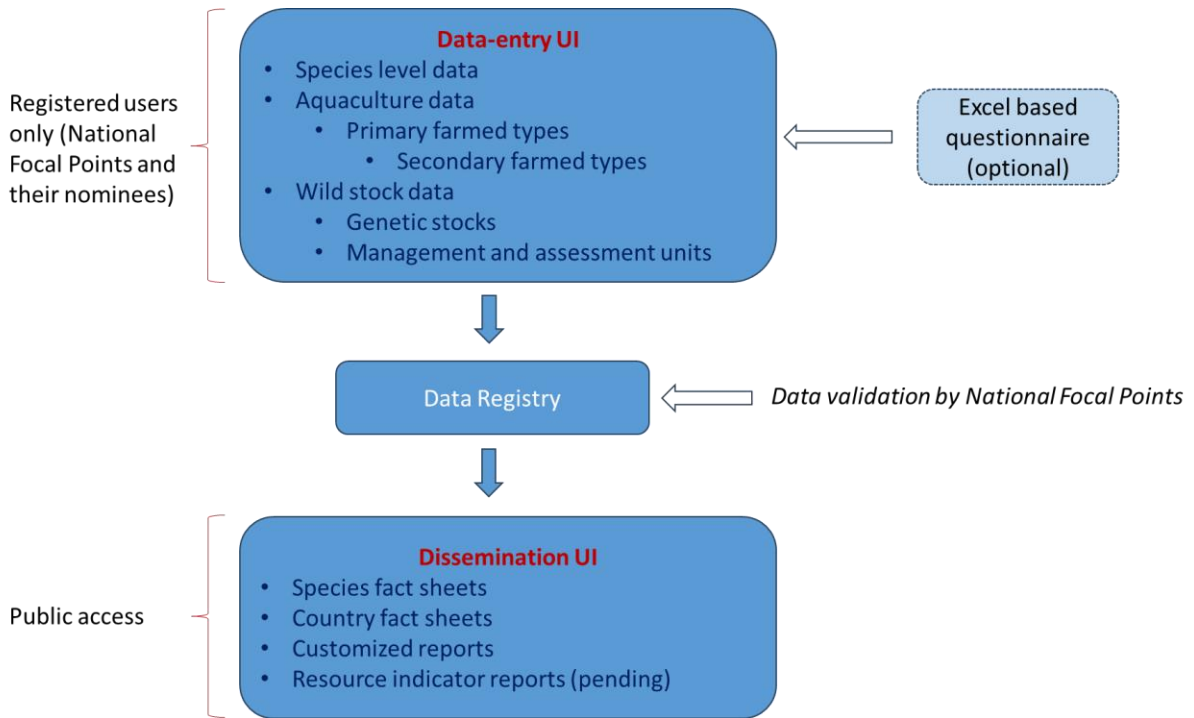
¹ CGRFA-19/23/Report, paragraph 113.

² CGRFA-19/23/Report, paragraph 120.

³ CGRFA-19/23/Report, paragraph 114.

⁴ <https://openknowledge.fao.org/items/13952c96-583e-497e-94af-dc07f042037f>

⁵ CGRFA-20/25/6.2/Inf.5.



6. **Figure 1.**

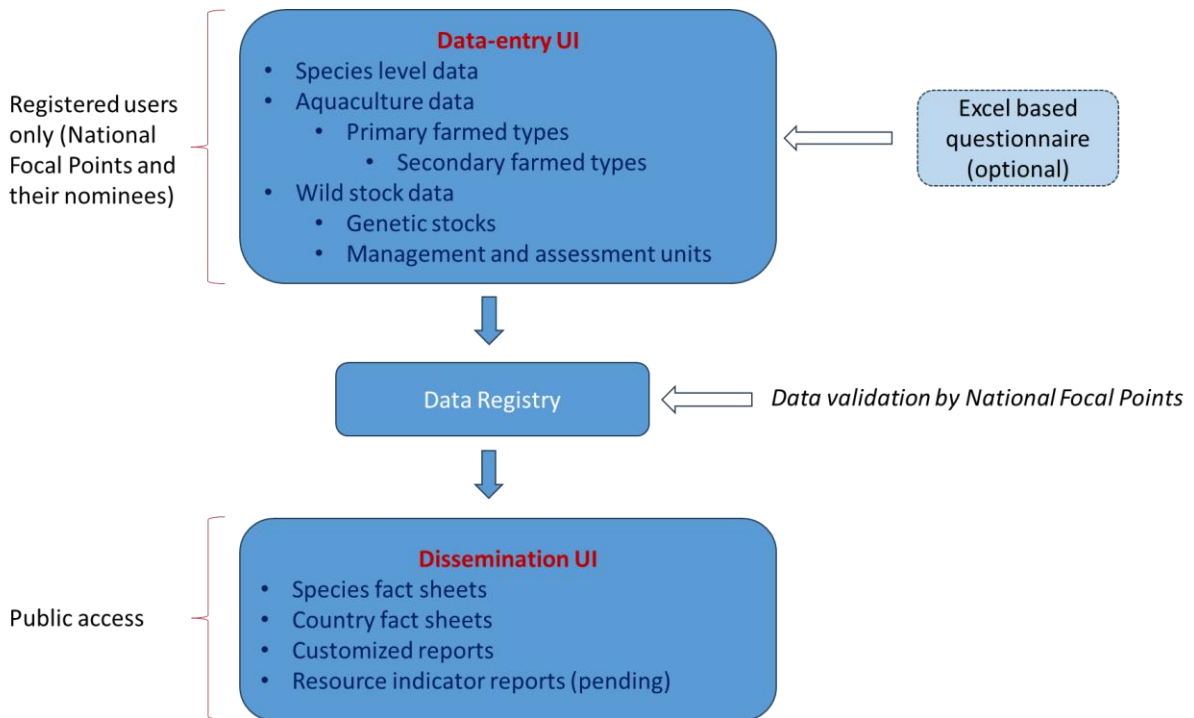


Figure 1. The structure of AquaGRIS indicating the two UIs.

Data-entry user interface (UI)

7. The UI for data-entry⁶ can be accessed only by National Focal Points and experts authorized by FAO and/or National Focal Points to support the collection and entry of data. Users must be registered and are provided with unique credentials to access the system. Permissions of registered users to use the data-entry UI are restricted to entering and editing data only for the country or taxa for which they are authorized by FAO and/or National Focal Points. The validation of national information entered into AquaGRIS is the exclusive right of the relevant National Focal Point of that country. The data entered in AquaGRIS are initially marked by the system as “pending”. Upon validation by the National Focal Point, the status of the information changes to “approved” or “rejected”. The information entered can be updated by a registered user at any time and fields may be left blank, for example if the information is not available or is considered proprietary.

8. AquaGRIS is based on a standardized classification of the genetic resources below the species level, namely farmed types and genetic stocks of wild relatives, that are entered into the system (**Box 1**). The classification of farmed types, developed by an Expert Workshop in 2019, classifies farmed genetic resources into 11 categories, divided into primary and secondary farmed types. The primary farmed types (e.g. strains and varieties) represent the different stages along the domestication continuum, while the secondary farmed types (e.g. monosex, triploids or hybrids) are generated through the application of genetic technologies to one or more primary farmed types. A second Expert Workshop, held in 2022,⁷ identified two units of information to enter into AquaGRIS for the wild relatives of aquaculture species: the genetic stocks, representing genetically identifiable resources; and the management/assessment unit identifying how any given wild stock is assessed and managed. The principal genetic resource of interest for the wild relatives is the genetic stock but information on the management and assessment unit is collected to assist in understanding how genetic stocks are monitored, assessed and managed.

Box 1. Definitions of farmed type, genetic stock and management/assessment unit.

Farmed type

A descriptor applied to farmed aquatic organisms at a level below species, including strain, variety, hybrid, triploid, monosex group, other genetically altered forms or wild-sourced.

Genetic stock

A stock having one or more distinguishing and heritable characteristics that distinguish the wild stock from other wild stocks of the same species within the country. These characteristics could include one or more:

- genetic differences (i.e. identifiable molecular signatures);
- morphological/phenotypic characteristics for one or more traits; and
- proxies for genetic differences such as geographic/reproductive isolation, behavioural isolation, various adaptations or localized parasitic infestation.

Management/assessment unit

A stock of a species in a country that is identified as a management or assessment unit and thus subject to some form of management, monitoring or assessment. This may include fisheries stocks, conservation units, evolutionary significant units, regional management unit or other.

9. Most questions in AquaGRIS are accompanied by help text in the form of explanatory notes that support users in completing their answers. A user manual will be developed in 2025.

⁶ www.fao.org/fishery/management/forms/en/login

⁷ <https://openknowledge.fao.org/items/13952c96-583e-497e-94af-dc07f042037f>

10. As outlined above, the released data-entry UI is the result of several rounds of refinements to the original questionnaire of the prototype version. A pre-release version of this interface was field-tested by various countries that had initiated the creation of national registries for some or most of their main aquaculture species. The feedback received from these countries was reflected in the final version of AquaGRIS made available in June 2024 and officially launched in September 2024.

Data-dissemination UI

11. The data-dissemination UI⁸ is a publicly accessible interface that allow users to review the information recorded in AquaGRIS at any time and in real time, and to filter and analyse this information at national, regional and global levels. Data can be filtered geographically and by taxonomic group, species, farmed type and/or genetic stock. The data-dissemination UI has counters that record, in real time, the number of countries and the total number of species for which data are recorded in AquaGRIS and also the numbers of primary and secondary farmed types and genetic stocks recorded.

12. The new data-dissemination UI allows users to generate country and species fact sheets; it also allows for the generation of customized reports using multiple filters, e.g. for regions or subsets of countries, or for specific farmed types or genetic stocks of species. The interface also allows users to drill down to access individual records for a species, farmed types or genetic stocks. The status of these individual records shall be identified either as validated or unvalidated. In the case of data reports which aggregate individual records, such as species and country fact sheets, generated in real time and based on currently entered data, a disclaimer will be added to the report identifying that the report may represent both validated and unvalidated data. National Focal Points will be requested to review, revise as necessary, and validate all national data prior to production of country reports to be used for reporting to the Commission, such as in the preparation of a global assessment.

13. Following the recommendation of the Working Group to finalize the indicator framework,⁹ the data-dissemination UI will be adapted to also incorporate reporting on the set of *resource indicators* developed to quantify the status of conservation, sustainable use and development of AqGR. The information related to such indicators will be used to generate user defined resource indicator reports and this capacity is expected to be integrated into the data-dissemination UI in 2025.

14. The initial version of the indicators, presented at the last Commission's session, was reviewed by National Focal Points and by the Committee on Fisheries (COFI) Advisory Working Group on Aquatic Genetic Resources and Technologies (COFI Advisory Working Group), and reviewed and revised by the last Session of the Working Group.¹⁰ The resource indicators incorporated into AquaGRIS will also serve to monitor countries' progress in implementing the Global Plan of Action. The Fifth Session of the Working Group recommended that National Focal Points use the indicators, as endorsed by the Working Group, for monitoring and reporting on the status of AqGR and the implementation of the Global Plan of Action.¹¹

15. The Fifth Session of the Working Group also recommended that the Commission consider requesting the Working Group to explore, at its next session, the feasibility of using AquaGRIS for the collection of data related to Sustainable Development Goal indicator 2.5.1.b.¹² Particularly, the Working Group recommended the addition or adaptation of questions in AquaGRIS to: (i) enable the creation of indicators to quantify germplasm stored in *ex situ* gene banks for species, farmed types and genetic stocks; and (ii) develop a resource indicator to quantify the extent of characterization of genetic resources.¹³

⁸ www.fao.org/fishery/aquagris

⁹ CGRFA/WG-AqGR-5/24/Report, paragraph 27.

¹⁰ <https://openknowledge.fao.org/items/1e772bfe-60b4-473b-889b-2f157af18ec7>

¹¹ CGRFA/WG-AqGR-5/24/Report, paragraph 29.

¹² CGRFA/WG-AqGR-5/24/Report, paragraph 23.

¹³ CGRFA/WG-AqGR-5/24/Report, paragraph 26.

III. BUILDING COUNTRIES' CAPACITY TO USE AQUAGRIS

16. During the reporting period, FAO has conducted multiple training sessions, both on-line and in person. Over 80 personnel were trained, representing National Focal Points, their nominees, or species experts, for a total of 22 countries (Table 1). Training included background and context, a live demonstration of the data-entry interface and, in the case of in-person training, hands-on experience of data entry. Representatives from the International Artemia Aquaculture Consortium were also trained and, at the time of writing this document, are starting to use AquaGRIS to catalogue Artemia farmed types and wild stocks worldwide. Those countries and individuals that were trained using the pre-release version of the new data-entry UI also received continuous technical support from FAO staff after the training.

Table 1. List of countries for which National Focal Points and their representatives have received training on the use of AquaGRIS.*

Africa	Asia	Americas**	Europe
Cameroon Kenya Morocco South Africa South Sudan	Brunei Darussalam Cambodia Indonesia Lao People's Democratic Republic Malaysia Philippines Thailand Viet Nam	Argentina Canada Chile Dominica Ecuador	Germany Italy Netherlands (Kingdom of the) Norway

*No training has yet been provided to any countries in the Near East nor Southwest Pacific.

**North America and Latin America and the Caribbean.

17. Under a new project, funded by the Government of Germany, FAO will assist a minimum of 30 countries, at their request, in the development of national registries for AqGR. To further assist countries in the use of AquaGRIS, the project will develop training resources, particularly an e-learning course, written guidelines and a Frequently Asked Questions page for the AquaGRIS website. The project will also further improve and develop the data-entry UI based on user experiences.

IV. FUTURE REPORTING

18. The Working Group, at its last session, recommended that the Commission, at its next session, encourage countries to create national registries of AqGR using AquaGRIS.¹⁴ It further recommended that the Commission, invite donors to support countries in the creation of national registries.¹⁵ However, the Working Group recommended deferring the decision on the frequency of the updating of AquaGRIS, and thus the generation of resource indicator reports, until 2027 when Members will have more experience with the workload involved with entering and updating data in AquaGRIS.¹⁶

19. The information covered by AquaGRIS, particularly the resource indicator reports generated through AquaGRIS, will be also used as one of the main information sources to the prepare *The Second Report on the State of the World's Aquatic Genetic Resources for Food and Agriculture*.¹⁷

20. In order to minimize countries' reporting burden and avoid duplication of efforts, and following recommendation from the Working Group, FAO will continue exploring opportunities of

¹⁴ CGRFA/WG-AqGR-5/24/Report, paragraph 32.

¹⁵ CGRFA/WG-AqGR-5/24/Report, paragraph 33.

¹⁶ CGRFA/WG-AqGR-5/24/Report, paragraph 28.

¹⁷ CGRFA-20/25/6.3.

interoperability of AquaGRIS with other information system.¹⁸ To date, the possible interoperability of AquaGRIS with existing information systems was examined in relation to information systems in Indonesia and Germany. In both cases it was determined that there were some content overlaps with the two systems but also significant differences in terms of objectives, scope and use of terminology for AqGR classification. In both cases, it was concluded that the existing national information systems contained data relevant to AquaGRIS but that AquaGRIS served a significantly different purpose and should exist alongside the national systems. It was further agreed that common data can be transcribed between AquaGRIS and the national system, but this was best done manually rather than being automated, to allow cross checking of data relevance and compatibility.

¹⁸ CGRFA/WG-AqGR-5/24/Report, paragraph 22.