



ECPGR Activity Grant Scheme Proposal Form

Fourth Call – Phase X (2019-2023)

Activity Proposal

Activity	
Full title	Collaborative action for updating the documenting about berry genetic resources in Europe
Acronym (or short title)	EUROPE.BERRIES
Duration of Activity (in months)	18 months
Start date – End date <i>Please indicate start date not earlier than 3 months after deadline of Call</i>	01.01.2021

Applying Working Group(s)

	Working Group	Indicate name and surname of Working Group Chair
1.	Berries	Monika Höfer
2.		
3.		
4.		

Activity Coordinator

Activity Coordinator	
Name and Surname	Monika Höfer
Working Group	Berries
Nationality	German
Current position	Senior Scientist
Institute	Julius Kühn Institute, Institute for Breeding Research on Fruit Crops
Country	Germany
Telephone	+49 3946 47 8009
Email	Monika.hoefer@julius-kuehn.de

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Activity Partners (ECPGR-funded)

Please note that each partner needs to be a member of an ECPGR Working Group to be eligible for funding. For self-funded partners please use the separate box below.

Partner ID No.	Name and Surname	Institute	Country
1	Rugienius, Rytis and Sasnauskas, Audrius	Lithuanian Research Centre for Agriculture and Forestry	Lithuania
2	Schulte, Erik	Federal Plant Variety Office - Testing Station Wurzen	Germany
3	Karhu, Saila	Natural Resources Institute (Luke)	Finland
4	Koron, Darinka	Agricultural Institute of Slovenia	Slovenia
5	Maloupa, Eleni	Institute of Plant Breeding and Genetic Resources – HAO Demeter	Greece
6	Höfer, Monika	Julius Kühn Institute, Institute for Breeding Research on Fruit Crops	Germany
7	Krška, Boris and Sedlák, Jiří	Research and Breeding Institute of Pomology Holovousy Ltd.	Czech Republic
8	Kaldmäe, Hedi	Estonian University of Life Science	Estonia
9	Denoyes, Beatrice	INRAE	France
10	Maitre, Raphael	INVENIO	France
11	Baruzzi, Gialuca	CREA Research Centre for Olive, Fruit and Citrus Crops	Italy
12	Laugale, Valda	Institute of Horticulture LATHORT	Latvia
13	Røen, Dag	Njøs Fruit and Berry Centre	Norway
14	Sturzeanu, Monica	Research Institute for Fruit Growing	Romania
15	Hjalmarsson, Inger	SLU/ Swedish National Genebank	Sweden
16	Kägi, Christina	Federal Office for Agriculture	Switzerland
17	Ibraliu, Alban	Agricultural University of Tirana	Albania

Self-funded partners

Further members of the Working group, who had not sent an Expression of Interest so far, will be contacted again in the frame of the project.

The aim is to get an overview of the preserved accessions of berries genetic resources from as many genebank collections of the ECPGR Berries Working group as possible.

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Description of Activity (suggested max. 1000 words)

Please address the following aspects:

– **Background:** Explain the context behind the choice of this Activity, e.g. why this has been prioritized or selected. If this is the continuation of a preceding Activity, please indicate how and why the new Activity will build on previous results/experiences.

Berries genetic resources, especially strawberry and raspberry are widely cultivated in Europe, thanks to high adaptability of the plants to environmental conditions and improved growing techniques. Maintaining berries genetic resources, and evaluating their diversity and genetic structure are of great importance for European fruit breeding programmes and in consequence, European competitive berry production.

Most of the temperate fruit species are genetically heterozygous and vegetatively propagated. Therefore, collections of berries genetic resources are maintained in the field as active collections where the accessions are available for comprehensive characterization, evaluation, and distribution. However, several disadvantages limit the efficiency of active collections and threaten their security. The genetic resources are exposed to pests, diseases and to natural abiotic hazards. Field genebanks require considerable input in the form of land, labour, management and materials.

For *Fragaria*, the field plantings have some special disadvantages, such as a regular careful monitoring to avoid contaminations by runners from different accessions and naturally spread viruses, which require periodic replanting. The same problems exist in the other berry fruit species (*Rubus*, *Ribes* and *Vaccinium*). The turnover is much shorter for strawberry (2 years or even 1 year for some institutions) than for raspberry (5 - 8 years). For this reason, the collections are subject to permanent changes.

Previous EU projects have conducted surveys of collections of berries genetic resources in gene banks (COST Actions 836 and 863, European AIR project, EU GENBERRY, RIBESCO, EUBerry or GoodBeery). However, there is an urgent need to update them in order to promote common characterisations/ evaluation and further work for AEGIS and EURISCO.

– **Justification:** Explain why this Activity is justified in terms of making progress towards achieving the ECPGR objectives.

The Joint Action for updating the documenting about berry genetic resources in Europe contributes to the following objectives of the ECPGR:

1. To provide passport and phenotypic information of actively conserved European PGRFA diversity *ex situ* through the EURISCO catalogue
With the implementation of the project, the berries genetic resources will be recorded in the respective countries. The data will be improved qualitatively in a uniform manner (including taxonomic data, FAO / Biodiversity passport descriptors) and make them available for inclusion to the respective National Focal Points for EURISCO.
2. To efficiently conserve and provide access to unique germplasm in Europe through AEGIS and the European Collection
In addition to the existing genetic resources in berries genetic resources, the project will also survey the forms of preservation and existing tests for trueness-to-type. Crop-specific technical guidelines for genebank management (Manuals) will then be developed on this basis.
On the other hand, it is possible to select eligible accessions in order to propose them as AEGIS accessions through further verification.

– **Rationale for the choice of partners:** Explain why the selected partners are the most suitable to

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carry out the proposed Activity and briefly describe their respective roles in the Activity.

All nominated partners verifying the requested queries for individual genera of berries were already involved in previous EU projects and have extensive knowledge of the respective genera of the genetic resources.

Fragaria – Rytis Rugienius, strawberry breeder at the Lithuanian Research Centre for Agriculture and Forestry, Institute of Horticulture, Lithuania. He was a partner in the COST Actions 836, 863, RIBESCO and GENBERRY projects. Rytis Rugienius is responsible for *Fragaria* collection in the Institute of Horticulture.

Rubus – Erik Schulte, Federal Plant Variety Office - Testing Station Wurzen, Germany. He was a partner in the RIBESCO project. He is the coordinator of the *Rubus* network of the German Fruit Genebank. Therefore, he is responsible for organizing the cooperative work between the network partners and for the further development of the *Rubus* network especially for the database part *Rubus*.

Ribes – Saila Karhu, research professor at Natural Resources Institute in Finland. She has been the coordinator of the AGRI GEN RES project RIBESCO, and has coordinated and participated in several projects with the aim to utilise berries genetic resources in breeding and pre-breeding, the institute Luke being responsible for maintaining national agricultural genetic resources including berry species.

Vaccinium – Darinka Koron, Slovenia. She is a researcher at Agricultural Institute of Slovenia, Fruit and Vine Growing Department; national curator for soft fruit in Slovene Gene Bank, responsible for two Soft fruit experimental fields, and for introduction of new varieties in Slovenia, unofficial coordinator on soft fruit professional work in Slovenia. She was a partner in the COST Actions 863.

Other genera of berry genetic resources – Eleni Maloupa, Research Director of Institute of Plant Breeding and Genetic Resources in Greece, has been the coordinator of the national project EcoVariety entitled 'Highlighting of local traditional and native wild fruit trees and shrubs' maintaining mother plant material and pilot cultivations in the Institute campus.

– **Methodology or Approach:** Explain how the partners will operate. Clearly explain who is expected to do what. Also explain the rationale of meeting (or not) as part of the Activity. Include a Gantt Chart, to illustrate the work breakdown structure of the project.

1. In preparation for the project, the coordinator of the working group requested inventories of the respective gene banks of the Working Group partners. The query was carried out according to the EURISCO passport descriptors and contained information on the preserved accessions, but also additional information on the authenticity of the variety and the virus status of the accession.
2. Five responsible members of the working group should be nominated for the project, who will verify the prepared inventories for individual genera of berries within the framework of the project. These five members will receive all inventories for one genus (point 1) from the coordinator of the Working group. These responsible persons will compare and complete the inventories and request missing data from the members of the working group. Further members of the Working group, who had not sent an inventory so far, should also be contacted again afterwards.
3. The revised inventories will be returned at the end of the project to the respective member of the Working group. A transfer of the data to EURISCO can subsequently only be made via the National Focal point of each country.
4. For the Working Group, however, this inventory of available genetic resources in berries will be the working basis for planning further joint tasks/ projects (aim: verification to propose AEGIS accessions).
5. Based on the results of the request regarding the forms of preservation the coordinator of the

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Working group will elaborate a first draft of crop-specific technical guidelines for genebank management (Manuals) of berries genetic resources. This first draft will be sent to all members of the Working group for discussion after the end of the project. The aim is to establish minimum quality standards of conservation.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Request for preparation of inventories of berry genetic resources in 2020																		
Delivery of the inventories of berries genetic resources (prepared in 2020) to the responsible WG members nominated for specific genera																		
Verification and completion of the inventories for the respective genera by the person responsible																		
Return of the updated inventories to the respective partners																		
Transfer of the data to EURISCO via the National Focal point of each country																		
Draft of crop-specific technical guidelines for genebank management (Manuals) of berry genetic resources																		
Select accessions for each genera in berries genetic resources for planning further joint projects																		
Project report																		

– **Description of genetic material:** If your Activity is focusing on genetic material, please describe in detail, as far as possible, who is providing this genetic material, its status and the number of accessions under investigation (for example: *This Activity aims at molecularly analysing / safety-duplicating / evaluating / collecting XY accessions (listed) of “Genus species”, provided by genebank Z/ farmers in country W /to be collected in country P..., etc.*).

At the first WG meeting in January 2020, the partners agreed to record initially in the inventory only **accessions of varieties / cultivars of the berries species** conserved in European genebanks (genera *Fragaria*, *Ribes*, *Rubus* and *Vaccinium* and others minor berries species).

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– **Expected impact.** Clearly specify the expected impact from this Activity for the respective ECPGR objective(s), compared to the current state of progress of those same objectives. Explain how the impact will be obtained.

1. With the implementation of the project, the varieties/ cultivars of the berries genetic resources will be recorded in the respective countries. The data will be harmonized, qualitatively evaluated and finally will be available for inclusion to the respective National Focal Points for EURISCO.
2. A first draft of crop-specific technical guidelines for genebank management (Manuals) of berries genetic resources will be elaborated and a related article will possibly be published in the journal “Genetic Resources” or “Journal of Berry Research”.

Both results provide the basis for the future work of the Berries Working group. With the inventory of which Berries genetic resources are conserved under which conditions in the gene banks of the European countries, further projects on characterisation (phenotypic/molecular) will be derived in order to identify unique accessions for inclusion in AEGIS in the future.

– **Links with other non-ECPGR projects or individuals:** If applicable, clearly explain the objectives of the linked projects and the reasons for complementarity with the ECPGR Activity.

Several partners of the Berries Working group are also partners in the new EU project Breeding Value 'Pre-breeding strategies for obtaining new resilient and added value berries'. The main objective of Breeding Value is to provide the knowledge and tools to utilize strawberry, raspberry and blueberry genetic resources and pre-breeding material for the creation of new breeding possibilities. With this aim the most interesting genetic resources available in different EU public and private collections and breeding programs can be identified and used for the project.

The Breeding Value project can increase the use of berries genetic resources managed by partners of ECPGR Working Group Berries and will give further information in order to identify unique accessions for inclusion in AEGIS in the future.

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Expected products and related ECPGR Objectives

List concrete products and results that are obtained by the Activity and the corresponding number(s) of the ECPGR Outcome(s) and/or Output(s) and/or Activities to which each product/result will contribute.

	Expected products/results	Corresponding ECPGR output, activity
1	Inventory of accessions of varieties/ cultivars of the berries genetic resources in a qualitative uniform manner ready to include into EURISCO by the respective National Focal Points for EURISCO.	The inventory will provide information about berries genetic resources actively conserved <i>ex situ</i> and finally documented through the EURISCO catalogue
2	A first draft of crop-specific technical guidelines for genebank management (Manuals) of berries genetic resources	The aim is to establish minimum quality standards of conservation for unique berries germplasm in European Collection.
3	Select accessions for each genera in berries genetic resources for planning further joint projects.	The aim is to start further projects on characterisation (phenotypic/molecular) in order to identify unique accessions for inclusion in AEGIS in the future.
4		

Workplan for the proposed period of the Activity

Brief description of meetings and/or main actions of the Activity.

	Type of Action (indicate if “meeting” or “other action”)
1	Other action: Request for preparation of inventories of berries genetic resources in 2020 by all partners.
2	Other action: Delivery of the inventories to the responsible WG members nominated for specific genera and video conference regarding the further verification work (01/2021)
3	Other action: Verification and completion of the inventories for the respective genera by the person responsible (02/2021 – 02/2022)

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4	Other action: Return of the updated inventories to the respective partners (03/2022 – 04/2022) and transfer of the data to EURISCO via the National Focal point of each country (05/2022 – 06/2022)
5	Other action: Elaboration of a first draft of crop-specific technical guidelines for genebank management (Manuals) of berry genetic resources (03/2022 – 06/2022)

Additional remarks

Indicate any additional remark(s) that is/are important for the evaluation/implementation of the proposed Activity

Remarks:

**Please send the completed form together with the budget table to the
Chair of the submitting Working Group for submission of the Activity proposal.**