

Prunus WG

ECPGR objectives for Phase X and next steps

Daniela Giovannini & Matthew Ordidge



✓ **94 Members**

- ✓ 22 genebank curators
- ✓ 44 crop specialists
- ✓ 26 plant breeders
- ✓ 19 Information/documentation
- ✓ 9 policy and law
- ✓ 5 other expertise

✓ **35 Countries**

✓ 7 main crops:

- ✓ **almond, apricot, cherry (sweet and sour), peach, plum (European and Japanese)**
- ✓ Accessions are maintained in open field collections, clonally propagated
- ✓ Exchange material is mainly budwood



2015 (I call).

PRUNDOC - Identification of a representative set of *Prunus domestica* accessions of European origin, well documented and characterized, to be included into the AEGIS system

Material & Methods

- ✓ 100 plum (mainly *P.domestica*) accessions of EU origin;
- ✓ 8 SSR loci; 18 passport FAO and 10 C&E;

Results

- ✓ 85 EU plum accessions described with FAO passport and (at least) 10 FPD (and pictures of the fruit);
- ✓ 38 genotyped with common SSRs;
- ✓ AEGIS: the 85 recommended for inclusion, with priority to 38 unique
- ✓ Publications

<https://doi.org/10.17660/ActaHortic.2019.1260.25>;

<https://link.springer.com/article/10.1007%2Fs10722-020-00901-y>

But: “Guidelines for developing a Plum-specific procedure for the selection of MAAs, to be extended in future to other *Prunus* species” not finalized.



2016 (II call).

EU.CHERRY - Collaborative action for updating, documenting and communicating the cherry patrimonial richness in EU

Material & Method

- ✓ 324 cherry accessions (from 23 countries, mainly EU)
- ✓ 187 (EU.CHERRY partners) accessions
 - ✓ 18 passport FAO, 33 C&E; 8 SSRs;

Results

- ✓ 192 unique profiles + 39 profiles common to ≥ 2 accessions;
 - ✓ 114 out of 192 recommended for inclusion into AEGIS:
 - unique accessions fulfilled most of the AEGIS requirements;
 - well described & maintained at ECPGR collections ;
 - landraces original to EU (non protected) endowed with important traits
 - passport and C&E data formatted for upload into EURISCO



a 2016 (II call).
agricoltura
a agraria
EU.CHERRY

PHASE IX:2014-2018

Pending questions

- ✓ 39 identical profiles: “Guidelines for developing a procedure for the selection of Prunus MAAs» not yet finalised;
- ✓ (Some) inconsistencies between EPDB and EURISCO in passport data;
- ✓ No EU.CHERRY accessions flagged yet as AEGIS
- ✓ Most of the EU.CHERRY accessions have unknown sanitary status.

Partners agreed to consider them AEGIS candidates with the understanding that if they have phytosanitary problems they have to be made quarantine disease-free before it can be distributed.

- ✓ Papers in preparation: genetic and phenotypic data still not yet publicly available

Prunus Alignment - Testing, Use and Alignment of genetic data to distinguish unique and characterized accessions in Prunus



- ✓ more accessions genotyped;
- ✓ more described with FPD and SPD



- ✓ Alignment of datasets from EU.CHERRY and other SSR studies on National collections;

Results

Presented and discussed at the meeting, soon in the Report in ECPGR website

ECPGR objectives for Phase X and next steps





OBJECTIVES OF ECPGR FOR PHASE X (2019-2023)

(agreed at the 15th Steering Committee meeting, May 2018)

LONG-TERM GOAL

Stakeholders in Europe collaboratively, rationally and effectively conserve *ex situ* and *in situ* PGRFA, provide access and increase sustainable use.

OBJECTIVES

click on the 'objective' below to go to the respective page

- 1 To efficiently conserve and provide access to unique germplasm in Europe through AEGIS and the European Collection
- 2 To provide passport and phenotypic information of actively conserved European PGRFA diversity *ex situ* and *in situ* through the EURISCO catalogue
- 3 To improve *in situ* conservation and use of crop wild relatives
- 4 To promote on-farm conservation and management of European PGRFA diversity
- 5 To promote use of PGRFA

1

To efficiently conserve and provide access to unique germplasm in Europe through AEGIS and the European Collection

Requisites for AEGIS accessions (as established by the *Prunus* WG, 2008; 2010)

PGR in the public domain

Originated in EU/important to EU

Genetically unique

Of known origin, whether collected or bred;

Accompanied by comprehensive passport information using the EURISCO multi-crop passport descriptors;

Accompanied by morphological and/or molecular characterization data;

Accompanied by agronomic evaluation data;

Correctly named (in perennial clonal crops synonyms and homonyms are frequent);

Of high health status, eg. virus free

We developed harmonized protocols and descriptors for C&E of accessions

- ✓ Crop-specific protocols and First and Second Priority descriptors
 - peach (2013)
 - plum (2015) – PRUNDOC
 - sweet cherry (2016) – EU.CHERRY

We developed SSR set and reference varieties for:

- sweet cherry (2009) under revision (soon available)
- plum (soon available)



- 1 To efficiently conserve and provide access to unique germplasm in Europe through AEGIS and the European Collection
- 2 To provide passport and phenotypic information of actively conserved European PGRFA diversity *ex situ* and *in situ* through the EURISCO catalogue

Still few Prunus accessions in AEGIS. However....

We developed (2016) Prunus crop-specific standards (PGS) for genebank management (AQUAS)

FAO standards



PGS



- 1 To efficiently conserve and provide access to unique germplasm in Europe through AEGIS and the European Collection
- 2 To provide passport and phenotypic information of actively conserved European PGRFA diversity *ex situ* and *in situ* through the EURISCO catalogue

Resources

We have a list of candidate accessions for the AEGIS *Prunus* Collection:

104 plum (*P.domestica*) and **153 sweet cherry** landraces of EU origin

- described with EURISCO passport descriptors,
- described with crop-specific FPD (some also with SPD);
- described with fruit pictures;
- genetically unique (distinct SSR profiles);

- | | |
|---|---|
| 1 | To efficiently conserve and provide access to unique germplasm in Europe through AEGIS and the European Collection |
| 2 | To provide passport and phenotypic information of actively conserved European PGRFA diversity <i>ex situ</i> and <i>in situ</i> through the EURISCO catalogue |

2 **To provide passport and phenotypic information of actively conserved European PGRFA diversity *ex situ* and *in situ* through the EURISCO catalogue**

- EURISCO catalogue is the DB of reference for ECPGR since Phase IX
- The EPDB (the DB of the Prunus WG) is under the responsibility of INRA Bordeaux. At the moment INRA Bordeaux cannot guarantee the security of this computer, and steps are being taken to transfer the data to GnpIS, an Information System maintained by INRA:
- GnpIS is interoperable with EURISCO, and can provide some functionalities which are lacking in EURISCO: - Ability to search for an accession using several characters (for example searching all cherry accessions with red colour and big fruit) (currently not possible with EURISCO) - Ability to host SSR data (currently not possible with EURISCO) - Easy import of data.
- EPDB (13,000 accessions) is not fully synchronized with EURISCO (18,000), and there are inconsistencies among the accessions listed in the two DBs.

Short term

More *Prunus* accessions well characterized in EURISCO

- Crop-specific protocols for further *Prunus* crops;
- Collaborate with EURISCO DB manager to implement EURISCO functionality for Prunus (Transfer the data in EPDB to another Information System maintained by INRA: GnpIS)
- New *Prunus* accessions with C&E data on EURISCO;
- New *Prunus* candidates for AEGIS
- *Prunus* accessions in AEGIS (those fulfilling all the requisites)
- New Associate Memberships to AEGIS
- Common Publications
- Prunus WG Meeting
- New calls (joint with other WG?)

Long term

Promote the exchange (and use) of *Prunus* accessions

- phytosanitary status assessment of AEGIS candidates;
- sanitation of the most valuable;
- Protection of the healthy copies against quarantine pests and diseases (*in vitro*; cryopreservation)