Implementation of the ECPGR European Evaluation Network (EVA) on legumes and preparatory actions for the creation of a new network on perennial plants (berries and fruit trees) – EVA Boost

Proposal submitted for funding to the German Federal Office for Agriculture and Food

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1. Background

At its 17th meeting in Oeiras, Portugal (May 2023), the ECPGR Steering Committee approved the objectives of ECPGR for Phase XI (2024-2028), which are aligned with priority actions identified in the Plant Genetic Resources Strategy for Europe, developed by ECPGR in the frame of the GenRes Bridge project (ECPGR 2021, https://www.ecpgr.org/fileadmin/bioversity/publications/pdfs/PGR_STRATEGY_LP_22_Nov_revised.pdf). Among its priorities for the next phase are the continuation and strengthening of the European Evaluation Network for PGRFA (EVA Network), including the support for adapting the EVA concept to perennial plants such as fruit trees. This project proposal outlines activities directly addressing these ECPGR priorities, implementing the EVA Network on grain legumes and supporting a preparatory action to create new EVA networks on berries and/or fruit trees. This will facilitate access to crop accessions and associated phenotypic and genotypic data of underutilized European germplasm collections of priority crops for use in research and breeding, contributing to adaptation measures to climate change and to strengthen food and nutritional security.

The EVA Network has been successfully operating since 2019, using a project granted by the German government (GenRes 2019-2) for the "Implementation of the ECPGR European Evaluation Network (EVA) on wheat/barley, maize and vegetable crops (carrot, lettuce and pepper)", which has enabled the operation of five crop-specific EVA networks, working on seven crops for the duration of 2019-2024. During this time, significant progress was made in generating characterization and evaluation (C&E) data (with more than half a million phenotypic data points) for more than 5,000 accessions, which have been genotyped and evaluated for more than 230 traits in more than 300 trials in over 100 locations across Europe. The data collected is stored in a project-specific EURISCO-EVA database and results have been promising as interesting materials have been

isolated for several traits and marker-trait associations have been identified in all datasets analyzed so far. Overall, project participants in the various networks have expressed their satisfaction with the process of the EVA networks and the progress achieved. The EVA networks are perceived as unique opportunities for public/private collaboration on PGR research, especially for smaller institutes and small and medium-sized enterprises (SMEs). This approach provides visibility to funding bodies as well as valuable information on and access to unique germplasm and all networks are interested in continuing their collaborations.

Furthermore, the EVA Network has provided numerous opportunities to communicate about ECPGR and this project, through presentations on EVA at conferences, workshops and project meetings, enhancing visibility of ECPGR among relevant audiences. Additionally, three peer-reviewed international research papers were recently published, highlighting the research results of the maize (Balconi et al. 2024, https://doi.org/10.3390/biology13060454), lettuce (Tripodi et al. 2023, https://doi.org/10.3389/fpls.2023.1252777) and carrot (Goritschnig et al. 2023, https://doi.org/10.17660/ActaHortic.2023.1384.8) EVA networks. Through these dissemination and communication activities, the successful implementation of the EVA project has sparked interest in the breeding and research community for the establishment of new EVA crop networks, which will contribute to the long-lasting impact of the current EVA project, as one objective was for it to serve as a springboard for additional crop-specific EVA networks that could be established following the same framework.

Promotion of the EVA networks during project meetings of the H2020 project BRESOV have resulted in an ECPGR grant scheme activity of the Grain Legumes Working Group, "Fostering the need of implementation of the ECPGR European Evaluation Network (EVA) on Grain legumes" (ForEVA), running from February 2023 to April 2024. ForEVA, funded by the German Ministry of Food and Agriculture (through an amendment to the EVA project GenRes 2019-2) and coordinated by WG chair Creola Brezeanu (VRDS), was a preparatory action to establish a new EVA network on grain legumes, survey the inventory of grain legumes available for evaluation, identify stakeholders and possible private sector partners of the future network and develop a workplan and funding proposal based on partner's priorities. The ForEVA project's 23 activity partners identified 35 additional stakeholders (mostly public and private sector breeders, but also research institutes and farming cooperatives) who signed letters of commitment to contribute to the ForEVA project and future EVA Legumes network. During the ForEVA project meeting in Bucharest, Romania on 10-11 October 2023, 34 in person and 17 online participants discussed the establishment of the EVA Legumes network. They agreed to work on seven priority legume crops (common bean, chickpea, fava bean, lentil, lupin, orphan legumes and pea), in line with interests of partners and stakeholders. The main traits of interest expressed by breeders focused on resistance to diseases and abiotic resistance traits (drought and cold tolerance), and quality traits (e.g. cooking ability, nutritional content, antinutrient content). Interactions with Horizon projects INCREASE (https://www.pulsesincrease.eu/), BELIS (http://www.belisproject.eu/) and Legume Generation (https://www.legumegeneration.eu/) provided access to various stakeholder groups and added partners to the EVA Legumes network.

The ForEVA meeting was followed by a survey in December 2023, which identified the participants of the EVA legumes network's crop groups and their possible contributions to the network (summarized in Table 1).

Table 1: Summary of responses to the EVA Legumes survey, identifying partners, accessions and possible evaluation locations used in further work planning. In total, 54 responses from 51 institutes were received.

	Common bean	Fava bean	Lentil	Chickpea	Pea	Lupines	Orphan legumes[1]
Number of partners	34	27	23	24	28	22	26
Number of countries	18	18	9	15	16	13	15
# of potentially available accessions	>16,000	>3,000	>2,100	>1,500	>10,000	>3,000	>6,000
# of accessions with available genotypic data[2]	>1,000	>450	~730	>400	>1,000	>1,000	>200
# of genebanks that can share accessions	21	14	16	14	14	11	18
# of partners that can realize evaluations	21	16	13	16	18	11	12
# of potential evaluation plots per year	>1600	>1500	>1400	>1300	>1600	>600	>900

[1] among orphan legumes the focus will be on grasspea (*Lathyrus* spp.), cowpea (*Vigna* spp.) and vetch (*Vicia* spp.).
[2] genotyping data generated by BRESOV/Increase will be available for reuse after the projects' embargo periods.

51 organizations from 23 countries confirmed their interest in participating in the seven different crop groups of EVA Legumes, and provided information on available field trial locations and genebank accessions for evaluations, including those that had been genotyped in previous projects. Specifically, materials developed as single-seed descent (SSD) lines in the BRESOV (beans) and INCREASE (beans, chickpeas, lentils, lupins) projects have been extensively genotyped and phenotyped, providing collections of ready-to-use materials for breeders and producers. At the same time, the survey identified large collections of legume accessions in European genebanks for which no or only limited data exist, and which could be mobilized through activities in the EVA Legumes Network. Characterizing and evaluating these genebank collections, keeping data and germplasm available, will help to identify useful traits in genebank accessions that can be included in breeding programmes as well as directly utilized by farmers and growers. Exploiting the full potential of genetic resources is indeed one of the main strategies to achieve a more resilient and productive agricultural system in the face of climate change, providing also a wider choice of nutritional and sustainable food products to consumers.

An EVA Legumes website was created, including information on the different partners: https://www.ecpgr.org/eva/eva-networks/legumes. The EVA Legumes crop groups started their collaborative work in early 2024 with online meetings for each of the seven crop groups of EVA Legumes: common bean (27 participants); chickpea (20 participants); faba bean (17 participants); pea (23 participants); lentil (18 participants); lupin (15 participants) and orphan legumes (16 participants). In these meetings, partners discussed priority traits for evaluation, criteria for selection and size of accession sets, and identified partners' capacities for in-kind multiplications and evaluations as well as activities that would require additional funding, such as generation of SSDs, some multiplications, trials under controlled conditions, quality assays and support for on-farm evaluations. Scientific

leaders were identified for most of the different crop groups. They provide guidance and scientific expertise to the development and implementation of the work plans for the individual crop groups and are the main focal points for the EVA coordination team at ECPGR. Workplans for all the crop groups as well as data collection templates were drafted in collaboration with the ForEVA project and in consultation with the crop group leaders and form the basis of this project proposal.

Given the priority assigned to the EVA networks during Phase XI of ECPGR, as well as the importance of grain legumes in the context of increasing the availability of plant-based protein in human diets (see e.g. the EU Farm2Fork strategy), supporting the implementation of the EVA Legumes network significantly contributes to the sustainability and impact of the first EVA project, which ends in December 2024. As mentioned, the EVA Legume network is building on and interacting with previous and ongoing projects, both at national level and within the framework of the EU Horizon programmes. Several ForEVA project partners are involved in European projects focused on legumes (e.g. INCREASE, BELIS, Legume Generation), allowing the EVA Legume network to take advantage of material and background data developed in these projects and contributing to their exploitation by providing them to breeders. The present project will complement these existing data by creating purified lines of underutilized materials from EVA genebank partners, exploring additional diversity and making them available for genotyping and field evaluations. The overwhelming interest of stakeholders and especially private sector breeders in participating in an EVA Legumes network comes at the right time, triggered by the increasing need for a transition towards a more sustainable agriculture, and corresponding to the momentum generated by the various projects to further exploit European legume collections for breeding.

In spring 2024, the first sets of accessions for common bean (98; original accessions from genebank collections) and chickpea (200; SSD lines developed in INCREASE) were multiplied in kind by seed company partners of EVA Legumes. Moreover, the first set of lentils (101 accessions, including 99 SSDs developed in INCREASE) was developed and is ready for multiplication with sowing in fall of 2024. Other crop groups are currently compiling information on available accessions and planning, where possible, regeneration activities during the 2024 fall season, including creation of SSD lines where necessary.

Legumes are crops with high heterozygosity and generating SSD lines for eventual genotyping is essential, but often requires use of insect-proof enclosures to prevent cross-pollination. Working with homogenous SSD lines will allow to perform association analysis of phenotypic and genotypic data, allowing to identify alleles related to particular traits, which would not be possible with heterogeneous accessions This information can guide further breeding efforts as well as studies on genomic predictions. Hence, exploiting plant materials from previous projects such as INCREASE is planned for one set of accessions per crop (where applicable) and provides a link with data collected by these projects (both genotypic and phenotypic data). The exploitation of material from previous projects is highly desirable considering that several reproduction cycles are needed to generate SSDs as well as collecting basic phenotypic data. Using SSD materials and data from previous projects will speed up the initial phases of the project, allowing to focus more on

in-depth evaluations for specific target traits as well as on farmers' trials. Reusing the data from previous projects will be enabled through curation and upload of phenotypic data for SSD lines used in EVA legumes to the EURISCO-EVA intranet, and where possible to EURISCO, liaising with partner genebanks and national coordinators to facilitate inclusion of project-generated materials in the public database. Increasing the completeness of data available for evaluated accessions is fundamental to enhancing the usability of these materials by breeders, researchers and farmers. In this way, EVA Legumes will contribute to ensuring the long-term availability of valuable genetic resources developed in publicly funded projects.

At the same time this project aims to extend the diversity of these existing collections by including also materials that have not yet been studied in detail. We plan to mobilize these genebank materials, generating purified SSD lines over several regeneration cycles, where necessary. Since the material has yet to be developed, genotyping of these accessions to allow association studies based on the phenotypic evaluation data collected should be planned for a later timepoint, funding permitting.

Furthermore, this proposal includes valuable activities that enhance evaluations of EVA legume accessions, such as experiments conducted in controlled conditions (for biotic and abiotic stress tests, planned on a subset of most promising accessions) and biochemical and nutritional characterization of evaluated materials. Near InfraRed spectra (NIRs) technology allows for fast and non-destructive measurement of grain nutritional quality and will be used to determine protein, starch and moisture content and to measure antinutritional compounds. This method can be applied to material harvested from experimental trials, but also on genebank material and could be developed as a predictive tool for selection of accessions (see also the recent ECPGR grant scheme activity MALANIRS, where it will be applied to maize). Furthermore, we plan important activities towards the long-term conservation of SSD lines of legumes, promoting their inclusion in EURISCO and AEGIS, along with the data generated in this and previous projects. In addition, The EVA Legumes network also includes partners with experience in on-farm evaluations in Italy, Switzerland and Georgia. Providing farmers with the possibility to access and test in their fields interesting legume landraces will promote direct uptake of project results by producers. To facilitate this, the project foresees activities to support the on-site management of the farmers' regenerations and evaluations. Together, the activities described above will be critical for maximal exploitation of EVA Legume capacities and expertise and add significant value to European legume collections. In particular, this project will identify promising accessions, in terms of (a)biotic stress resistance, agronomic and/or nutritional traits, and ensure their conservation and appropriate documentation so that they can be further exploited by research centers, seed companies and farmers.

Additionally, preparatory actions to establish a new EVA Network on perennial plants, with a focus on berries and/or fruit trees can be realized. This will be based on the existing ECPGR working groups on Berries, *Malus/Pyrus* and *Prunus*. These groups have worked in recent years to update the documentation of PGR, improve the completeness and quality of PGR data in EURISCO, as well as develop common ECPGR protocols and tools available for characterization & evaluation. Further efforts are needed to enhance the characterization and evaluation of these understudied PGR and to make them

available to breeders and producers, considering also the phytosanitary requirements and different distribution methods for the different species. This activity will build on previous and ongoing European projects, for example EUBerry (https://www.euberry.univpm.it/), BreedingValue (https://breedingvalue.eu/), FruitDiv (https://fruitdiv.eu/), InnOBreed (https://innobreed.eu/), as well as different recent ECPGR Grant Scheme activities, and bring together relevant genebanks and stakeholders from the public and private sectors to discuss a possible framework and roadmap for an EVA network on perennials. The benefit of exploring opportunities and encouraging the development of public/private partnerships on fruit and berry crops at a pre-competitive level lies in the high potential of identifying sources of resistance to abiotic and biotic factors among the unexplored genebank germplasm. In fact, it is well-known that these crops receive the highest proportion of phytosanitary products used in agriculture for their protection, as well as they are maximally under strain due to unprecedented biotic and abiotic stresses emerging as a result of climate change. The identification of disease resistance traits through a concerted action of this new EVA network would thus have a wide impact in the medium term on substantially reducing the use of phytochemicals in Europe, in line with the ambitions of the European Green Deal. An EVA network on these crops will also be a first step towards increasing the currently low diversity of marketed fruit varieties, providing breeders and growers with access to potentially useful genebank materials as well as those developed in international projects. Similar to what has been achieved in other EVA networks, the establishment of an EVA perennials network will promote the exchange of experience and knowledge, foster collaboration between actors involved in conservation and use and contribute to making data available for the research and breeding community.

The EVA networks provide a trusted framework for joint evaluations of germplasm diversity and this project will provide a boost for their long-term implementation, further enlarging the pool of stakeholders involved in evaluation and use of genetic resources, strengthening the public-private partnerships working on priority crops, enhancing the access to well-described genebank accessions for researchers, breeders and producers, and increasing the data available in EURISCO for further exploitation. Both grain legumes and perennial fruit trees and berries are priority crops in Europe with a high potential to ensuring food security and this project lays the groundwork for enhancing their available diversity in the food production value chains.

2. Objectives of the project

This project will contribute towards several priority activities for ECPGR in Phase XI:

1. Strengthen the EVA network of grain legume crops by contributing to the implementation of the planned activities, following up on the results of the ForEVA project:
   - Implementation of the European Evaluation Network on grain legumes under the coordination of the ECPGR Secretariat
   - Formalize the EVA legumes consortium through the signature of a specific Cooperation Agreement by the partners

- o Within the consortium strengthen the seven crop groups for the different types of grain legumes (chickpea, lentil, beans, fava beans, peas, lupins, orphan legumes), clarifying partners' contribution (providing or evaluating materials) and finalizing the workplans for the different crops.
- o Establish collaboration with farming cooperative(s) to facilitate on-farm evaluations of grain legumes.
- o Collect, curate and make available in EURISCO-EVA (and EURISCO, where possible) existing data from previous legumes projects and research publications.
- o Finalize the identification of plant material for the different crop groups, from European genebank accessions (including regeneration as SSD sets for further evaluation where necessary). Include also material from previous or ongoing projects (e.g. BRESOV, INCREASE), where possible, to contribute to exploitation of Horizon project results.
- o Finalize the development and employ jointly agreed evaluation protocols (experiment set up, scoring methodology) and data collection standards (ontologies) for data collection.
- o Perform evaluations for priority traits, as identified by crop groups (agronomic traits, biotic and/or abiotic stresses) of two sets with between 50-200 European genebank accessions each for the seven crop groups per year, in possibly 10 sites suitable for each of the different crops, for two years, for a total of at least 700 grain legumes accessions evaluated. This will include also evaluation in farmers' field through the collaboration with farmers' networks. At the end of the project, study accessions will be kept available by long-term conservation in genebanks.
- o Perform biochemical and nutritional analyses on the accessions sets, including non-destructive near-infrared spectroscopy (NIRS). NIRS measurements will be preceded by a research phase on the optimization and calibration of this technology for the target species.
- o Perform targeted abiotic and biotic resistance trials, on a subset of accessions for each crop group, selected based on preliminary evaluation results.
- o Update of the EURISCO-EVA documentation system to enable a dedicated intranet platform for the EVA legumes consortium, to display and analyze data for the partners under a three-years embargo period.
- o Include the projects derived phenotypic data in EURISCO-EVA and the genotypic data into appropriate public repositories.

2. Preparatory actions towards an EVA network for berries and/or fruit trees:
   - o Identify relevant stakeholders in public and private sector, starting from the relevant ECPGR Working groups.
   - o Organize a workshop bringing together genebanks and stakeholders to discuss the scope and activities of a potential EVA berries/fruit trees network and develop a roadmap towards its implementation.

3. Activities

For the implementation of the EVA Legumes network, in broad terms, activities will be following the framework of other established EVA networks, building on deliverables of the ForEVA project, and exploiting existing material and data from previous projects where possible. It will be carried out around four growing seasons, as follows, with some difference depending on each crop's growing season with the intention to perform repeated evaluations of same accessions over two years.

- Year 1 (2024): setting up of standards, acquisition, multiplication and redistribution of material, NIRS calibration and analyses (1st set), curation and accessibility of existing characterization and evaluation data.
- Year 2 (2025): first round of evaluation (1st set), including additional biochemical and nutritional analyses; second round of acquisition, multiplication and redistribution (2nd set)
- Year 3 (2026): first (2nd set) and second (1st set) round of evaluation, including biochemical and nutritional analyses
- Year 4 (2027): second round of evaluation (2nd set), targeted evaluations on abiotic and biotic stresses, data analysis and multiplication and long-term conservation of interesting material.

Furthermore, the project intends to support on-farm evaluations of legume crops with the goal to provide producers with interesting landraces that could be adapted to their locations and suitable for immediate exploitation by farmers in intercropping or specific crop rotations. Furthermore, the project includes activities to prepare a framework for a possible new EVA network on perennial plants as well as produce public awareness products to actively promote its activities and results.

In more detail, the following activities will be carried out for EVA Legumes:

i. Finalize EVA Legumes consortium through obtaining signature of EVA Cooperation agreement by partners – identified partners are the following, but the list can be extended:
    a. **Genetic Resources Centres:** Leibniz-Institut für Pflanzengenetic und Kulturpflanzenforschung (Germany), National Research Council, Institute of Biosciences and BioResources (Italy), Wageningen University and Research. Centre for Genetic Resources (Netherlands), Institute of Agricultural Resources and Economics (Latvia), Instituto Nacional de Investigação Agrária e Veterinária, I.P. (INIAV, I.P.), Banco Português de Germoplasma Vegetal (Portugal), Banca de Resurse Genetice Vegetale Suceava (Romania), Instituto Nacional de Investigación y Tecnologia Agraria y Alimentaria (Spain), Nordic Genetic Resources Centre, NordGen (Sweden).
    b. **Research Institutes (including NGOs):** Flanders Research Institute for Agriculture (Belgium), Genetic Resources Institute, University of Banja Luka (Bosnia and Herzegovina), Aarhus University (Denmark), Centre of Estonian Rural Research and Knowledge (Estonia), Centre de Ressources

de Botanique Appliquée (France), Terres Inovia (France), Groupe d'Étude et de contrôle des Variétés Et des Semences (France), Scientific Research Center of Agriculture (Georgia), Agricultural University of Athens (Greece), Universita Politecnica delle Marche (Italy), University of Basilicata (Italy), CREA-OF (Italy), CREA-ZA (Italy), Norwegian University of Life Sciences (Norway), Instituto de Tecnologia Química e Biológica - Universidade NOVA de Lisboa (Portugal), Vegetable Research and Development Station, Bacau (Romania), Institute of Field and Vegetable Crops (Serbia), Institute for Forage Crops Kruševac (Serbia), National Agricultural and Food Centre (Slovakia), Agricultural Institute of Slovenia (Slovenia), University of Maribor (Slovenia), Servicio Regional de Investigacion y Desarrollo Agroalimentario (Spain), Misión Biológica de Galicia (Spain), Institute for Sustainable Agriculture (Spain), Getreidezüchtung Peter Kunz (Switzerland), Agroscope (Switzerland), Ankara University, Faculty of Agriculture (Türkiye), Field Crops Central Research Institute (Türkiye), School of Biosciences, University of Birmingham (UK), Aberystwyth University (UK), Earlham Institute (UK).

- c. **Breeding companies/Commercial breeding programmes:** Protealis NV (Belgium), Agri Obtentions (France), GSN Semences (France), Semences de Provence (France), Gautier Semences (France), Semetica Srl (Italy), Cà Colonna (Italy), Vandinter Semo(Netherlands), HR Smolice (Poland), Lidea/Euralis (France), Deutsche Saatveredelung AG (Germany).

ii. Two in person project meetings of consortium partners (in 2025 and 2027)

iii. Finalize the crop-specific workplans for the agreed legume crop groups, specifying roles of partners, defining accession sets, multiplication/evaluation locations, traits to be evaluated and appropriate genotyping protocols.

iv. Collect, curate and make available existing characterization and evaluation data from previous projects and research activities on legumes. The data will be uploaded in the EURISCO-EVA project intranet and in EURISCO, where possible.

v. Design of the evaluation experiments, agreement on evaluation protocols and standard data collection protocols coordinated by crop groups.

vi. Selection of two accession sets containing between 50 and 200 accessions per crop group and set, for a total of 700 to 2,800 accessions for evaluation.

vii. Dispatch seeds of agreed accessions with SMTA from genebanks to the multiplier institutes (unless multiplication can take place in the originating genebanks/institutions)

viii. Multiplication of accessions by multipliers or holding institutes, including generation of SSD lines, where necessary and not yet available. This also includes the multiplication of interesting and unique material at the end of the project, for long-term conservation and safety duplication of these accession to ensure that high-viable seeds are available for future breeding and research activities. .

ix. Dispatch of multiplied accessions from multipliers to field evaluators with SMTA (possibly 10 locations per legume crop)

x. Carry out field evaluations in multiple locations: the same 50-200 accessions tested for agronomic traits for each legume crop, during growing seasons 2025, 2026 and 2027 (trials for each set repeated over two years).

xi. Carry out biochemical and nutritional analyses of the selected accessions on material harvested in selected evaluation trials. Conduct near-infrared spectroscopy (NIRS), including preliminary research on the optimization and validation of this technology for all the study species (~50 samples to be tested perhaps 5 times to calibrate the system).

xii. Carry out targeted evaluations under controlled conditions to investigate abiotic and biotic stress resistances on subsets of accessions.

xiii. Update the EURISCO-EVA intranet database to include a platform for EVA Legumes with special functionalities (intranet platform for the partners, with 3 years embargo before making data widely public)

xiv. Dispatch of evaluation data based on agreed standard exchange formats from all the evaluation sites to the central repository (EURISCO-EVA), within three months after end of experiments.

xv. Available genotypic and phenotypic data analysis by partners with the relevant expertise in the different crop groups.

xvi. Plan for Network continuation of rolling activities after the end of the project.

xvii. Produce highlight reports and other public awareness products to promote project goals and achievements

The following activities will be carried out in 2024/2025 to prepare potential EVA networks for berries and/or fruit trees:

xviii. Identify relevant stakeholders in private and public sector

xix. First meeting of genebanks and stakeholders to discuss scope and activities

xx. Development of a roadmap towards establishment of potential EVA networks on berries and/or fruit trees.

4. Expected outcomes

a) EVA Networks on Grain Legumes fully established with Letters of Commitment and Consortium agreements signed by possibly 50 partners.

b) Existing characterization and evaluation data of at least 500 accessions available in EURISCO-EVA and possibly EURISCO, where possible.

c) Preparation and multiplication of two sets of at least 700 to 1,400 European grain legumes (chickpea, lentil, beans, fava beans, peas, lupins, orphan legumes), including SSD lines for further evaluations.

d) Evaluation for characterization, agronomic, nutritional, biotic and/or abiotic tolerance traits of the selected accessions in multiple field locations (with each set of accessions tested for two years).

e) Protocols developed for NIRS analyses for all target legume crops and NIRS analyses conducted for selected field trials.

f) Evaluation of a selected core set of accessions (200-300 in total) in controlled conditions for priority traits on biotic and abiotic stress tolerance (cold, drought, pest and disease).

g) Provision of generated phenotypic data to EURISCO-EVA, made available exclusively to consortium partners for three years, then open to the general public via EURISCO

h) Roadmap developed towards establishing an EVA network on berries and/or fruit trees, with relevant stakeholders, scope and activities identified

i) Highlight reports for communication and dissemination of project goals and outputs developed for promotion at beginning of project and at regular intervals

5. Chronogram of activities

Legend: ▓ = scheduled activity (yellow cell)

	2024		2025				2026				2027			
Activity – EVA Legumes	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Obtain signature of EVA consortium agreement by the partners	▓													
Meetings				▓								▓		
Finalize the workplans and selection of the accessions sets	▓	▓	▓	▓										
Finalize the design of the evaluation experiments	▓	▓												
Seed distribution from genebanks	▓	▓												
Multiplication of accessions (including multiplication for long-term conservation)	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
Distribution of multiplied accessions to evaluators		▓	▓	▓				▓						
Multi-location field evaluations			▓	▓	▓	▓	▓	▓	▓	▓				
Biochemical and nutritional analyses (including NIRS)	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓				
Targeted evaluations under (a)biotic stresses								▓		▓		▓		▓
Collect, curate and make available existing data on legumes	▓	▓	▓											
Collect evaluation data from multilocation field trials			▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
Data curation and display through the EURISCO-EVA intranet			▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
Data analysis											▓	▓	▓	▓
Plan for Network continuation													▓	▓
Production of public awareness materials	▓	▓				▓				▓		▓	▓	
Activity – EVA berries & fruit trees	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Prepare potential EVA networks for berries and/or fruit trees	▓	▓	▓	▓										