Project:	CWR in EURISCO	Date:	2023-07-31

From:	Stephan Weise (IPK) Suman Kumar (IPK)	To:	Lorenzo Maggioni (ECPGR Secretary)
CC:	Loredana Maria (ECPGR Secretariat)		

This report describes the activities carried out by IPK Gatersleben between January and June 2023 in the frame of the project “CWR in EURISCO” (LoA N° L22ROM153).

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1 Background and aims

The European Search Catalogue for Plant Genetic Resources (EURISCO) documents more than two million accessions of cultivated plants and their wild relatives, which are preserved under *ex situ* conditions in more than 400 collections throughout Europe and neighbouring countries. To achieve this, EURISCO is based on a network of National Inventories from 43 countries through which these data flow together. EURISCO provides information on the great genetic diversity preserved by the cooperating institutions. In this way, the system makes an important contribution to the conservation of global agrobiodiversity.

The genetic resources of crop wild relatives (CWR) native to Europe are related to many socio-economically important crops grown in the region and in other parts of the world, and contain a large pool of evolving genetic diversity of potential value for crop improvement. New challenges posed by climate change increase the need to explore potential sources of new diversity. In addition, innovative molecular technologies make it easier to study wild gene pools to find useful alleles.

The need to conserve and document CWR has been recognised, inter alia, in the Convention on Biological Diversity (CBD), the Second Global Plan of Action (GPA) on Plant Genetic Resources for Food

and Agriculture and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

Since 2014, the ECPGR Working Group on Documentation and Information has been discussing the issue of *in situ* conservation data and recommending its inclusion in the EURISCO catalogue. The recommendation to use EURISCO to document data on the most suitable wild populations of CWR was also made in the "ECPGR Concept for *in situ* conservation of crop wild relatives in Europe", a document endorsed by the ECPGR Steering Committee in March 2015. The "European Strategy for conservation and sustainable use of plant genetic resources" (PGR Strategy), submitted to the ECPGR Steering Committee for endorsement in October 2021, recognises that many national programmes in the European region have a growing evidence base on the diversity, conservation and use of CWR.

The issue of *in situ* material was also discussed at the EURISCO Advisory Committee meeting in July 2021 and it was decided to develop a plan for the extension of EURISCO to include *in situ* data.

Against this background, the German Federal Agency for Agriculture and Food approved a project to promote the definition of the scope of the type of *in situ* CWR data that would benefit from inclusion in EURISCO. This project aims to expand the EURISCO catalogue and prepare it to include and make publicly available the *in situ* CWR data provided by European countries. The provision of data from these pilot countries will complement the new EURISCO extensions and serve as an example to all other countries.

2 Approach

In order to extend EURISCO for *in situ* CWR data, the following tasks have to be completed:

- Finalise the EURISCO-*in situ* CWR data standard;
- Implement a mechanism for providers of *in situ* CWR data to upload it to a staging area;
- Implementation of integrity checking mechanisms to be applied to the uploaded data;
- Modify/extend the EURISCO database schema;
- Implement an update mechanism for integrating the *in situ* CWR data into the actual EURISCO database schema;
- Implement an intranet interface for *in situ* CWR-NFPs and embed the upload/check/update mechanisms;
- Extend the public EURISCO application for *in situ* CWR data

3 Results

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. The activities started in 2022 were continued in 2023. A total of 3 PL/SQL packages containing 67 background programmes and 24 front end application pages were created to achieve the objectives of uploading, validating and updating of EURISCO with *in situ* CWR data (Table 1).

Table 1: Summary of implemented PL/SQL packages.

Total	Package	Type
5	EURISCO_CWR_IMPORT_CHECKS	FUNCTION
28	EURISCO_CWR_IMPORT_CHECKS	PROCEDURE
20	EURISCO_CWR_UPDATE	FUNCTION
7	EURISCO_CWR_UPDATE	PROCEDURE
5	EURISCO_EXCEL_CWR_IMPORT	FUNCTION
2	EURISCO_EXCEL_CWR_IMPORT	PROCEDURE

3.1 Data integrity checks

The development of the data integrity checks for *in situ* CWR data uploaded to a staging area was largely completed by the end of 2022. During the reporting period, some necessary extensions were made and extensive tests were carried out. The implementation was realised with PL/SQL; all checks were organised in a package comprising 5 functions and 28 procedures.

3.2 Extension of the EURISCO database schema

All necessary adaptations and extensions of the EURISCO database schema have been carried out. First and foremost, this concerns extensions to the central accession table and the creation of structures for the management of occurrence, site protection and conservation action information.

3.3 Update mechanism

The primary focus of activities in the reporting period was on the implementation of the update mechanism. As with all other background mechanisms in the EURISCO context, the implementation was realised using PL/SQL. A total of 20 functions and 7 procedures were developed and tested. These ensure the consistent integration of the *in situ* CWR data uploaded to the staging area and checked there into the actual EURISCO database schema.

3.4 Extension of the CWR intranet interface

An intranet interface for *in situ* Focal Points was already developed in 2022, which enables a purely browser-based upload of *in situ* CWR data into the EURISCO staging area. The data integrity checks and the update mechanism have now been embedded in this interface. After uploading data, the necessary checks are carried out by a background process (see section 3.1). The data of the accessions/populations are checked one after the other with regard to the descriptors defined in the *in situ* CWR data standard. In case of errors, log information is written to the database and an error report is presented to the user (Figure 1).

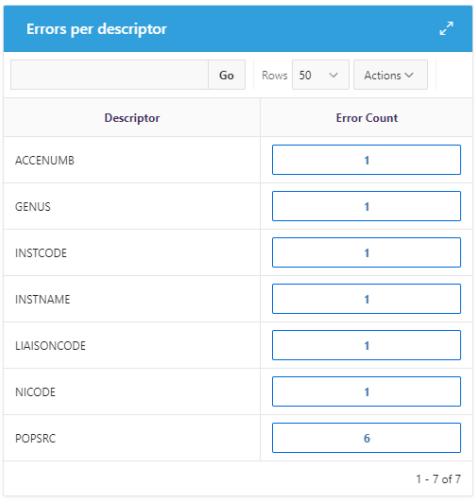

Figure 1: Screenshot of a report indicating errors for various descriptors.

The extent of the reports provided is similar to the established intranet interface for *ex situ* data. The user then has the option of approving the data for publication in EURISCO or discarding it and uploading it again after revising it (Figure 2). If the data is approved, the processes for distributing the new data into the EURISCO database schema are started in the background.

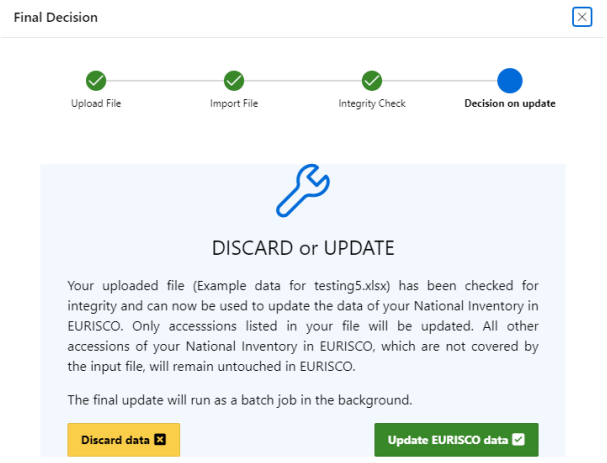

Figure 2: Screenshot of the final decision about approving or discarding the data.

3.5 User guide

A user guide for in situ focal points describing the preparation and upload of data was compiled (Figure 3).

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User guide:

Uploading *in situ* CWR passport data in EURISCO

Author: Suman Kumar, Stephan Weise
Date: 2023-04-24
Version: 1.0

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Figure 3: User guide for uploading *in situ* CWR data.

4 Outlook

The extension of the public EURISCO web application for *in situ* CWR data is still pending. A user survey has been prepared for this; implementation will take place by the end of 2023.