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This report describes the activities carried out by IPK in 2019 for hosting and maintaining the European search catalogue for plant genetic resources (EURISCO), and for coordinating the EURISCO network.

Content

1   EURISCO development

An important focus of activities in 2019 was the collaboration on various project proposals, especially under the EU's Horizon 2020 funding programme. Therefore, some developments had to be postponed.

The following activities were carried out:

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

1.1.1 Extension for crop-specific passport data

It was frequently asked by various ECPGR Crop WGs to develop a possibility of providing additional information not included in the MCPD standard. Therefore, a simple and general extension was developed following the so-called Entity-Attribute-Value (EAV) approach. This was first introduced to the participants of the ECPGR Grant Scheme Activity "ImprovLoliumCol". The approach allows the Crop WG chairs to define additional descriptors beyond the MCPD standard, which can be used to store corresponding data for the respective accessions. The basic EURISCO-MCPD format was not touched.

1.1.2 DOI registration service

As proposed in 2018, a DOI service was implemented in close collaboration with the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). For this service, EURISCO acts as a mediator in the DOI registration process for germplasm accessions and hands over the issued DOIs to the respective genebanks. This is made possible by the fact that EURISCO has all necessary passport data (incl. regular updates).

This service was first used by the National Inventory Focal Point of Azerbaijan; 8,387 accessions of AZE015 were registered for a DOI in October 2019.

1.1.3 Extension for SSR data

Work has begun on exploring the possibilities of adding SSR data to EURISCO. In general, this extension is considered feasible. The collection of requirements for the visualisation as well as the implementation will be continued in 2020.

1.1.4 Update of how-to documents

The how-to documents for uploading data to EURISCO are being updated continuously. The procedure for registering germplasm accessions for DOIs was documented. The crop-specific extensions of the passport data will be documented accordingly as soon as they are accepted by further Crop WGs.

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

1.2.1 Implementation of general improvements

2019 a number of functionalities of the web interface were (further) developed. These developments will be continued in the future.

An API has been provided to enable better linking to passport data in EURISCO from external information systems. For example, the Commonwealth Potato Collection of the James Hutton Institute links its accessions directly to the corresponding entries in EURISCO.

The National Inventory Reports are now available by Interactive Grids and the total number of accessions found was added.

A thorough performance tuning of the search on phenotypic data was performed.

Several encoding issues of non-Latin-1 characters were fixed for accession names and crop names.

A frequently expressed user request, the download option for complete phenotypic experiments, was implemented. This includes the experiment description, trait definitions and observation values, which can be downloaded together as a single MS-Excel file.

Requests for additional extensions were collected from the users of the EURISCO system, in particular with regard to combined searches using passport and phenotypic data, and *in situ* CWR data. The implementation of combined searches will be included in the planning for 2020; a possible extension for *in situ* CWR data has to be discussed in advance with the EURISCO Advisory Board.

1.2.2 Improvement of taxonomy searches

The taxonomic search already implemented in 2018 was extended by a fuzzy logic component in 2019. This ensures that even typing errors etc. lead to usable hits. The search for species names, which are composed of several substrings, is now supported too.

Furthermore, the new taxonomic search functionality has also been implemented for the Advanced Search now.

Figure 1: Screenshot of the Advanced Search showing the results of a taxonomic search. The synonyms found and the taxonomic terms that contain typing errors, respectively, are listed and can also be selected/selected. Besides the taxonomic search term, the selected filter criteria of the other search categories are also displayed. The search can be adjusted successively.

The taxonomy extensions of EURISCO have been published in a short communication article (see section 2.1).

1.2.3   Crop-specific passport data

The infrastructure for managing crop-specific passport data in addition to the MCPD attributes was developed (section 1.1.1). The visualisation of those data was implemented in the new crop portal for forages (section 1.2.4). If this extension is accepted by the community, it can also be used for other crop portals and/or the EURISCO web interface.

1.2.4   Crop portal for forages

In the frame of the ECPGR Grant Scheme Activity "ImprovLoliumCol", a prototype for a new crop portal dedicated to forages was developed. This portal allows users to search over different genera of forage crops. A search using passport data as well as phenotypic data is possible. It is planned to enable a combined search across both data domains in the future.

In addition to the classic search, it is also possible to search for acquisitions by selecting them on a map. Furthermore, various statistical information is offered.

Separate data management by the ECPGR Forage WG is no longer necessary, because the data displayed in this portal is provided directly by EURISCO in the background and is automatically updated.
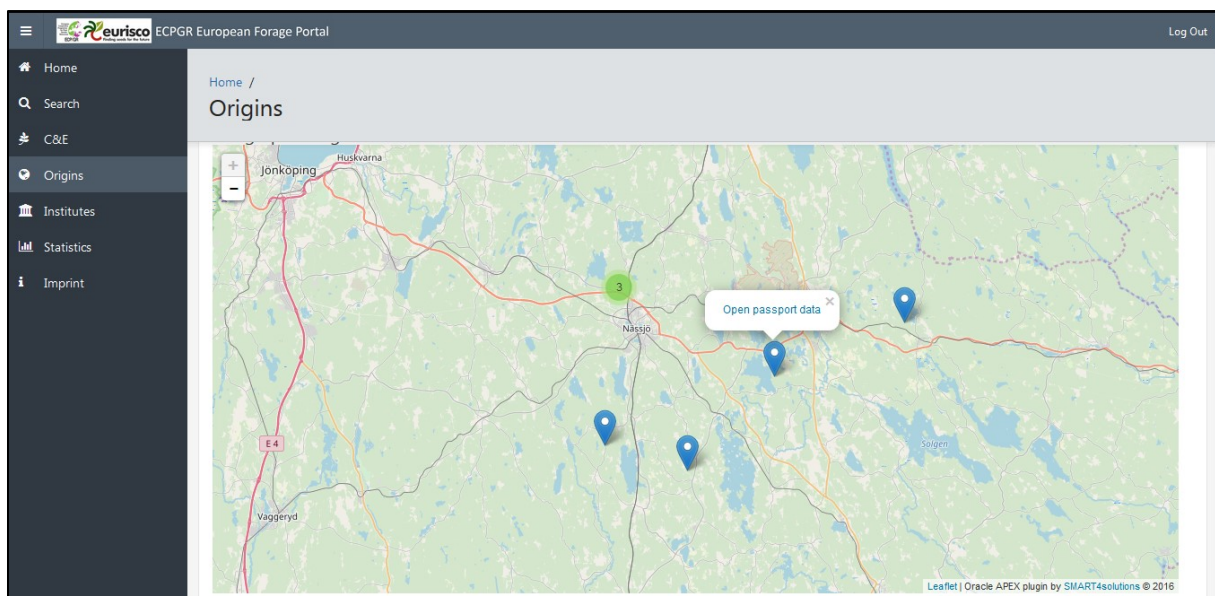
Figure 2: Prototype of the new crop portal for forages. The screenshot shows an example of selecting accessions via a map.

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 mentioned above, besides the coordination of the EURISCO network activities, an important focus in 2019 was the collaboration on various project proposals, especially under the EU's Horizon 2020 funding 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 2019 in order to demonstrate the potentials of this common European approach.

The EURISCO coordination co-organised the workshop of the ECPGR Grant Scheme Activity "ImprovLoliumCol", which took place 17 September 2019 in Germany. In addition to several other topics, the newly developed prototype of the ECPGR Forage Portal was presented. Additional use cases were discussed, the feasibility of which will be checked.

An presentation on EURISCO was given at the *ECPGR Workshop for the establishment of a European Evaluation Network (EVA) on vegetables*, 2–3 April 2019, Durrës, Albania.

Another talk was given at the workshop *Breathing New Life into the Global Crop Conservation Strategies: Providing an Evidence Base for the Global System of Ex Situ Conservation of Crop Diversity*, Global Crop Diversity Trust, Bonn, Germany, 14–15 October 2019.

EURISCO was also presented at the workshop *Enhancing and Linking Information Systems*, 30–31 October 2019, Tuusula (Helsinki), Finland.

A presentation was given at the *First Meeting of the ECPGR Maize Working Group*, Belgrade, Serbia, 2–3 December 2019.

The bi-annual EURISCO newsletter was sent around in September and December 2019, respectively. This is considered very important for providing feedback to the EURISCO users.

A manuscript about EURISCO's taxonomy extension was prepared and published as a short communication in Plant Genetic Resources (Advancement of taxonomic searches in the European search catalogue for plant genetic resources. DOI: https://doi.org/10.1017/S1479262119000339).

In 2019, the update frequency of National Inventory datasets was on a high level again. In total, 33 productive updates of National Inventory datasets were performed, either completely or in parts.

In 2019, the number of accessions documented in EURISCO increased by 36,028. By the end of the year, a total of 2,019,404 accessions from 43 National Inventories and 398 individual holding institutions were documented. These accessions represent 6,392 genera and 43,223 species, respectively. The number of AEGIS accessions labelled in EURISCO rose by 9,769, reaching 56,818 in total (Figure 3).

The number of phenotypic data records rose by 189,133, reaching a total of 2,482,274 provided by eight countries so far.

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 2018, a first analysis of the International Database for Beta (IDBB) was performed with the aim of integrating its data into EURISCO. Due to time constraints, it was not feasible to continue this task in 2019. So it had to be postponed to 2020.

Figure 3: Trend in the development of the EURISCO dataset.

2.2 Participation in project proposals

The EURISCO coordination provided substantial legwork to the preparation of project proposals (Horizon 2020 and others) aiming at acquiring additional funding for developing certain aspects of EURISCO.

The EURISCO coordination participated in three project proposals, which were submitted to the Horizon 2020 call "Adding value to plant Genetic Resources" (SFS-28-2019 B). One of them, Activated GEnebank NeTwork (AGENT), was recently approved for funding. 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 will be 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.

The EURISCO coordination continues to participate in the ongoing Horizon 2020 projects "EUCLEG", "Farmer's Pride" and "GenRes Bridge".

The EURISCO coordination supports the ECPGR European Evaluation Network funded in 2018. The EURISCO coordination participated in two workshops in 2019 (section 2.1). Initial financing for the network was provided by the German government. The activities of EURISCO will start in 2020.

We will continue to actively participate in the preparation of further project proposals aiming at acquiring additional funding for developing certain aspects of EURISCO. Two further Horizon 2020 proposals with participation of EURISCO were under preparation for submission in January 2020.