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This document describes the activities carried out in 2022 for hosting and maintaining the European Search Catalogue for Plant Genetic Resources (EURISCO), and for coordinating the EURISCO network.

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1 EURISCO development

1.1 Extension of the intranet support mechanism for National Inventories (permanent activity)

1.1.1 Rework of EURISCO update mechanism for phenotypic data

Following the revision of the upload/update mechanism for passport data for National Focal Points (NFPs) in 2020/2021, the corresponding mechanism for phenotypic data was also revised in 2022. This had become necessary because the technology used so far can no longer be used in the future due to changed licensing conditions and reduced manufacturer support. A completely web-based solution was developed and integrated into the EURISCO intranet. Third-party software and special firewall settings are no longer required.

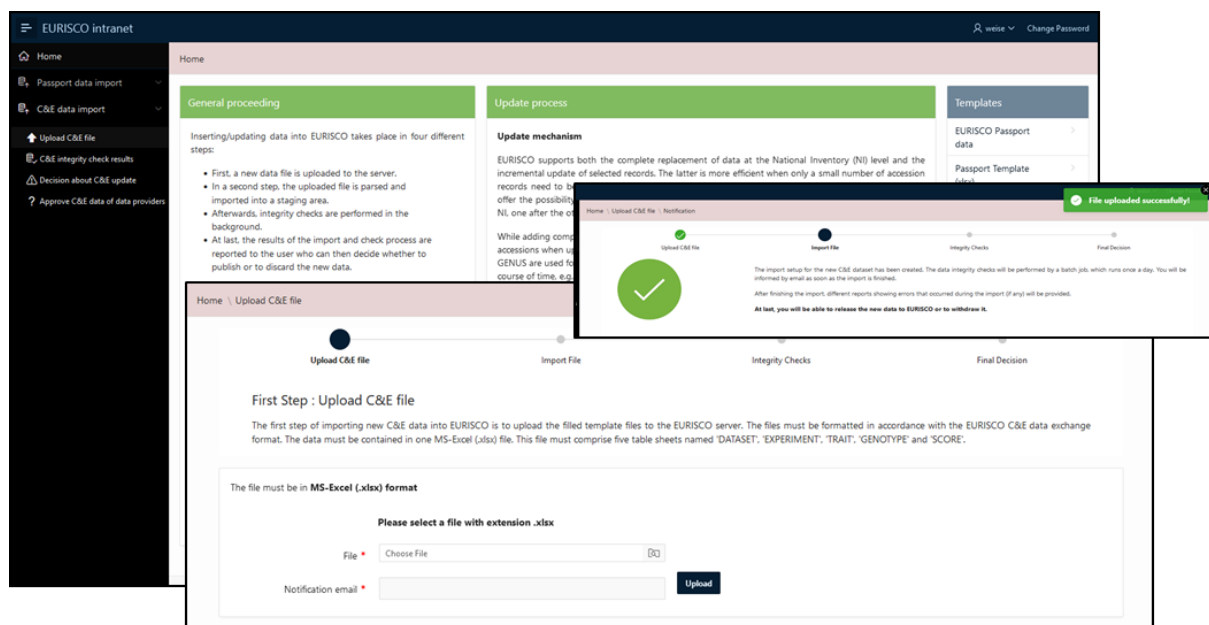


Figure 1: Screenshots of the new upload mechanism for phenotypic data.

1.1.2 Infrastructure for ECPGR EVA

The EURISCO coordination is involved in the European Evaluation Network (EVA), which made it possible to provide additional funding for a software developer. After the first prototype was already presented in 2021, work on it continued in 2022 and was brought to a conclusion at the end of September 2022. The focus of the work in 2022 was on importing the data provided by the various EVA consortia. This required adaptations/further developments of the data import templates as well as the upload and check mechanisms.

The templates were further developed and finalised in close agreement with the EVA coordination. This was particularly important against the background that it will not be possible in the long term to

support separate data templates and import tools for each EVA consortium. The requirements of the individual consortia were therefore combined and the templates standardised. Only in this way it was possible to develop a scalable, robust and easily supported import pipeline.

In addition, a number of modifications to the upload and check mechanisms were necessary in connection with the further development of the data import templates. The necessary backend functionalities were implemented on the database-side.

Furthermore, extensive enhancements have been made to the EVA web interface according to the wishes of the users. The completed infrastructure is now available to existing and future EVA consortia.

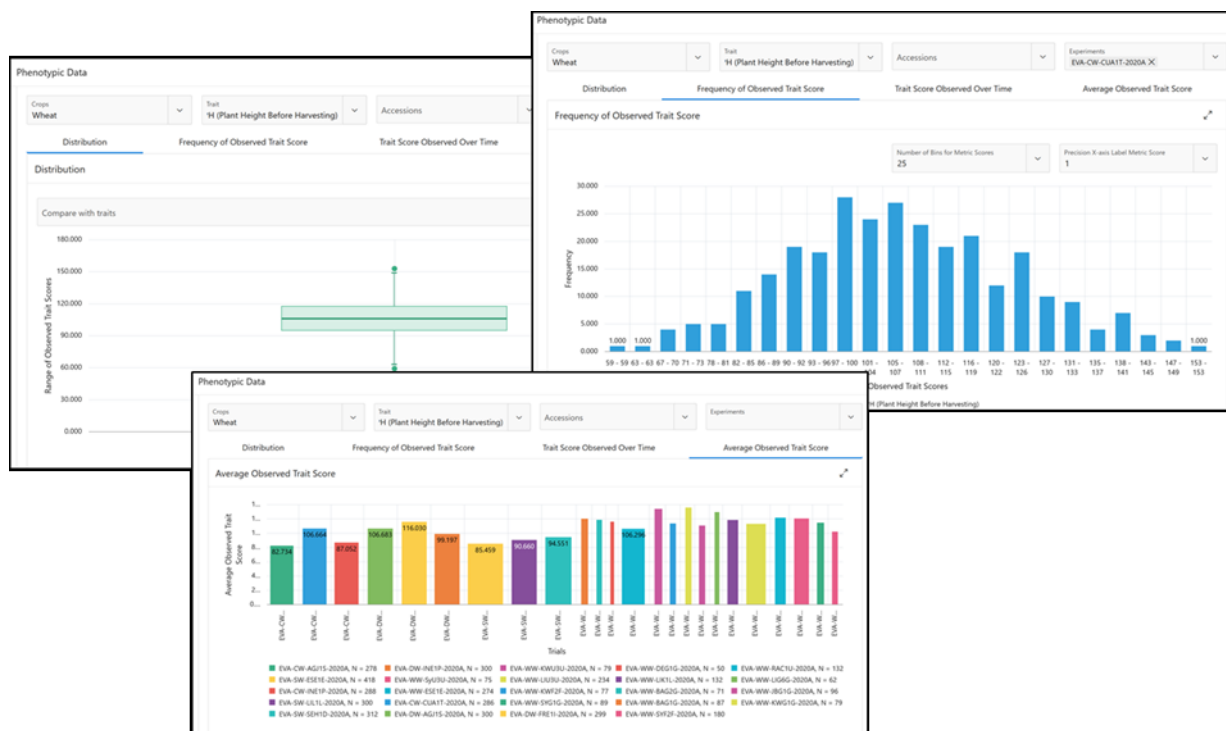


Figure 2: Example visualisations of phenotypic data in the EVA web interface.

Further information can be found in the technical report of the EVA project.

1.1.3 Extension of EURISCO backend for *in situ* CWR passport data

Within the project 'Extension of EURISCO for Crop Wild Relatives (CWR) *in situ* data and preparation of pilot countries' data sets', funded by the German Federal Ministry of Food and Agriculture and coordinated by the ECPGR Secretariat, the adaptation of EURISCO for *in situ* CWR data started in October 2022.

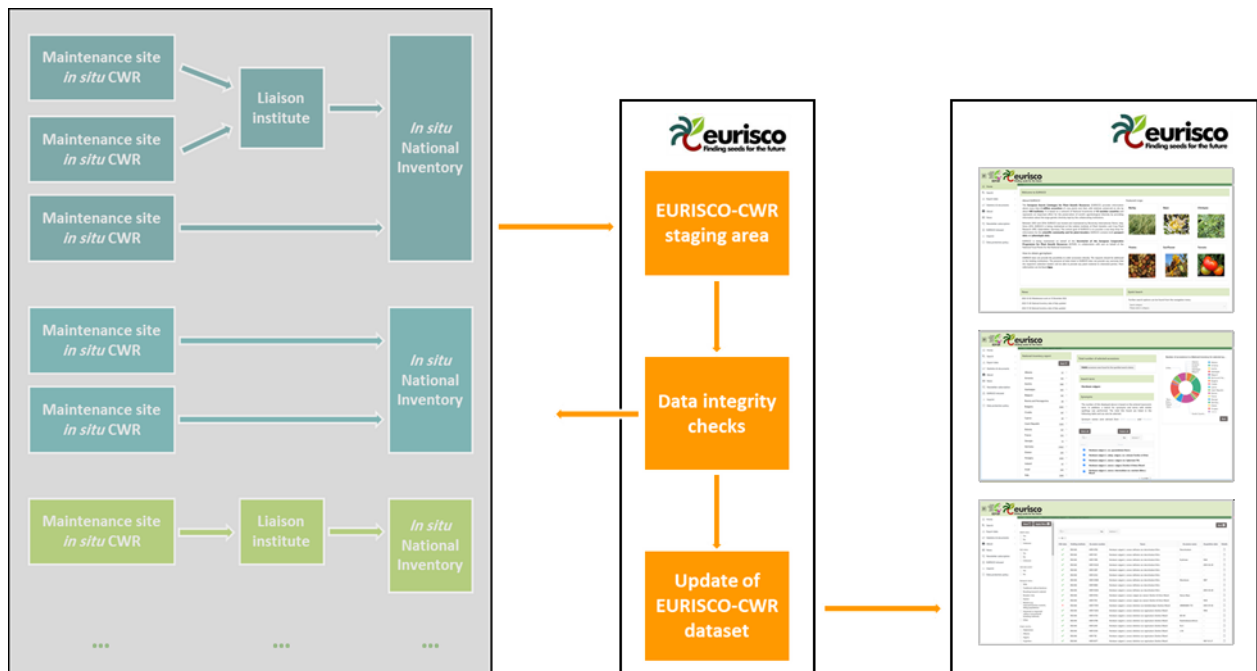


Figure 3: Conceptualised flow of *in situ* CWR data between National Inventories and EURISCO.

Based on the white paper ‘Principles for the Inclusion of CWR Data in EURISCO’ (van Hintum & Iriondo 2022), a data exchange standard was defined. This document includes 28 passport descriptors and is closely aligned with the MCPD standard for *ex situ* passport data in order to reuse the existing infrastructure as much as possible.

Following on from this, an Excel template was also created that can be used by data providers to submit *in situ* CWR data to EURISCO.

A mechanism to support the upload process was implemented and tested. As in the case of *ex situ* passport data, this is also purely web-based. Third-party software and special firewall settings are therefore not required.

Since the group of data providers of *in situ* CWR data is not necessarily congruent with that of *ex situ* passport data, the web interface developed for this purpose was separated from the *ex situ* data upload mechanism. However, both interfaces use the same design and are as intuitive as possible.

File Uploaded	National Inventory	FileName	Notification Email	Import Finished	Import Status
08-DEC-2022 12:45:39	DEU	Example data for testing2.xlsx	weise@ipk-gatersleben.de	08-DEC-2022 12:45:39	Setup Finished
06-DEC-2022 16:18:14	DEU	Example data for testing5.xlsx	weise@ipk-gatersleben.de	06-DEC-2022 16:18:14	Setup Finished
06-DEC-2022 11:01:33	DEU	Example data for testing5.xlsx	weise@ipk-gatersleben.de	06-DEC-2022 11:01:33	Setup Finished
06-DEC-2022 11:01:23	DEU	Example data for testing4.xlsx	weise@ipk-gatersleben.de	06-DEC-2022 11:01:23	Setup Finished
06-DEC-2022 10:59:17	DEU	Example data for testing2.xlsx	weise@ipk-gatersleben.de	06-DEC-2022 10:59:17	Setup Finished
06-DEC-2022 10:58:29	DEU	Example data for testing3.xlsx	weise@ipk-gatersleben.de	06-DEC-2022 10:58:29	Setup Finished
17-NOV-2022 10:03:17	DEU	Example data for testing5.xlsx	weise@ipk-gatersleben.de	17-NOV-2022 10:03:17	Setup Finished
17-NOV-2022 09:52:50	DEU	Example data for testing5.xlsx	weise@ipk-gatersleben.de	17-NOV-2022 09:52:51	Setup Finished

Figure 4: Screenshot of the web interface for uploading *in situ* CWR data to EURISCO.

The development of the data integrity checks, which will take place in the next step, was also started in 2022. These could already be implemented to a large extent. The implementation will be completed and extensively tested in 2023. The development of the subsequently necessary update procedures will then take place in 2023.

1.1.4 Update how-to documents

How-to documents, descriptions of data exchange formats etc. are continuously updated.

1.2 Extension of functionality of the public EURISCO application (permanent activity)

1.2.1 Revision of the public web interface and general improvements

An important focus of activities was EURISCO's new public web interface. Both technologies and user behaviour are constantly evolving. Therefore, even established information systems have to be revised regularly. Thus, the central EURISCO web application was also completely revised. Extensive work on this was already started in 2021 and continued in 2022. In addition to necessary updates of the technology used, special attention was paid to the implementation of a responsive design. In this context, functionalities of the previous application were assessed to identify those used particularly heavily or little, in order to adopt or adapt them accordingly in the new application. Furthermore, new functionalities were introduced based on user feedback, in particular a combined search via passport data and phenotypic data. Additional functionalities were implemented, such as faceted search, map-based selection of accessions and search indices for scientific names and common crop names. After the completion of extensive performance tests, the interface was made publicly available in spring 2022.

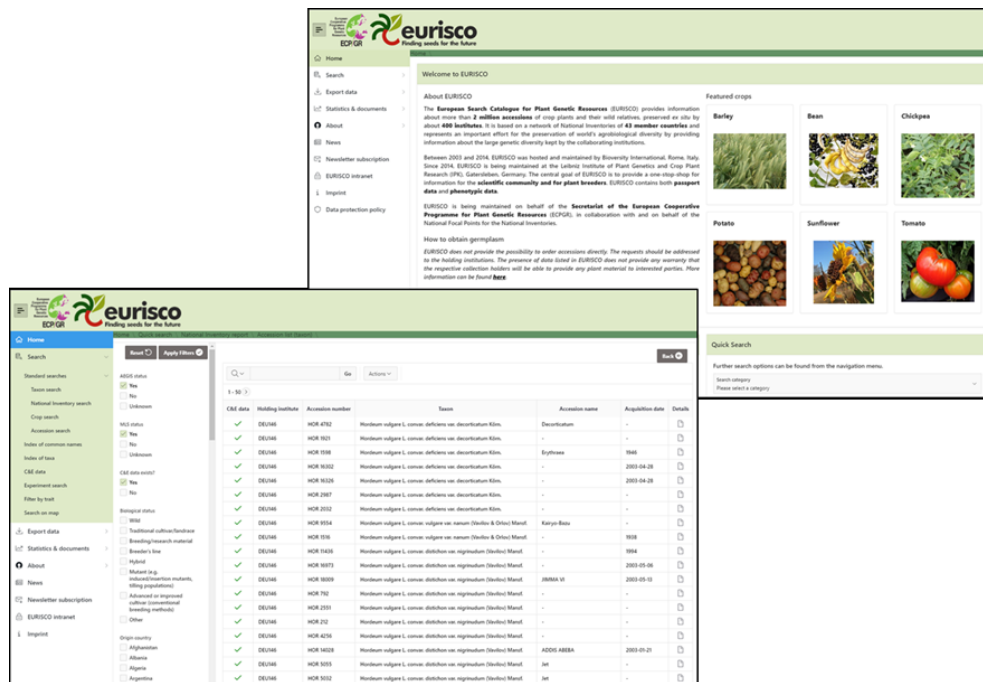


Figure 5: Screenshots from the new public EURISCO web interface.

Smaller extensions, additional performance tuning as well as necessary bug fixes were continuously carried out.

1.2.2 Extension of EURISCO frontend for *in situ* passport data

In connection with the extension of the EURISCO backend for *in situ* CWR data (see above), it is necessary to extend the public web interface as well. The work required for this will take place in spring 2023. Before that, activities on the necessary backend infrastructures will be completed.

1.3 Documentation and planning of the next steps

The developments described in sections 1.1–1.2 were specified and all developments were documented.

2 EURISCO coordination

As in previous years, in addition to the actual network activities, an important focus of work consisted of collaboration with various projects, especially under the EU's Horizon programmes.

2.1 EURISCO network maintenance and coordination of the EURISCO development

As a continuous activity, the contact to (potential) EURISCO stakeholders was also intensified in 2022 in order to demonstrate the potentials of this common European approach.

A presentation on the progress of EURISCO during ECPGR Phase X was given during the 16th Meeting of the ECPGR Steering Committee (online).

Various aspects of the extension of EURISCO to include *in situ* CWR data were presented at the GRIN-Global Workshop for European Genebanks (18–21 October 2022, Prague, Czech Republic) and at the *Ad hoc* Crop Wild Relatives Working Group Meeting (online).

A publication on EURISCO has been accepted for the 2023 database issue of *Nucleic Acids Research* (DOI: [10.1093/nar/gkac852](https://doi.org/10.1093/nar/gkac852)). This special issue is published once a year with articles on the most important databases in the field of life sciences. The contribution will enhance the worldwide visibility of EURISCO.

The EURISCO newsletter was sent around in December 2022. This is considered very important for providing feedback to the EURISCO users.

After the above-average number of updates of National Inventory datasets in 2021, the frequency declined somewhat in 2022, as expected. A total of 22 production updates of passport datasets were carried out, either partially or completely.

During 2022, the number of accessions documented in EURISCO grew by 10,194, reaching 2,082,075 on 31st December 2022. In total, passport data of 447,640 accessions were updated or newly imported. The number of AEGIS accessions was 70,413, an increase of 10,729.

The number of phenotypic records increased by 33,297 to 2,716,599. Phenotypic data are sourced from 21 countries and are available for 90,974 accessions.

Against the background of the increasing global exchange of data on plant genetic resources, permanent and unique identifiers (PUIs) are becoming increasingly important. To this end, genebanks are registering more and more accessions for Digital Object Identifiers (DOIs). As of 31st December 2022, 230,532 accessions of 22 institutions from eight countries had a PUID in EURISCO, which for most of them is a DOI.

Much effort was invested into providing a helpdesk “behind the scenes”. Direct, personal communication took place with National Inventory Focal Points and National Coordinators (e.g. support for updates, provision of specific database queries and special data export formats, discussion about future developments).

2.2 Participation in project proposals

An indispensable task of the EURISCO coordination is to acquire additional funding for the future development of EURISCO. Fortunately, some of the corresponding project applications were approved.

In 2022, the EURISCO coordination participated in the already running Horizon 2020 project ‘Activated GENEbank NeTwork’ (AGENT). The AGENT project is a concerted effort to activate genebanks that started in May 2020. It focuses primarily on wheat and barley and aims to facilitate access to genetic resources for breeders and farmers through standardised protocols for data generation, documentation and provision to users. The EURISCO coordination is mainly involved in two work packages aiming at the development of guidelines and formats for data production, exchange and representation, and at the development of the infrastructure for managing and analysing genotypic and phenotypic data about genetic resources, respectively.

During 2022, another project was approved for funding under the Horizon Europe programme – ‘Promoting a Plant Genetic Resource Community for Europe’ (PRO-GRACE). Aggregator databases such as the EURISCO are cornerstones for making information on plant genetic resources available to

researchers and breeders. Information that is as comprehensive as possible is the basis for PGR users to select and access the material they need for their scientific and breeding activities. However, those databases are only as good as the information provided to them by the data providers. Initially created for passport data and phenotypic data of material maintained in *ex situ* genebanks, new areas of application are constantly being opened up. Information on *in situ* CWR and traditionally cultivated landraces maintained on-farm needs to be linked. A large amount of data generated in different projects is waiting to be integrated. PRO-GRACE aims to close this gap by developing the concept and enacting the proof-of-concept actions for the creation of a large European Research Infrastructure (GRACE-RI) dedicated to PGR. In this context, the EURISCO coordination will be responsible for a work package focussing on an inventory of PGR-related systems and information standards.

The involvement of the EURISCO coordination in the European Evaluation Network as well as in the project 'Extension of EURISCO for Crop Wild Relatives (CWR) *in situ* data and preparation of pilot countries' data sets' has already been mentioned above.

The EURISCO coordination continued and continues to actively participate in preparing further project proposals to acquire additional funding for developing certain aspects of EURISCO.