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This document describes the activities carried out in 2020 for hosting and maintaining the European Search Catalogue for Plant Genetic Resources (EURISCO), and for coordinating the EURISCO network.

Content

1 EURISCO development

In addition to the COVID-19 pandemic, which has dominated 2020 worldwide and led to delays in many projects, there have been organisational changes regarding EURISCO. The former EURISCO coordinator and developer has only been working for EURISCO on a half-time basis since February 2020. Since then, his work has focused on EURISCO coordination and will continue to do so in the future. The funds thus freed up were used to advertise the separate position of a EURISCO developer. The tendering process was difficult, not least because of the tense situation on the market for IT specialists. In the end, however, we succeeded in recruiting a very qualified developer, who took up her position in mid-November 2020. Against this background, not all planned work could be completed to the full extent.

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

1.1.1 Rework of update mechanism

The upload and update mechanism for National Focal Points (NFP) previously used for EURISCO was developed in the Java programming language using WebStart technology. Due to changes in licensing conditions and the discontinuation of WebStart technology, it has become necessary to replace this functionality.

For this purpose, various possible solutions were evaluated. A native PL/SQL implementation was then chosen in order to achieve a complete and user-friendly embedding of the upload/update functionality into the EURISCO intranet interface. The implementation was carried out successfully; final tests as well as the embedding in the intranet interface are still pending.

In this context, a revision of the intranet interface will also be carried out in 2021 in order to make it more visually up-to-date on the one hand and to update it technically to the current version of the Oracle APEX technology used on the other.

1.1.2 Infrastructure for ECPGR EVA

In the first step, two exchange formats for phenotypic data were developed. The first of these is a simplified format based on the format previously used in EURISCO. It serves the user-friendly capture of already existing (historical) phenotypic data on genebank accessions. The format has been documented and distributed to the project partners. The first data recorded with it are already available and will be successively imported into EURISCO after approval by the responsible NFPs.

The second exchange format was developed in close consultation with the EVA coordination and in discussions with participating project partners. Its focus is on the user-friendly collection of new phenotypic data from the respective EVA consortia. In particular, the granularity of the experiment metadata goes far beyond the possibilities of the previous EURISCO format. Import tools will be developed in the course of 2021.

The basic database requirements of the EVA infrastructure have already been recorded; more detailed use cases will be collected in 2021. A generic approach has been chosen for the infrastructure, which will have a fine-grained access concept and support embargo periods for the data of the respective EVA consortia, among other features.

Synergy effects between the EVA infrastructure and the EURISCO infrastructure will be sought.

1.1.3 Extension for SSR data

The expansion of EURISCO to include SSR data was postponed due to the declining relevance of these data. EURISCO's focus in the future will increasingly be on linking genebank accessions with high-resolution genotyping data from public repositories. Synergies can be expected here, especially from the Horizon 2020 project AGENT.

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

The revision of the public web interface was largely postponed in 2020 due to time constraints. The work on this was only started at the end of the year. With the appointment of the new developer, the revision of the web interface can be continued in 2021.

1.2.2 Continue crop portal for forages

The prototype of the crop portal for forages was already presented at the ECPGR Forages WG workshop in 2019. Apart from initial feedback, there have been no further activities of the ECPGR Grant Scheme Activity "ImprovLoliumCol" since then. In particular, data deliveries on a larger scale are still pending. As soon as these data are available, they will be entered into EURISCO and made visible via the forage portal.

1.2.3 Update of synchronisation mechanism with AEGIS website

In deviation from the original planning, firewall configurations were made to ensure that the exchange of data on AEGIS accessions can only take place via dedicated IP addresses.

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

After the temporary omission of the EURISCO developer, the primary focus in 2020 was on EURISCO network activities. 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 2020 programme.

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 2020 in order to demonstrate the potentials of this common European approach.

The 2020 annual EURISCO training workshop should have taken place in Plovdiv, Bulgaria, jointly organised with the Institute for Plant Genetic Resources "K. Malkov" and in the framework of the GenRes Bridge project. The workshop was originally scheduled to take place in May 2020; the organisation was already well advanced. Due to the ever-increasing spread of the COVID-19 pandemic, a postponement of the workshop to September was initially envisaged, but unfortunately the workshop had to be cancelled altogether at the end. For 2021, the training workshop can in all likelihood be considered for the second half of the year at the earliest. However, this is still subject to great uncertainty at the moment.

A presentation on EURISCO was given at the workshop *First Meeting of the ECPGR Berries Working Group*, Dresden, Germany, 14–16 January 2020.

Another talk was given by video conference at the *ad hoc* action meeting *Development of specifications for a modern gene bank documentation software (CryoWEB 2.0)*, Madrid, Spain, 11–12 March 2020.

In addition, EURISCO was presented in a webinar given in the frame of the European, Middle Eastern & African Society for Biopreservation and Biobanking (ESBB), 15 December 2020.

EURISCO was mentioned in a paper in *Plants* (DOI 10.3390/plants9081050) as well as in a book chapter of the *Handbook of Plant Breeding* series (DOI 10.1007/978-3-030-38792-1_1).

The EURISCO newsletter was sent around in December 2020. This is considered very important for providing feedback to the EURISCO users.

In 2020, the update frequency of National Inventory datasets was slightly higher than in 2019. In total, 38 productive updates of National Inventory datasets were performed, either completely or in parts.

Since January 2020, the number of accessions documented in EURISCO increased by 23,843. A total of 2,043,257 accessions from 43 National Inventories and 404 individual holding institutions were documented by 3rd December 2020. They represent 6,719 genera and 45,131 species, respectively. The number of AEGIS accessions labelled in EURISCO rose by 788, reaching 57,606 in total (Figure 1).

In 2020, the number of phenotypic data records rose by 31,149, reaching a total of 2,513,423. They are provided by nine countries and comprise 86,041 accessions.

Digital Object Identifiers (DOIs) are increasingly accepted as unique identifiers in the field of plant genebanks. The number of accessions documented in EURISCO to which a DOI was assigned, increased by 166,289 to a total of 226,789. At present, DOIs from six countries are deposited in EURISCO. Details can be found on the EURISCO website. Since 2019, the EURISCO coordination has offered a service to support genebanks in registering accessions for DOIs. This service was used by Romania in 2020; as a result, DOIs were issued for 15,529 accessions from ROM007.

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).

In 2020, the EURISCO coordination was requested to transfer phenotypic data from two ECPGR Central Crop Databases: the ECPGR International Lactuca Database (ILDB), currently hosted by the Centre for Genetic Resources, Wageningen, and the ECPGR Wheat Database, currently hosted by the Czech Genebank at the Crop Research Institute, Prague. Preparations for the transfer of the data were carried out in 2020, e.g. by matching the listed accessions with EURISCO. A number of feedbacks from the NFPs of the participating countries are still pending. Only when their approvals have been received the transfer can take place.

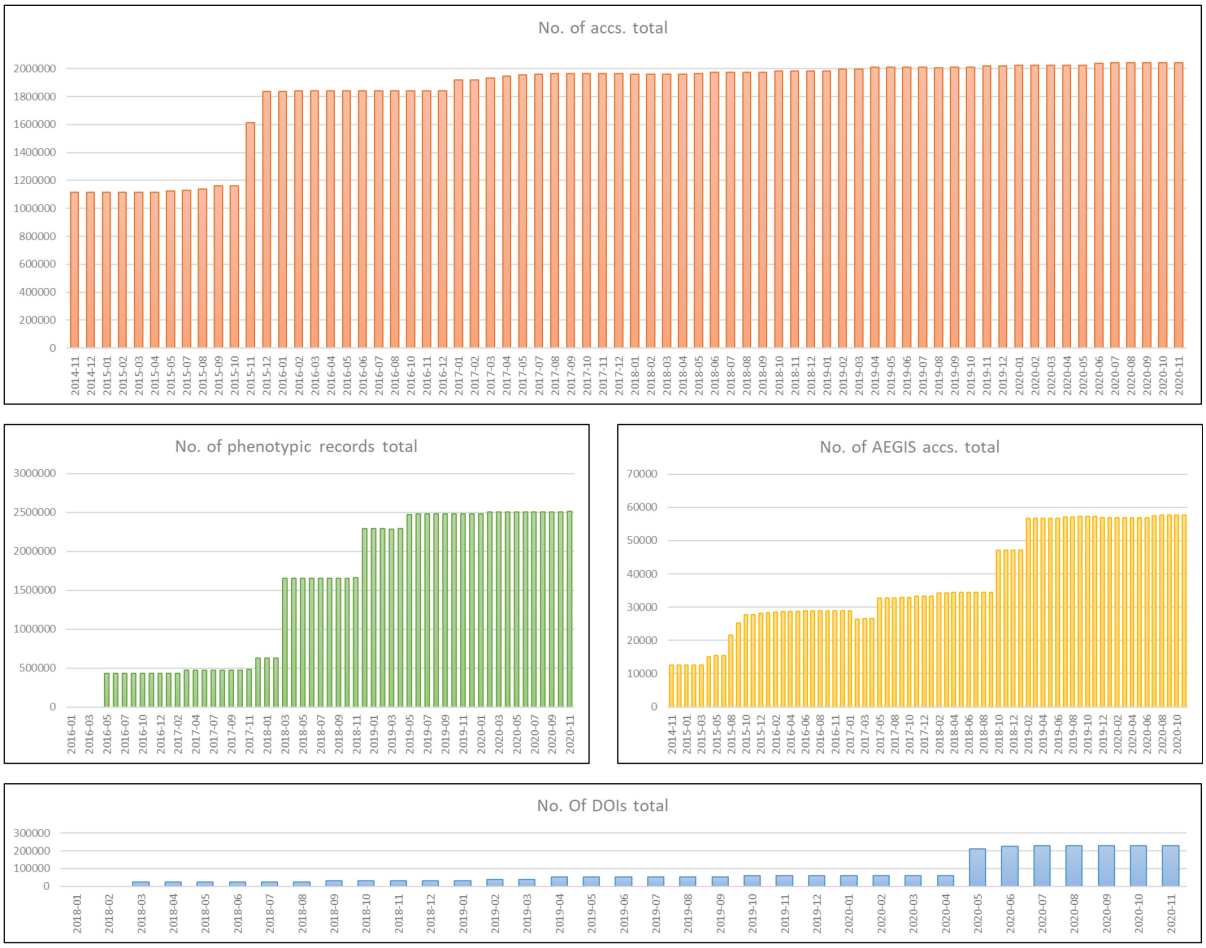

Figure 1: Development of the EURISCO dataset.

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 2020, the EURISCO coordination participated in the three already running Horizon 2020 projects “EUCLEG” (work package lead) and “Farmer’s pride” (task lead) as well as “GenRes Bridge”, all of which are related to EURISCO. Work had to be carried out in all projects (see separate project reports). In addition, a large number of video conferences were held.

End of 2019, another Horizon 2020 project was approved for funding – Activated GEnebank NeTwork (AGENT). The AGENT project is a concerted effort to activate genebanks. 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.

This project started in May 2020 and required major work. Bridging collections for a pilot group from four genebanks (Czech Republic, Germany, Poland and Slovakia) were compiled for barley and wheat (both spring and winter type). Data exchange formats were proposed and guidelines for data flows were drafted. All work was done in close coordination with the European colleagues.

Within the framework of the European Evaluation Network (EVA), the ECPGR was able to provide funding for a sub-project to the EURISCO coordination thanks to a grant from the German Ministry of Agriculture. This will finance a developer position through which the extensions to the EURISCO infrastructure necessary for EVA can be made. During the year, a letter of agreement was signed between the ECPGR Secretariat and IPK (hosting institute of EURISCO) and the post was advertised. By the end of the year, a qualified developer was recruited to take up the post on 1 January 2021. A number of preparatory activities have already been carried out in 2020. This includes participation in numerous meetings of the already active EVA consortia, the development of data exchange formats and the collection of requirements.