

PRIVATE PUBLIC PARTNERSHIPS FOR THE USE OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

PHASE II

Report of the Second workshop, 27–28 March 2018, Rome, Italy

L. Maggioni







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Welcome and PPP project background

Welcome by ECPGR Secretariat

The ECPGR Secretary, L. Maggioni, welcomed the participants to the second meeting of the second phase of the PPP project, funded by the German Federal Ministry of Food and Agriculture. The objective of this workshop was to finalize an agreed framework for a European PGRFA Evaluation Network. All participants then introduced themselves briefly (the list of participants is provided as Annex I).

Overview of the PPP project since the last meeting and workshop's objectives

L. Maggioni recapped the Private Public Partnerships project background and objectives, referring to the reports of the Bonn workshop (7-9 June 2017)¹ and of the Rome workshop (12-13 October 2017).² The aim of the current second project phase (August 2017 – May 2018) was to prepare a framework for a European PGRFA Evaluation Network, i.e. propose a network structure, draft network documents (such as a Memorandum of Understanding (MoU) and cooperation agreements), discuss how the harmonization of standards and methods for evaluation should be dealt with in the project, how exemplar crops should be selected to test the network structure, and develop recommendations to the ECPGR Steering Committee on how the work on the Network could become a permanent part of the ECGPR Secretariat's work.

At the end of the First Workshop of the second phase, (Rome, October 2017), scope, goal, objectives, comparative advantages and structure of a European PGRFA Evaluation Network had been revised (see Annexes III and IV of the Report of First Workshop). Subsequently, the legal advisor, G. Moore, drafted an MoU for the establishment of the Evaluation Network, based on the elements agreed at the first workshop (see Annex V of the Report of First Workshop). Comments received from the Task Force and Advisory Group then suggested to modify the MoU into a draft 'Proposal' for the establishment of the Evaluation Network, which was the main item to be discussed and agreed during this second workshop, together with its annexed draft Letter of Commitment and model Cooperation Agreement. In particular, this workshop was to define the appropriate level of formalization that could be attractive for potential parties and promote their action. The appropriate role of the European Seed Association (ESA) in the Network was also a key factor to be streamlined.

Regarding the type of standards and methods to be harmonized, general guidelines were drafted in the previous workshop. For the selection of crops to be included in the Evaluation Network, the main criterion defined was the existing interest of crop communities. Reports at this regard were expected during this meeting. Finally, recommendations for ECPGR and the definition of steps towards the implementation of the network were also be formulated during this meeting.

This presentation is available from the workshop webpage.

Report of a Workshop, 7–9 June 2017, Bonn, Germany

² PPP Phase II. Report of the First workshop, 12–13 October 2017, Rome, Italy

Reporting about crop communities' interest for an Evaluation Network

R. Töpfer reported about the needs and expectations of the grapevine breeding community. A good exchange of germplasm has been going on so far; it is necessary to operate at European regional level to do breeding and pre-breeding. There are only 6-7 available sources of resistance. New ones are needed for a long-lasting approach, also considering the challenges posed by climate change, especially in south and southeast Europe. Traditional cultivars will no longer be useful. It will be necessary to breed for changed conditions and to do this through the understanding of how genotypes are affected by biotic and abiotic stresses. A positive feedback regarding the establishment of an Evaluation Network was received for example from Montpellier, France, Conegliano, Italy, and Madrid, Spain. The grapevine community already has an organized structure that needs to be improved with phenotyping activity in different environments; germplasm repositories are the suitable places to carry out the evaluation. There is a great chance to evaluate for biotic or abiotic factors, also introducing new germplasm sources from Asia and America. It is important to carry out joint evaluation as well as a joint analysis of evaluation data. The most needed traits are those involved in the adaptation to climate change. One example would be spring frost, where bud burst flowering plants that start late are less endangered. The possibility to study such traits in several repositories in different climate conditions is something that is currently missing and that the Evaluation Network could provide.

- F. Ordon remarked that genebanks are critical since they hold not structured populations with diversity. The potential to utilize such diversity is now much higher than in the past, since it is now possible to investigate at the level of genes.
- M. Marino commented about the importance of taking action through networking, since networks offer the potential to cope with new and emerging issues.
- C. Allender informed the meeting via email that she had made some enquiries about interest in a field vegetable PPP, and confirmed that this raised an interest to be further explored.

Proposal for the establishment of a European PGRFA Evaluation Network

G. Moore presented the proposal for the establishment of a European Evaluation Network (EVN). The previous workshop in October 2017 had recommended the preparation of a Memorandum of Understanding (MoU) to establish the network and that the MoU should be initially signed by the ECPGR Steering Committee and the European Seed Association (ESA). Subsequently, other partners such as genebanks and breeding companies would also be invited to join. Elements of an MoU had been listed in Annex V of the workshop's report. On this basis, a draft MoU was initially developed. However, dialogue with ESA convinced the drafter that a more acceptable solution would be the preparation of a 'Proposal for the establishment of a European Evaluation Network', rather than a MoU, and that this proposal could be simply endorsed by the ECPGR Steering Committee during its upcoming 15th Meeting. In parallel, ESA and ECPGR Secretariats would develop an MoU for enhanced reciprocal collaboration.

The 'Proposal' had been circulated to all the participants, seeking their feedback and was subsequently revised.

The revised Proposal was thoroughly discussed and a number of amendments agreed, in particular:

- the preamble was simplified and partly reworded;
- the definition of "Evaluation" was reworded;
- the definition of members of EVN was revised;
- it was specified that the EVN will operate 'according to the principles of the Treaty';
- the 'currently in force' Standard Material Transfer Agreement (SMTA) was suggested for use;
- the 'participation of the private sector' in the Steering Unit was added;
- Annex C was specified to be just an example of the 'type of format' to be used for cooperation agreements;
- paragraph 06 c. was reworded;
- in Annex A, the first bullet related to the costs of participation in EVN was reworded; the second bullet, referring to the role of EURISCO and the period within which data should be made available, was reworded; the SMTA was suggested to be used 'if possible'; the number of years of privileged access to data was left to the choice of the cooperators, without indication of a preferred figure;
- in Annex B, the two boxes 'Material providers' and 'Evaluators/Network of sites' were deleted;
- in Annex C, point 1, 'resistance' was specified to be just one example of possible traits under investigation; at point 8., the results should be made 'publicly' available (not only available to other Members of EVN); point 13, related to entitlement to apply for patents, was deleted.

Further steps and recommendations were agreed as follows:

- 1. The redrafted proposal should be circulated to the entire PPP group (Task force and Advisory Group) with the aim to consolidate the final version within two weeks from date of circulation.
- 2. The proposal in the form agreed by the PPP group should be included among the background documents for the 15th ECPGR Steering Committee meeting to be held in May 2018, with a recommendation for approval.
- 3. The PPP group also recommended that ECPGR and ESA revise and finalize their MoU, along the lines of the draft provided to the group, with the aim to reach its signature by the ECPGR Steering Committee and the Board of ESA, possibly during the 15th ECPGR Steering Committee meeting in May 2018.

Standards, methods and structure

Role of EURISCO

S. Weise described the status of characterization and evaluation (C&E) data in EURISCO and the challenge to handle data collected with several types of standards. The current pragmatic approach in EURISCO involves import of existing data as they are, without standardization of trait, scale or experimental design. The only standardization relates to the exchange format. Only non-confidential data related to accessions that are present in EURISCO can be included. The responsibility to upload the data remains in charge of each National Focal Point.

The role of EURISCO in a future Evaluation Network can be to offer support in promoting harmonization of experiment set-up, treatment, etc. A minimum approach would bring at least better descriptions, while a desirable approach could lead to fully harmonized protocols with standardized trait names (crop ontology), methods, scales, etc. The level of standardization should be discussed by crop experts (e.g. ECPGR Crop Working Groups). The EURISCO Coordinator could offer support in terms of tools (templates and standards), training and helpdesk to facilitate data upload. EURISCO could provide an intranet platform for project partners, offering specific exchange formats, upload and check tools, with extension for privileged access (data embargo period). Data could then be published automatically after expiration of the embargo. In principle, also non-EURISCO material could be managed.

In reply to various questions, S. Weise explained that in terms of use of the data, the statistics revealed an increase of the use of EURISCO after publication of C&E data started. However, it is not possible to know who is using EURISCO (i.e. breeders vs. other categories). Training is currently organized for data providers, not yet for data users.

It was remarked that the knowledge of EURISCO by breeders is currently very low and there is ample room for improvement of its use.

Information from EVA II community

EVA II, the National Evaluation Programme for Cereal Plant Genetic Resources, was launched in Germany in 2001 with the objectives to establish an institutional network for the evaluation of wheat and barley plant genetic resources (PGR) and to generate scientifically more meaningful resistance data by evaluating identical sets of germplasm at different locations and using standard methods and standard genotypes. Another objective was to develop a dynamic information system for recording, analysis and provision of the data generated by the network.

The network agreement was eventually signed by 20 private and public partners. The main partners include the Julius Kühn-Institute (Institute for Resistance Research and Stress Tolerance), with a coordinating role, the Association for the Promotion of Plant Innovations (GFPi) and other plant breeding companies and scientific institutions. The workflow involves the selection of interesting diseases by the EVA II expert group, the selection, ordering, multiplication and primary evaluation of the genotypes by the coordinating institute, the dispatching of the composed trial entries along with the SMTA to partners. Lists for evaluation data recording are provided by the coordinator. The susceptibility to diseases is assessed on small-scale plots. Data are imported into the common database and the results released by the coordinator. The EVA II information system facilitates the information flow between partners within the network. Partners can search information by year, crop, disease or location or a combination thereof. After 3 years, the data enter the public domain.

EVA II can be proposed as a blueprint for a wider European Network, as it has shown that it fulfils the basic demands for an evaluation system without requiring additional work by the private partners. Ideally, the structure could respond to additional needs and challenges, by expanding to cover molecular data, implement screening protocols for more complex traits, tools for genome wide association studies (GWAS) and for marker development.

Common standards and protocols in evaluation

In a presentation uploaded on the meeting's website, but not discussed during the meeting owing to lack of time, L. Maggioni referred to the general principles regarding standards and methods which were outlined during the <u>first workshop of PPP Phase II.</u>

Within a PPP project, harmonized protocols and methods are required to share the cropspecific data among partners. Work on harmonization of evaluation protocols and good practices is foreseen to be developed as part of the Crop consortia cooperation agreements. Similarly, the data management plan describing the data flow with responsibility of all the partners, when the data are private and when they become public will be part of the Cooperation agreement.

Regarding the choice of an information system with international standards in order to make the data available and the need to adopt FAIR (= Findable, Accessible, Interoperable, Reusable) principles, the project GenRes Bridge was submitted for funding (2019-2021) to the EC. This project includes work packages specifically dedicated to help EURISCO to move towards being FAIR, in collaboration with existing European infrastructures (ELIXIR, EMPHASIS) and international initiatives. GenRes Bridge will also develop actions for training and capacity building on data management, protocols and data standardization. It will furthermore identify the useful data expected by GenRes managers and users (inventory of use cases; workshop on data interoperability; strategy for delivery of information services to end-users), improve the implementation of the FAIR principle (state of the art of existing standards, vocabularies and guidelines; dissemination and training strategy) and build communities of interoperable information systems (searches across info systems; federation of information systems for plant community).

On the other hand, the need to provide a file repository for additional information to be stored, such as cooperation agreements, MoUs, sMTAs, protocols, etc., will be ensured by the ECPGR Secretariat coordination unit, within the context of the Evaluation Network.

Composition of Structures' bodies

In a presentation uploaded on the meeting's website, but not discussed during the meeting owing to lack of time, L. Maggioni proposed draft functions and compositions of the various bodies of the Evaluation Network, i.e. Steering Unit, Coordination Unit and Data and Information management support group, as follows:

Steering Unit

Functions

- Promoting establishment of PPP projects
- Overseeing Coordination unit
- Advising on general issues related to consortia agreements

Composition

- ECPGR (genebank, research, public breeding, policy and law)
- ESA (private breeding)
- Non-governmental organization (NGO) (breeding, direct use)

Coordination Unit

Functions

 Facilitate agreements and compilation of documents (Cooperation agreement, Selection of accessions, Evaluation protocols)

- Facilitate germplasm and data flow across partners
- Repository of documents: Cooperation agreements, MoU, MTAs, protocols, standards, etc.

Composition

• ECPGR Secretariat (initially absorb functions, add part-time position when things start rolling)

Data and Information management support group

Functions

- Advise on data standards and data flow
- Advise on centralized information systems and cooperation with existing infrastructures
- Maintain and develop information system
- Provide appropriate training

Composition

- EURISCO Coordinator
- EURISCO Advisory Group
- Other documentation experts

How to get the Network started

The discussion on the next steps to get the Network started was chaired by J. Engels and the following conclusions were reached:

- 1. Following the approval of the Proposal by the ECPGR Steering Committee and the signing of the bilateral MoU between ECPGR and ESA, ECPGR and ESA should publicize the initiative widely, such as on a new dedicated webpage and through their communication channels.
- 2. ECPGR (also involving the Crop Working Groups) and ESA Secretariats should inform their respective memberships about EVN and should encourage potential partners to become members of EVN. To this effect, they should jointly prepare a model invitation letter explaining the objectives and benefit of the EVN.
- 3. PPP team group members (Advisory Group and Task Force) were invited to continue exploring within their crop communities whether sufficient interest is expressed for the EVN, so that 'test crops' could be selected for actual implementation of a regional evaluation programme. Grapevine and vegetables were considered a suitable crop group for which there might be strong interest to evaluate genebank material. Small breeding companies were also considered as an important possible target that might express interest to get involved. The organic breeders were also suggested as a community that could take action within EVN.
- 4. The German initiative EVA II (wheat/barley) was considered as one of the possible models that could be extended from Germany to involve other European countries. In parallel with point 3 above, F. Ordon offered to explore the interest of European breeders to get involved into such initiative. The ECPGR/ESA letter of point 2 above could be used for this purpose.

- 5. In case of positive response from crop communities (points 3 and 4 above), ECPGR will aim at organizing one or more workshops, for the respective crop experts to:
 - a. consolidate their agreement to initiate European evaluation programme(s),
 - b. get familiar with the opportunities offered by EVN (model documents, harmonization of standards; use of EURISCO as central information system for data sharing and upload),
 - c. make plans for the selection of accessions and of traits of interest,
 - d. discuss harmonization of evaluation protocols,
 - e. dialogue with the EURISCO coordinator to convey their needs and plan for the necessary improvements,
 - f. discuss specific terms for a cooperation agreement, and
 - g. discuss about funding requirements and opportunities.

Introduction to H2020 topic: Genetic resources and pre-breeding communities

L. Maggioni informed the participants about the upcoming call for proposal SFS 28 B. [2019], published on the EU Research and Innovation Portal, with topic on "Genetic resources and pre-breeding communities". This is a Research and Innovation Action (RIA) focused on "Adding value to plant genetic resources". The scope is to enhance management and use of genetic resources in Europe and implement global commitments in this area. Activities should be dedicated to dynamic management and documentation of genetic resources collections. Major efforts should go into capturing and characterizing the genetic diversity in germplasm and revealing novel information to users, thereby disclosing the potential of less adapted material from genebanks/*in situ* conservation sites in relation to valuable traits associated with resilience, adaptability and quality of crops.

As this opportunity could be relevant to advance the private public partnerships of a European Evaluation Network, the following actions were discussed and agreed:

- 1. The ECPGR Secretariat should verify whether a voluntary leader exists for the coordination of a project proposal in which the EVN structure and mode of operation could be optimally integrated
- 2. A think tank composed of Frank Ordon, Riccardo Bocci, Rob van Treuren, Stefan Weise, ESA [and possibly Anne-Françoise Adam-Blondon] agreed to enter into a brainstorming dialogue regarding the suggestion of the best options to promote the creation of a consortium for the preparation of a project proposal. A 'one-page' recommendation was expected to be delivered to the ECPGR Secretariat in time for the 15th ECPGR Steering Committee meeting.

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Annex I. List of participants

PPP Project Phase II

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Annex II. Workshop agenda

PPP Project Phase II Second Workshop, 27–28 March 2018, Maccarese, Italy

TUESDAY 27 MAI	RCH – SAKURA MEETING ROOM	
12.30-13.30	LUNCH	
	Welcome and introductory session	CHAIR: IMKE THORMANN
14.00 – 14.05	Welcome by ECPGR Secretariat	L. Maggioni, ECPGR
14.05 – 14.20	Introduction of participants	All
14.20 – 14.40	Introduction of agenda and objectives - Overview of PPP project since the last meeting	L. Maggioni
14.40 – 15.00	Reporting back about crop communities' interest for an Evaluation Network (10 min each)	 Grapevine – R. Töpfer Field vegetables – message from C. Allender Others?
15.00 – 15.30	TEA/COFFEE BREAK	
	Proposal for the establishment of an Evaluation Network	CHAIR: FRANK ORDON
15.30 – 16.00	Draft Proposal for the establishment of the Evaluation Network / Letter of Commitment / Cooperation Agreement	G. Moore
16.00 – 17.00	Discussion on Proposal	All
17.00 – 17.30	Recommendations	
	END OF WORKSHOP DAY 1	
17.30	Train to hotel	
20.00	SOCIAL DINNER	Restaurant <i>L'isola</i> , close to hotel - Via Assisi 140

WEDNESDAY 28 MARCH - SAKURA MEETING ROOM			
	Standards, methods and structure	CHAIR: TBC	
9.00 – 09.20	Discussion on common standards and protocols in evaluation	Introduced by L. Maggioni	
09:20 - 09:40	Role of EURISCO	Stephan Weise, IPK, EURISCO Coordinator	
09:40 – 10:00	Information from EVA II community	F. Ordon, JKI	
10.00 – 10.30	Discussion		
10.30 – 11.00	TEA/COFFEE BREAK		
11.00 – 11.15	Composition of Structures' bodies	Introduced by L. Maggioni	
11.15 – 11.30	Discussion		
	How to get the Network started	CHAIR: JAN ENGELS	
11.30 – 12.00	Introduction to H2020 topic: Genetic resources and pre-breeding communities	Introduced by L. Maggioni	
12.00 – 12.30	Discussion		
	Concluding session	CHAIR: LORENZO MAGGIONI	
12.30 – 13.00	Recommendations to the ECPGR Steering Committee, wrap-up and next steps	All	
13.00 – 14.00	Lunch		
	End of workshop		

Annex III. Summary of decisions and recommendations

Proposal for the establishment of the Evaluation Network

- 1. The Proposal for the establishment of the European Evaluation Network was thoroughly discussed and a number of amendments agreed.
- 2. The redrafted proposal should be circulated to the entire PPP group (Task force and Advisory Group) with the aim to consolidate the final version within two weeks from date of circulation.
- 3. The proposal in the form agreed by the PPP group should be included among the background documents for the 15th ECPGR Steering Committee meeting to be held in May 2018, with a recommendation for approval.
- 4. The PPP group also recommended that ECPGR and ESA revise and finalize their MoU, along the lines of the draft provided to the group, with the aim to reach its signature by the ECPGR Steering Committee and the Board of ESA, possibly during the 15th ECPGR Steering Committee meeting in May 2018.

How to get the Network started

- 5. Following the approval of the Proposal by the ECPGR Steering Committee and the signing of the bilateral MoU between ECPGR and ESA, ECPGR and ESA should publicize the initiative widely, such as on a new dedicated webpage and through their communication channels.
- 6. ECPGR (also involving the Crop Working Groups) and ESA Secretariats should inform their respective memberships about EVN and should encourage potential partners to become members of EVN. To this effect, they should jointly prepare a model invitation letter explaining the objectives and benefit of the EVN.
- 7. PPP team group members (Advisory Group and Task Force) were invited to continue exploring within their crop communities whether sufficient interest is expressed for the EVN, so that 'test crops' could be selected for actual implementation of a regional evaluation programme. Grapevine and vegetables were considered a suitable crop group for which there might be strong interest to evaluate genebank material. Small breeding companies were also considered as an important possible target that might express interest to get involved. The organic breeders were also suggested as a community that could take action within EVN.
- 8. The German initiative EVA II (wheat/barley) was considered as one of the possible models that could be extended from Germany to involve other European countries. In parallel with point 7 above, F. Ordon offered to explore the interest of European breeders to get involved into such initiative. The ECPGR/ESA letter of point 6 above could be used for this purpose.
- 9. In case of positive response from crop communities (points 7 and 8 above), ECPGR will aim at organizing one or more workshops, for the respective crop experts to:
 - a. consolidate their agreement to initiate European evaluation programme(s),
 - b. get familiar with the opportunities offered by EVN (model documents, harmonization of standards; use of EURISCO as central information system for data sharing and upload),
 - c. make plans for the selection of accessions and of traits of interest,

- d. discuss harmonization of evaluation protocols,
- e. dialogue with the EURISCO coordinator to convey their needs and plan for the necessary improvements,
- f. discuss specific terms for a cooperation agreement, and
- g. discuss about funding requirements and opportunities.

Opportunities to join forces for Horizon 2020, topic SFS 28 B. [2019]: Adding value to plant GenRes

- 10. The ECPGR Secretariat should verify whether a voluntary leader exists for the coordination of a project proposal in which the EVN structure and mode of operation could be optimally integrated.
- 11. A think tank composed of Frank Ordon, Riccardo Bocci, Rob van Treuren, Stefan Weise, ESA [and possibly Anne-Françoise Adam-Blondon] agreed to enter into a brainstorming dialogue regarding the suggestion of the best options to promote the creation of a consortium for the preparation of a project proposal. A 'one-page' recommendation was expected to be delivered to the ECPGR Secretariat in time for the 15th ECPGR Steering Committee meeting.

Annex IV. Acronyms and abbreviations

BLE Federal Office for Agriculture and Food, Germany

C&E Characterization and evaluation

CGN Centre for Genetic Resources, the Netherlands, Wageningen,

The Netherlands

EC European Commission

ECPGR European Cooperative Programme for Plant Genetic Resources

ESA European Seed Association, Brussels, Belgium

EU European Union

EURISCO European Internet Search Catalogue

EVA II National Evaluation Programme for Plant Genetic Resources (Germany)

EVN European Evaluation Network

FAIR Findable, Accessible, Interoperable, Reusable

GFPi German Federation for Plant Innovation, Bonn, Germany INRA Institut National de la Recherche Agronomique, France

IPK Leibniz Institute of Plant Genetics and Crop Plant Research, Gatersleben,

Germany

JKI Julius Kühn-Institute, Quedlinburg, Germany

MoU Memorandum of Understanding

NordGen Nordic Genetic Resource Center, Alnarp, Sweden

PGR Plant genetic resources

PGRFA Plant Genetic Resources for Food and Agriculture

PPP Private Public Partnership

SMTA Standard Material Transfer Agreement