ECPGR Activity Grant Scheme
Final Activity Report

Fostering the need of implementation of the ECPGR European Evaluation Network (EVA) on Grain legumes – ForEVA

Implemented by the Grain Legumes Working Group of the European Cooperative Programme for Plant Genetic Resources (ECPGR)

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INTRODUCTION

Sustainability is an imperative, and in the context of agri-food chains, it is more crucial than ever, especially in the face of global challenges such as pressures of climate change, ongoing conflicts and pandemics. Agrobiodiversity conservation, sustainable agricultural practices and food security are domains which require feasible solutions to be implemented and to be competitive economically and in terms of environmental benefits. Legumes are unanimously recognized for their importance for agriculture and food and nutrition security, considering also that alternative plant proteins for food are highly demanded (1).

It is a general desire to expand legume cultivation (2), but farmers are currently complaining about not having available enough adapted varieties for cultivating their lands. Lack of breeding efforts and knowledge gaps (e.g. low agronomic expertise, insufficient cooperation between stakeholders, non-competitive management of plant genetic resources (PGR)) and poor adaptation of plant protein cultivars in Europe (3) need to be reversed. The EU is stimulating environmentally friendly and diverse cropping systems through various programmes, and grain legume genetic resources play a significant role (4). There are now several international research projects focused on different aspects aimed at exploring the multiple benefits of legumes.

The European Evaluation Network (EVA) is an ECPGR initiative to implement public–private partnerships in the evaluation of genebank crop accessions, generating valuable knowledge on germplasm collections and encouraging their use in research and breeding by diverse stakeholders. The framework for the EVA networks was endorsed by the ECPGR Steering Committee in 2018 and implementation of EVA was recently incorporated as a priority activity into the ECPGR plan for Phase XI (2024–2028). Five EVA networks on vegetables and field crops have already been established since 2019 with financial support from the German Federal Ministry of Food and Agriculture, and there has been interest in expanding the EVA networks to new crops. (5)

Based on the ECPGR objectives (6), building upon the communication initiatives within the Horizon projects BRESOV and INCREASE, the Grain Legumes Working Group (WG) initiated ForEVA - Fostering the need for implementation of the ECPGR European Evaluation Network (EVA) on grain legumes, in the frame of the ECPGR Grant Scheme. This was designed as a preparatory action aimed at establishing a novel EVA network focused on grain legumes.

The key objectives of ForEVA encompassed the identification of partners with common interests, surveying the inventory of available grain legume germplasm for evaluation, gathering potential stakeholders and private sector collaborators for the

emerging network, and formulating a comprehensive work plan and funding proposal aligned with partners' priorities.
The project successfully united partners from 24 European genebanks and research institutes, along with over 35 interested stakeholders from both the public and private sectors, collectively motivated to establish this new EVA network. The aim was to establish a comprehensive framework for selecting and managing these genetic resources effectively. The activity will contribute to and update the European grain legume genetic resources and diversity required by users for present and future needs in food and agriculture (7). By developing harmonized research plans, it is possible to enhance the utilization of PGR, thereby ensuring long-term benefits across economic, environmental, climatic and socio-economic spheres.
Field evaluation, phenotyping and genotyping of PGR are indispensable tools for agricultural research and crop improvement. Their integration has proven to be a powerful approach to plant breeding and genetic resource conservation. These methodologies play a pivotal role in unravelling the genetic potential of diverse plant species, thereby helping researchers to efficiently identify and utilize the vast genetic diversity present in PGR, leading to the development of crops that are better adapted to changing environmental conditions and farmer needs. Furthermore, the data generated through field evaluation and phenotyping can be utilized to develop predictive models and decision-support tools. These models can assist breeders and farmers in making informed choices about crop selection, management practices and resource allocation, ultimately contributing to more sustainable and productive agricultural systems.

MATERIALS AND METHODS / APPROACH

The Activity involved multi-actor participation facilitating a comprehensive approach to achieve multi-level impact. The network involved diverse expertise by the different partners and stakeholders.
The activity was planned as a preparatory phase of EVA Legumes implementation. Having the model of the other EVA networks focused on different crops, the Grain Legume WG started to initially gather information from the group members on related species, traits, local and regional interests, ongoing projects, etc.
Firstly, the goal was to create an EVA consortium, to establish a feasible work plan with potential funding sources identified for this initiative and a clear workflow for PGR and data. Considering the multitude of grain legume species, and agro-climatic factors where EVA legumes can be implemented, ForEVA was dedicated to

searching for interest, species and stakeholders who would want to jointly implement the EVA Legumes network based on the established framework and with significant in-kind contributions by all partners. At the same time, the project focused also on the identification of funds to make this network functional and attractive by its impact on many diverse partners and stakeholders.

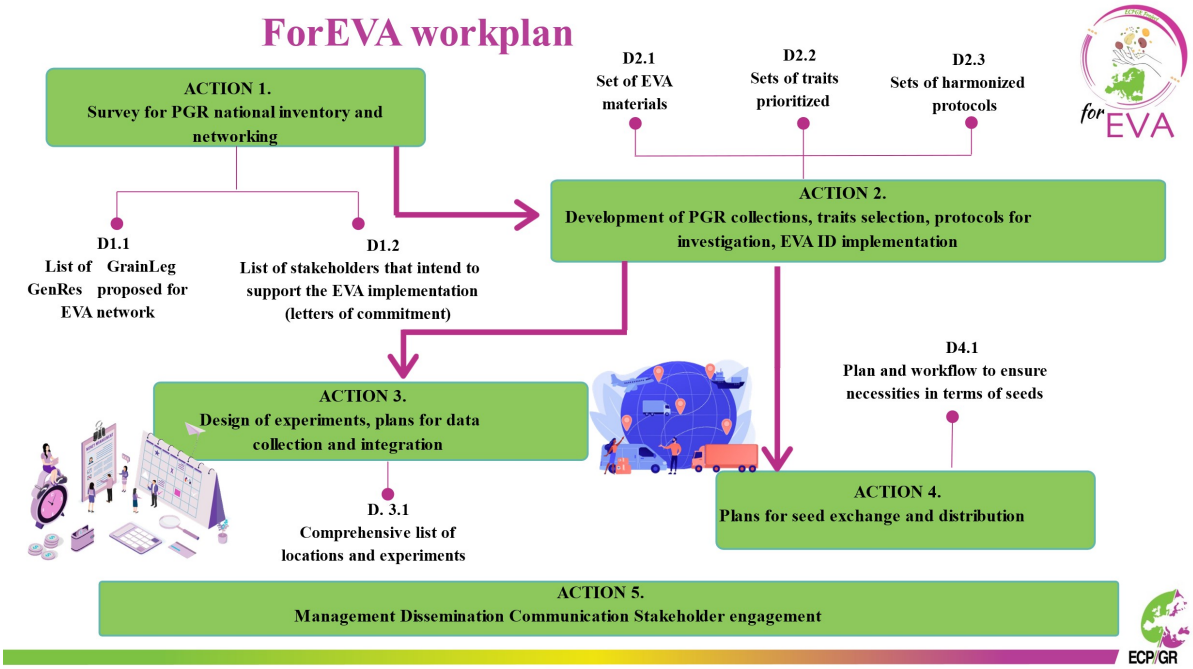

Figure 1. ForEVA workplan, activities and deliverables

The main activity of this project was to document the existing collections of grain legumes, to identify expertise and projects related by topic, available materials for regeneration cycles and exchanges, identification of stakeholders at each national level interested in supporting the initiative, the interest of potential partners for involvement in EVA Legumes establishment, based on in-kind contribution along the possibility to identify funds for specific activities. For this to be analyzed by the ForEVA consortium, an in-person meeting was held in Bucharest, Romania on 10-11 October 2023, which brought together project partners and interested stakeholders to review available materials and data, identify priorities and start preparing feasible work plans for selected legume species. The selection of species to be proposed for EVA legumes was based on ForEVA partners and stakeholders' proposals and grouped in crop groups. Moreover, a survey and a series of seven online dedicated meetings to crop groups were conducted.

RESULTS

Five actions of the work plan and their related deliverables (Figure 1) were integrated in the following steps, during project implementation:

Step 1 Preparatory phase of the meeting
Step 2 In-person meeting
Step 3 Survey, Crop-specific workshops (online meetings)
Step 4 Funding opportunities identification
Step 5 Promotional activities

Step 1 Preparatory phase of the meeting

- Project identity - a representative logo was designed for the project as well as specific and personalized materials which were used in project promotion and meeting organization (meeting folders, badges, roll-up, project flyer, small artistic bookmarks) - Annex 5B.
- Project promotion – All partners were invited to promote the ForEVA project in their representative networks within their countries and regions, or within consortia of ongoing projects, such as INCREASE. Organizations already involved in existing EVA networks were also invited to join the stakeholder consortium. The aim was to identify the interests and needs of stakeholders as well as their capacities and expertise that could support the EVA Legumes network.

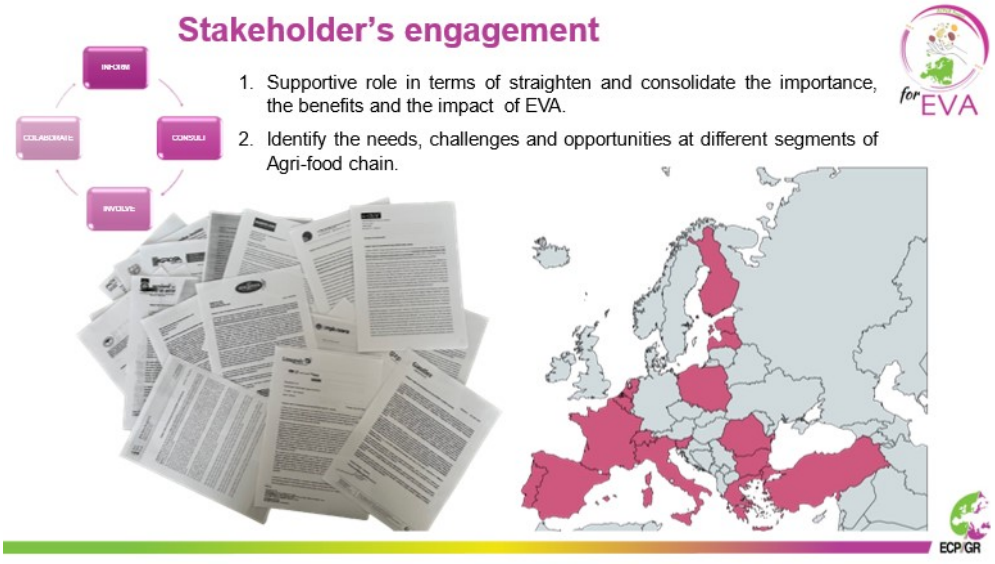

Figure 2. Letters of support and stakeholder representation

- A template for a Letter of Support was created and circulated by project partners to their networks. Responses were collected by partners from stakeholders in their area/countries. Deliverable D1.2 List of stakeholders that intend to support the EVA implementation is presented in Annex 1B and 1C. It is important to mention here, that also stakeholders from countries where ForEVA partners were not present (Poland, France, Turkey, Netherlands), gave their support to this initiative, thanks to project promotion on different channels and visibility, or based on their knowledge and affiliation to other EVA networks. The activity of collecting support from stakeholders continued also after the in-person meeting and is reflected by the diverse membership of the EVA Legumes network by the end of this project (Annex 1C). New partners from the stakeholder outreach via the BELIS and Legume Generation projects expressed their interest in joining the initiative.

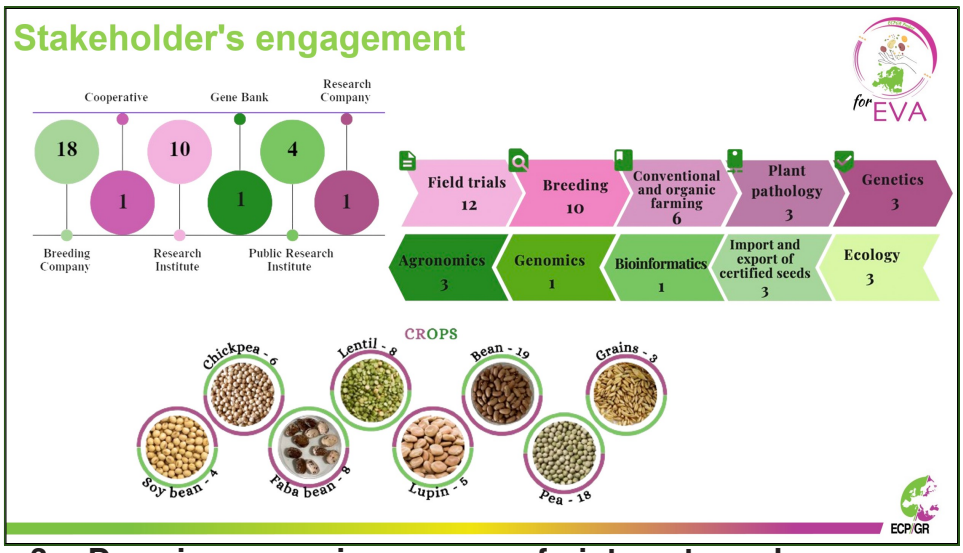

Figure 3. Domains, species, area of interest and engagement of stakeholders

During the preparatory phase the major interests collected, in terms of stakeholders interested in joining and contributing to the crop network, were on bean (19 interests) and pea (18 interests). This distribution has changed during the online workshops (presented in this report at Step 3) and is also expected to change in the future being in direct relation to partners' interests, related actions and projects and funding opportunities. From the received letters we observed 12 stakeholders interested in field trials, 10 being representatives of breeding companies, 6 having an interest in legumes evaluation in conventional versus

organic agriculture. For genetics, agronomy and ecology fields, 3 stakeholders for each category expressed their interest, 1 for genomics and 1 for bioinformatics. Stakeholders of ForEVA were invited to become future partners in EVA Legumes. They are also invited to join EVA Legumes initiatives in future, as stakeholders, based on their specific interests.

Step 2 In-person meeting

- The ForEVA project meeting took place on 10-11 October 2023 in Bucharest, Romania. Thanks to an amendment to the existing EVA project, the costs of the meeting were covered by the German Ministry of Food and Agriculture, as the EVA coordinator informed during attendance.
- The event was hybrid and reunited 33 project partners and stakeholders with 25 additional stakeholders connecting online to the meeting. Participants reviewed ongoing initiatives on legumes across Europe and jointly discussed the options for the establishment of an EVA Legumes network.
- The agenda of the 2-day meeting, the list of presenters and presentations given during the meeting are available **here**.
- ForEVA partners and stakeholders gave significant feedback related to the interest and capacity for involvement in a future EVA Legumes network.
- Participants were invited to document in detail their potential contributions to facilitate the collection of valuable information for collaborative progress. To ensure a standardized and efficient process, a dedicated template/structure for presentations was created, shared and agreed by partners. The template can be found in Annex 5A.
- In this manner, ForEVA partners shared information related to different aspects, such as: location and mandate of their organization, makeup of their grain legume PGR collections, existing expertise and main research objectives of ForEVA partners. Moreover, additional information was collected on: 1) grain legumes species prioritized according to research interest and importance, 2) priority plant traits for the evaluations, 3) a short overview of the most important projects on legumes, 4) the availability of phenotypic and genotypic data and also seeds availability to be shared by means of SMTA, 5) information related to national collections of grain legumes, 6) expectations and constraints related to the new EVA network from breeders and researchers point of view, 7) ways to foster cooperation.

Main benefits and achievements of the meeting:

- Seven priority legume crops were identified: common bean, faba bean, lentil, chickpea, pea, lupin and orphan legumes (e.g. cowpea, grasspea)
- Identification of interests and availability of partners and stakeholders in creating the EVA Legumes network
- Next steps towards the implementation of EVA Legumes were agreed
- Subgroups were created to develop draft work plans and budget proposals
- Potential ways of cooperation were identified
- Expectations related to contribution to EVA Legume were established
- Capacity building of the ForEVA Consortium.

Collateral benefits identified:

- Linkages with ongoing HorizonEurope projects as INCREASE (INCREASE – Intelligent Collections of Food Legumes Genetic Resources for European Agrofood Systems | INCREASE), Belis Belis Project, and Legume Generation - Start - Legume Generation, as well as other past projects on legumes as BRESOV Shaping the future of organic breeding & farming | BRESOV
- Potential to create links and connections to these projects (thanks to direct implication of different ForEVA partners in various projects)
- Potential to exploit material and data generated by other projects and connect them with the EVA network's activities
- Consolidate the capacity to avoid unnecessary work duplication
- Potential to involve EVA as a stakeholder/third party/partner in different funding schemes.

Step 3 Survey, Crop-specific workshops (online)

Following up on the meeting, a set of actions increased the knowledge in terms of partners' interest, volume of available materials, locations available for evaluation and other proposed research. Summarizing these actions:

- The ForEVA meeting was followed by a survey in December 2023, which identified:
  - Participants committed to joining EVA Legumes
  - Their interest and capacity towards contributing in-kind to evaluation activities for the seven identified crop groups
  - New data and information about potential germplasm material to be introduced in the EVA Legume collection (summarized in Annex 1A, largely presented in Annex 6_ Report on the online survey of Eva Legumes).

- Responses to survey, facilitate identifying partners, accessions and possible evaluation locations used in further work planning. In total, 54 responses from 51 institutes were received and analyzed.
  Fifty-one (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 characterization and evaluation 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.
  For each of the crop groups, scientific leads were identified, these will provide their expertise in the design and implementation of the various crops' work plans.

- During February and March 2024, seven online workshops dedicated to each crop group were organized (Annex 4). The meetings were conducted based on the common agreed plan as follows:
  - Introduction of the crop leaders, who kindly accepted and assumed the role of the group's focal point for the EVA coordination to ensure effective implementation of the work plan
  - Updates on ForEVA and EVA progress and a review of the EVA framework
  - Presentation of survey results specific to each crop. e.g: accessions that could be accessible, evaluation plots in different countries that can host the field trial, number and size of plots, specific crop calendar according to the regions
  - Defining a timeline for the next activities
  - Defining crop-specific challenges and specific requirements
  - Plan for further steps: the Core Team (ECPGR Secretariat, crop leader, ForEVA coordinator) decided to create templates to record 1) trial and location availabilities and additional information on the growing season, 2) available accessions to create the first set, this will include available information on

interesting traits and growth habit of each accession and are based on the EVA standard data templates to facilitate metadata management.

- A Microsoft Teams group and dedicated channels for each crop group were created to share all future communications with the entire network.

A comprehensive summary of the primary topics of each meeting, providing a concise yet informative overview of the progress, can be found below.

MEETING 1 Bean group

List of attendees: Guzzon Filippo, Creola Brezeanu, Goritschnig Sandra, Zetochová Erika, Arzu Celik, Aziz Karakaya, Antonio De Ron, Tamar Jinjikhadze, Ulrika Carlson-Nilsson, Christian Antraygues, Madalena Vaz, Elena Bitocchi, Frederic Dalmon, Tania Gioia, Groenink Wouter, Clémence de Chabot, Ulrike Lohwasser, Barbara Pipan, Hilde Muylle, Charles-Henry Duval, Aleksandra Ilic, Creola Brezeanu, Edoardo Bagnara, Domitille Mukankubana, Sebastian Kussmann, Carlota Vaz, Juan Jose Ferreira.

Specific topics of discussion:

- Inclusion of genebank material that could provide an interesting source of diversity for breeders.
- Most genebank material is heterogenous, a threshold of only 1 or 2 cycles of selfing (instead of the usual 9 cycles) should be accepted when creating SSD.
- Following previous discussions with the farmers' groups and breeding companies, it was highlighted the importance of: 1) setting up evaluation field plots (instead of single rows) for better field evaluations, 2) evaluating simple traits that can help identify varieties with good characteristics for production and harvest (e.g. short cycle, first pod at > 15cm above the ground).
- Inclusion into the evaluations, together with landraces, also registered varieties from different regions that could give good results and could convince farmers to participate in the project. This is also a good opportunity to promote these varieties directly in production and identify new growing regions.
- As for the size of the evaluation plot, 1m^2 was suggested with 35 plants per plot. Considering two replicates, a maximum number of 100 seeds per accession was estimated to be necessary per trial. Considering the different interests of the partners, information on the growth habits (climbing, bush) and cultivar type (green, dry beans) was agreed to be included.
- Passport and location data indicated to be collected.

- Identification of the possibility of carrying out some regeneration and evaluation activities in one ForEVA stakeholders' nursery in 2024. For this to be possible the material was shared before the end of March 2024.

MEETING 2 Chickpea group

List of attendees: Filippo Guzzon (ECPGR), Creola Brezeanu (Vegetable Research and Development Station Bacau), Sandra Goritschnig (ECPGR), Erika Zetochová (National Agriculture and Food Centre, Slovakia), Ana Uhlarik (Institute of Field and Vegetable Crops, National institute of the Republic of Serbia), Clémence de Chabot (Semences de Provence), Aziz Karakaya (Ankara University), Lucia De la Rosa (INIA-CSIC), Loredana Sigillo (CREA), Primož Titan (University of Maribor), Arzu Celik (Ankara University), Patrice Jeanson (LIDEA-Pro'Pulse), Ulrika Carlson-Nilsson (NordGen), Elena Bitocchi (Polytechnic University of Marche), Miguel A. López (CRF-INIA), Luis Guasch (CRF-INIA), Anna Rizzolo (School of Advanced Studies Sant'Anna), Sebastian Kussmann (GZPK), Rachele Stentella (Rete Semi Rurali), Matteo Petitti (Rete Semi Rurali).

Specific topics of discussion:

- Material should be provided as SSD (e.g. INCREASE material), genebank accessions are typically heterogeneous material, which is more difficult to be used in association analysis.
- Chickpeas may need two rounds of regeneration to yield sufficient seeds for multilocation trials.
- The accession sets should not be too large, it may be better to focus on some accessions with possibly interesting traits (e.g. based on existing data from INCREASE). There is also the need to consider geographic adaptation for material suitable for Mediterranean or temperate conditions.
- Registered commercial varieties should be identified as common checks across evaluations, seed companies could propose their varieties.
- The group agreed to start the multiplication activities, for a set of 200 chickpea SSDs, propagated in field conditions, from the INCREASE collection.
- Two partners offered to realize the multiplication (with some basic phenotyping) in their nurseries in Southern France during 2024, based on 50 seeds per accession received by early March. This creates the possibility to have the first chickpea set ready for evaluation by the end of the year.
- Evaluations should be carried out with ~50 plants in 1m^2 plots with two replicates per accession in each location. Plot size will depend on partners' usual practices and capacity and this detailed information will be collected using standard metadata templates.

- Data on fungal disease (e.g. *Fusarium* and *Ascochyta*) was suggested to be visually evaluated in the field in this first stage of evaluations, and laboratory trials can be performed later in the project. Nutritional analyses could also be performed later in the project, by partners with relevant expertise and are routinely testing material for such traits in other projects that could be linked.
- The focus of the first evaluations recommended to be on abiotic stresses (drought and cold tolerances), these traits can be particularly interesting considering the water-use efficiency of this crop as well as its expanding growing area in a climate change scenario.
- Some agronomic traits (e.g. yield, maturity timing, harvestability, growth habit) were indicated to be considered in this first round of evaluations.

MEETING 3 FABA BEAN

List of attendees: Filippo Guzzon (ECPGR), Creola Brezeanu (Vegetable Research and Development Station Bacau), Sandra Goritschnig (ECPGR), Lea Narits (Centre of Estonian Rural Research and Knowledge), Ana Uhlarik (Institute of Field and Vegetable Crops, National institute of the Republic of Serbia), Loredana Sigillo (CREA-OF), Primož Titan (University of Maribor), Ulrika Carlson-Nilsson (NordGen), Edoardo Bagnara (Ca' Colonna), Paolo Annicchiarico (CREA-ZA), Stig Uggerhøj Andersen (Aarhus University), Kees Bentema (Vandinter Semo), Aina Kokare (Institute of Agricultural Resources and Economics), Wouter Groenink (CGN-WUR), Beate Schierscher-Viret (Agroscope), Macarena Martin (Protealis), Diego Rubiales (CSIC, Institute for Sustainable Agriculture).

Specific topics of discussion:

- Discussions on several ongoing projects on faba beans characterization and evaluation, identification of synergies with these projects to enable further exploitation of their results in EVA legumes.
- Accessions metadata – recommended to include information on: growing season (spring or winter types) uses (dry or fresh; human consumption or animal feed) and geographical adaptations (continental European or Mediterranean).
- The seed multiplication stage was planned to start in the autumn of 2024 (with winter types), to possibly have the first sets ready for evaluation in 2025.
- Traits of interest for the evaluation: yield, disease resistance, earliness, flowering time, photoperiod insensitivity and grain quality.
- The suggested size of microplots for evaluation can be 1m^2 with 30 seedlings. Some partners suggested designing trials with a minimum of 3 replicates with 15 seedlings each.

- Working on SSDs will be important considering the heterogeneity that can be observed in the landraces of this crop, these should be generated during the first step in multiplication.
- Suggested focus on locally adapted landraces and other interesting accessions, even if heterogeneous to some degree.
- Important to consider that faba bean is partly allogamous and isolation with insect-proof nets (or distancing of lines) will be required to avoid cross-pollination among different accessions.
- Discussion on research on intercropping of faba beans with other crops (e.g. wheat and pea) is ongoing in Europe and the Mediterranean.

MEETING 4 PEA

List of attendees: Filippo Guzzon (ECPGR), Sandra Goritschnig (ECPGR), Creola Brezeanu (Vegetable Research and Development Station Bacau), Nic Boerboom (DSV Zaden), Ophelie Dubois (GSN Semences), Christian Antraygues(GSN Semences), Antonio De Ron (MBG-CSIC), Ulrika Carlson-Nilsson (NordGen), Ana Uhlarik (Institute of Field and Vegetable Crops, National institute of the Republic of Serbia), Tiia Kangor (Centre of Estonian Rural Research and Knowledge), Kylli Annamaa (Centre of Estonian Rural Research and Knowledge), Paolo Annicchiarico (CREA-ZA), Aziz Karakaya (Ankara University), Macarena Martin (Protealis), James Brett (EI), Diego Rubiales (CSIC, Institute for Sustainable Agriculture), Frederic Dalmon (Gautier Semences), Aina Kokare (Institute of Agricultural Resources and Economics), Katarzyna Gacek- Bogucka (HR SMOLICE), S.Stawiński (HR SMOLICE), B.Górynowicz (HR SMOLICE), Sebastian Kussmann (Getreidezüchtung Peter Kunz), Arzu Celik (Ankara University).

Specific topics of discussion:

- Different criteria in terms of accessions and traits should be followed to establish different collections of field peas (dry peas for both animal or human consumption, low-input crop) and garden peas (fresh for human consumption, high-input crop) as interest for various types was noted in the survey.
- Important to create different accessions sets, based on the interests of different partners. Pre-exisiting data on disease resistances and protein content should inform the selection of accessions.
- Particularly interest in evaluating landraces but based on a budget for field activities.
- Decisions on identifying different evaluation priorities across Europe, considering that different biotic stresses are present in different areas and climates.

- Field multiplication and evaluation of different pea types should happen in microplots of 25–100 seeds, ideally with replications in a block design.
- It was agreed that it was too late for multiplication in spring 2024, since in most locations the sowing was occurring at the meeting moment.
- It was suggested to create a set of 200 accessions, with 100 landraces and 100 modern varieties, to be evaluated for adaptation to the different regions, and considering the intended use of the crop.
- Genotyping as well as high-throughput phenotyping data for 150 pea lines that could become available for EVA legume is available. Additionally, in terms of availability of genotyping data, the process of genotyping the NordGen pea collection (via GBS) to select for a core collection of 200 accessions is ongoing, with regeneration planned for 2025 and 2026, these accessions could also be included in EVA evaluations.

MEETING 5 LENTIL

List of attendees: Guzzon, Filippo (ECPGR), Sandra Goritschnig (ECPGR), Creola Brezeanu (Vegetable Research and Development Station Bacau), Aziz Karakaya (Ankara University), Arzu Celik (Ankara University), Lucia De la Rosa (INIA, CSIC), Luis Guasch (INIA, CSIC), Wilma Sabetta (CNR-IBBR), Angela Rosa Piergiovanni(CNR-IBBR), Clémence de Chabot (Semences de Provence), Edoardo Bagnara (Ca'Colonna), Tania Gioia (Unibas), Matteo Petitti (Rete Semi Rurali), Rachele Stentella (Rete Semi Rurali), Elisa Lorenzetti (Scuola Superiore di Sant'Anna), Diego Rubiales (CSIC, IAS), Primož Titan (University of Maribor), Frederic Fantin (Agri Obtentions).

Specific topics of discussion:

- Initial focus on the selection of set 1 - SSD lines, 100–150 available accessions from the INCREASE project, based on: 1) Morphological/phenotypic data (including phenology), 2) genotypic data, 3) data on pests and disease resistance.
- Additional germplasm to be considered as part of this crop group includes Australian and ICARDA panels, a specific collection developed by the University of Pisa in collaboration with Rete Semi Rurali (110 characterized accessions, with also GWAS analyses, mixtures of landraces and commercial cultivars); landraces with some level of protected designation of origin (PDO) to be used as check; landraces from different genebanks (this can be very important for organic production and intercropping).
- Important to consider that at different latitudes, the phenology of the varieties can change drastically due to different photoperiods.

- The priorities in terms of traits to be evaluated and the contribution to the project were also highlighted, more in detail:
  - Some partners are able to multiply and evaluate material, with sowing in February/March, 100–150 varieties can be regenerated in the nursery.
  - Green and red lentils are considered the priorities, disease resistance (*Fusarium* and *Ascomycota*) and drought tolerance are the main traits of interest.
  - Weed control can also be an issue in lentil cultivation.
  - The importance of the height of the first pod as well as growth type, with preference for erect types.
  - Intercropping can be important in reducing weed incidence.
  - The importance of testing varieties suitable for mechanization as well as with disease resistance.
  - The importance of evaluating lodging and height of the first pod.
  - Importance of multiplying enough material to be able to store active, base and safety duplicate collections by the end of the project.

MEETING 6 LUPINES

List of attendees: Filippo Guzzon(ECPGR), Sandra Goritschnig (ECPGR), Creola Brezeanu (Vegetable Research and Development Station Bacau), Jens Vaupel (DSV AG), Paolo Annicchiarico (CREA-ZA), Mohammad El-Khalifeh (NordGen), Matteo Petitti (Rete Semi Rurali), Rachele Stentella (Rete Semi Rurali), Barbara Pipan (KSI), Aziz Karakaya (Ankara University), Arzu Celik (Ankara University), Miriam Kamp (GZPK), Barbara Gorynowicz, (HR SMOLICE), S.Stawiński (HR SMOLICE), Hilde Muylle (ILVO).

Specific topics of discussion:

- Four main species of lupin are being cultivated in Europe:
  - White lupin (*Lupinus albus*), the most cultivated species, high alkaloid content can be the main drawback factor, suitable for autumn-sowing in some regions
  - Blue lupin (*Lupinus angustifolius*) with lower yield potential than white lupin but lower alkaloid level, higher anthracnose resistance and good for direct marketing for human use
  - Yellow lupin (*Lupinus luteus*), suitable for human consumption and with larger seeds
  - Andean lupin (*Lupinus mutabilis*), with high alkaloid but also protein content, characterized by spring-sowing in Europe, low-yield and a higher level of outcrossing.
- The crop group of lupins decided to initially focus on white lupin and lupin for human consumption.
- Several priority traits were highlighted that could be explored in this crop group, such as low alkaloid content, *Anthracnose* and *Fusarium* resistance, cold tolerance, drought tolerance, tolerance to alkaline soils, suitability for organic agriculture, experimentations on intercropping, explore phenological adaptations.
- Available materials were identified: 100+ accessions with genotyping data available from a previous project.
- SSDs will be needed if the focus of the project will be on genotyping and mapping, if the focus will be on observation and evaluation plots, SSDs could be created in later stages of the project.
- During multiplication, it will be very important to work in tents to avoid outcrossing (estimated as 5–10% in white lupin).

- Small plots were proposed (120x100cm), with 15 plants per plot, 5 plants in 3 rows (but perhaps better 8–10 plants) with also the use of spreader rows for testing anthracnose resistance.
- Working at the plot level could be better for breeders as well and a larger number of plants would make the results more robust.
- It is important to identify and check varieties among registered cultivars.
- Desirable to develop different subsets (considering different geographical adaptations) with complete passport data, including information on the use, if possible.
- Key importance to clarify the aims of the project which can serve as a proof of concept for further studies and projects; moreover at this stage the selection of the accessions should not be too narrow, considering landraces, different tolerances and phenological adaptations.

MEETING 7 ORPHAN LEGUMES

List of attendees:

Filippo Guzzon (ECPGR), Creola Brezeanu (Vegetable Research and Development Station Bacau), Barbara Pipan (KIS), Aziz Karakaya (Ankara University), Diego Rubiales (CSIC, IAS), Lucia De la Rosa (INIA, CSIC), Angela Rosa Piergiovanni(CNR-IBBR), James Brett (EI), Rachele Stentella (Rete Semi Rurali), Frederic Fantin (Agri Obtentions), Aleksandra Savic (Institute of Field and Vegetable Crops, Novi Sad), Antonio M. De Ron (MBG-CSIC), Penelope Bebeli (Agricultural University of Athens), Mirjana Petrović (Institute for forage crops Kruševac), Maria Carlota Vaz Patto (ITQB NOVA), Åshild Gunilla Ergon (Norwegian University of Life Sciences)

Specific topics of discussion:

- It emerged that the definition of neglected or orphan crop changes in different countries and regions, depending on the traditional use of the crop.
- More than 6,000 orphan legume accessions could be accessible for EVA field evaluations and > 900 plots in different countries can host the field trials.
- The general discussion highlighted the main potential foci of this group could be species of the following genera: *Lathyrus* (*L. cicera*, *L. clymenum*, *L. ochrus*, *L. sativus*), *Vicia* (*V. articulata*, *V. ervilia*, *V. narbonensis*, *V. sativa*, *V. villosa*), *Vigna* (*V. unguiculata* subsp. *unguiculata*, *V. unguiculata* subsp. *sesquipedalis*) and *Trifolium* (*T. pannonicum*).
- **Grass pea** *(Lathyrus sativus)* is still cultivated in several countries in Southern Europe. There is an increasing interest in this crop as well as a few ongoing

projects working on this species but, this allogamous species needs regeneration under isolation conditions. Available seeds for ForEVA: 3 cultivars from Spain, also from Spain accessions with limited seed quantities, several accessions from Serbia can be accessible, a few landraces from Slovenia, with also the availability for hosting small field evaluation experiments. There is an increasing interest in this crop and several initiatives are ongoing, which could be connected with the EVA Legumes network: participatory research on grass pea as a food crop in Portugal, regional projects in Italy to evaluate grain quality and the level of neurotoxic amino acids.

- Other *Lathyrus* species such as *L. clymenum and L. ochrus* are traditionally cultivated for human consumption in Greece and Cyprus, while these species are mostly considered as CWR in Spain. *L. cicera* is also grown mostly for feed, intercropped with cereals.
- **Cowpea** (*Vigna unguiculata*) would be important to test in intercropping systems; a collection of 400 accessions of cowpea from IITA genebank (Nigeria) tested for early sowing in Spain is available, a collection of 100 accessions, including *V. sesquipedalis* accessions (yardlong bean). Cowpea is still relatively widely cultivated in Italy and therefore it is not considered as an orphan crop there.
- ***Vicia.*** *Vicia sativa* is widely cultivated in Spain and cannot be considered an orphan legume in Spain, where *V. sativa and V. villosa* are cultivated for animal feed, few varieties are available in the market, there is also research in collaboration with farmers in southern Serbia. *V. articulata* is still cultivated as a food crop in some parts of Italy, known as black lentil, and it is being replaced with lentil. In Spain, this crop has nearly disappeared, but two cultivars were registered (unfortunately with scarce interest so far from seed companies).
- This group offers an important platform for outreach activities on some of these neglected and underutilized species.
- The orphan legume crop group needs to prioritize on which species to focus the evaluation activities, and to design their work plan accordingly.
- There is a high potential to address specific activities and to exploit the potential of legume minor crops.

Achievements of the workshops (online meetings)

- ForEVA partners and stakeholders were consolidated into seven crop groups with partners from different countries. This achievement has allowed us to define a powerful strategy, resulting in a significant enrichment of membership and

expertise. Through this process, we have successfully identified crop leaders, fostering a strong and diverse community. This outcome sets a solid foundation for future progress and knowledge-sharing, ensuring a productive EVA Legumes network.

- Decisions related to crop collections structure: the crop groups decided to prioritize an inclusive and diverse approach to crop collections for a comprehensive and representative structure. By including a wide diversity of PGR and avoiding exclusion, we have created a solid foundation that captures the richness and complexity of diversity. This strategy ensures that our collections are not only extensive but also diverse.
- Discussions on prioritized traits: best options were identified for establishing field trials size and design based on seed availability, farmer requests, and breeders' needs and capacity.
- Contouring the crops calendars across various regions to detect similitudes and differences. This comparative analysis provided valuable insights into timelines and has laid the foundation to start some experiments in spring of 2024.
- Cooperation was consolidated through the identification of availabilities to start field multiplication and evaluation for some sets of accessions. Even if the ForEVA activity had no PGR exchanges or planned characterization/evaluation experiments, activities were started thanks to the tremendous interest and availability of partners and stakeholders:
  - 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,
  - 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 the creation of SSD lines where necessary.

Step 5 Promotional activities, related to ForEVA and EVA

This step includes activities related to communication and dissemination.

- Updates related the progress of ForEVA were largely shared via the ECPGR: ForEVA website, and other partners websites as for example 10-11 octombrie 2023 – Întâlnirea proiectului ForEVA în cadrul grupului ECPGR Grain Legumes – Statiunea de Cercetare Dezvoltare pentru Legumicultura Bacau, 20 martie 2024 – Rețea de evaluare Leguminoase Orfane – Workshop

internațional în cadrul proiectului ForEVA – Statiunea de Cercetare Dezvoltare pentru Legumicultura Bacau, 29 februarie 2024 – Rețea de evaluare Mazăre – Workshop internațional în cadrul proiectului ForEVA – Statiunea de Cercetare Dezvoltare pentru Legumicultura Bacau, 21 februarie 2024 – Rețea de evaluare Bob – Workshop internațional în cadrul proiectului ForEVA – Statiunea de Cercetare Dezvoltare pentru Legumicultura Bacau, 14 februarie 2024 – Rețea de evaluare Năut – Workshop internațional în cadrul proiectului ForEVA – Statiunea de Cercetare Dezvoltare pentru Legumicultura Bacau, 1 februarie 2024 – Rețea de evaluare Fasole – Workshop internațional ForEVA – Statiunea de Cercetare Dezvoltare pentru Legumicultura Bacau

- ForEVA and EVA initiatives were presented at different scientific events such as the annual meeting of INCREASE and kick-off meetings of BELIS and Legume Generation projects.
- FORFVA promotion at World Pulses Day 2024, in Romania – a kit with legume seeds, substrate, brochure including different info about the benefits of legume consumption and cultivation and projects focused on legumes were shared with citizens.

Figure 4 ForEVA promotion in Romania during WORLD PULSES DAY 2024 10 februarie 2024 – Ziua internațională a leguminoaselor – Statiunea de Cercetare Dezvoltare pentru Legumicultura Bacau (legumebac.ro)

- An EVA legumes website was created, including information on the different partners: HTTPS://WWW.ECPGR.ORG/EVA/EVA-NETWORKS/LEGUMES.

- ForEVA partners contributed video materials to the development of a video about the EVA project (https://www.youtube.com/watch?feature=shared+_blank&v=AZ1NB6hC_ZU)
- ECPGR offers new opportunities as a member in different initiatives and project proposals in the frame of Horizon.

Significant progress of a core group **to identify funding:** A project proposal for the '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' was prepared based on identified priorities and planned activities of EVA Legumes crop groups and submitted to the German Federal Ministry for Food and Agriculture, which approved the project, providing financial support to EVA Legumes network for activities from 1 September 2024 to 31 December 2027.

RELATED DELIVERABLES OF FOREVA

The ForEVA activity was successful in establishing the framework for a new EVA Legumes Network, which started its implementation based on the deliverables of ForEVA in 2024. Given the actual size of the EVA Legumes network with more than 50 partners, which extends far beyond the initial Working Group, and the immense potential to engage stakeholders from diverse domains within and beyond the agrifood chain, the project deliverables are expected to be further developed depending on EVA Legumes work plans throughout the implementation phases. Consequently, it is entirely anticipated that additional PGRs will be incorporated into the EVA Legumes collection and that new traits will be prioritized to align with the evolving needs and objectives of the project.
The below timeline identifies the key moments/phases related to the achievements in progress of ForEVA to EVA Legume:

Key moments (KMs)	ForEVA in person meeting (KM1)	Survey Online (KM 2)	Crop group meetings online (KM 3)	Transition to EVA legumes (KM 4)
Date	October 2023	December 2023	February – March 2024	April – September 2023
Reference	Meeting presentations and crop group discussions	From ForEVA to EVA Legumes Report on the online survey of Eva Legumes	Minutes/ Synthesis of the meetings	EVA Legumes Network Cooperation agreement v1

D1.1 List of Grain Legumes genetic resources proposed for EVA network. A first version of this list was based on presentations given by ForEVA partners during the project meeting (Annex 1A) and further developed through the online survey to include materials that could be contributed by EVA Legumes partners (D2.1). This is summarized in Annex 6 Report on the online survey ”From ForEVA to EVA Legumes”.

D1.2 List of stakeholders that intend to support the EVA implementation. Annex 1B lists the stakeholders who were identified by ForEVA partners and who have signed a letter of commitment to ForEVA. This is the initial list, at KM 1, and was subsequently extended and consolidated based on their commitment. The entire list

of 51 partners of the EVA Legumes network (including ForEVA stakeholders) is provided in Annex 1C.

D2.1 Sets of EVA materials. During crop group discussions, partners identified their main priorities in terms of material types and knowledge of pre-existing traits for the selection of accession sets to be evaluated by EVA Legumes.
Progress to achieve deliverable D2.1

- Initial information was reported in D1.1, (Annex 1A, Table 1), which provides an overview of available grain legume materials from ForEVA partners' institutes/ genebanks, as it was presented during the meeting.
- The list was extended by other materials proposed during collecting info in survey (KM 2) and during discussions occasioned by online workshops February – March 2024 (KM3) and the final list (D2.1) constitutes the potentially available accessions for evaluation by EVA Legumes (Annex 1A, Table 3).
- Selection of sets of materials to be evaluated in EVA Legumes crop groups is based on partner agreement, along with the size of the sets according to the capacity of evaluating partners.
- Details on accessions proposed for sets of materials were collected in Teams, including associated passport and other metadata.

D2.2 Sets of prioritized traits (Annex 2)
Progress to achieve the deliverable D2.2

- KM 1, during the meeting some partners expressed interest in specific traits such as: For pea: lodging resistance, growth habit, form of the seeds, number of productive nodes; For grasspea: growth habit, harvest data, pod shattering, content of neurotoxic non-protein amino acid and ß-oxalyl-L-a,ß-diaminopropionic acid ODAP or BOAA; For Chickpea: seed size, *Ascochyta blight* resistance; for soybean (even if the species was not selected for partners as a crop for interest for EVA): pod shattering, diseases present, number of productive nodes. These suggestions were very specific and additional priority traits were mentioned by meeting participants. Moreover, there are aspects to be considered related to specific needs, budget, purpose of each evaluation cycle, and number of evaluated accessions. It was agreed to have a general inclusive protocol, from where, according to different contexts, traits will be prioritized.

- KM 2, in the survey respondents provided information on specific priorities on traits for the various crops. Annex 6 Report on the online survey of From ForEVA to EVA Legumes
- KM 3 Discussions and planning continued during the online crop group meetings and partners agreed to adapt and harmonize traits and protocols according to species, region, interest of partner, funding availability and in-kind contribution – using agreed descriptors and available protocols.
- The agreed strategy was to not impose limitations, and work using published descriptors, from where specific selection will be made according to the volume of material, partner interest/availability, contractual issues (if any), funding availabilities (if any) or agreement to work in kind (if any) at the moment of each evaluation cycle. A valuable conclusion was the need to adapt the work to the end-user needs which might be different from breeder, genebank curator or farmers, in agreement to EVA profile, purpose and impact. Finally, evaluation of some traits may require dedicated funding and will only be possible in the context of a project.

D2.3 Sets of harmonized protocols

The experimental protocols for evaluations were developed based on existing templates from other EVA Networks and input received from EVA Legumes partners in the survey and during discussions of the crop group meetings. The protocols are included as an appendix to the EVA Legumes cooperation agreement and as such confidential, but contain the following general guidance:

The **overall scope** of the EVA Legumes network is to evaluate European grain legume landraces through multilocation field trials repeated over two years for priority traits as outlined for each crop. The material is sourced from previous projects (e.g. INCREASE, BELIS) and European genebanks and provided as purified lines (SSD), where possible. Pre-existing data from previous projects will be utilized where possible. The objective is to include all EVA materials in EURISCO and the European collection (AEGIS) and to ensure the conservation of the SSD lines by primary holding institutes, where possible. Common commercial varieties will be included in the trials of each crop for standardization. Metadata of accessions used in evaluations can be found in the EURISCO-EVA intranet, to which all partners will be granted access.

Field evaluations use crop management according to local practices, with soil characteristics and any field treatments (irrigation, fertilization etc.) being recorded in the data collection template. Evaluation data is to be collected for traits specified for

each crop according to a standard protocol provided and using the standard data collection template. Trials will be planned according to the regular growing season in each location and sowing, harvesting and evaluation dates are to be recorded in the data collection template. Data should be made available on the EURISCO-EVA platform within three months after a trial is concluded.

The genotyping of newly purified accessions of European grain legumes accessions is foreseen for later in the project, as the materials first need to be developed. Existing genotyping data from previous projects will be made available to the network for analysis based on project embargo rules.

Data analysis will be conducted by partners with the relevant expertise in each crop group after experiments of one set are finalized. Analyses include among others statistical analysis of traits and trials, GxE, GxP and GWAS analysis, where possible, to produce publishable results that can also be easily applied in breeding programmes.

Adjustments to the experimental plans, including plant materials, trait descriptions, trial design and locations can be made upon agreement by the crop groups, who will meet regularly to discuss progress and plan upcoming work. Metadata will be updated in the databases of the EURISCO-EVA project intranet as necessary. This is a living document and will be updated as necessary by the EVA coordinator based on input from the EVA Legumes crop groups.

D3.1 Comprehensive list of locations and experiments

The scope of the EVA Legumes network is the multilocation evaluation of different grain legume crops. During the project meeting (KM 1) and in the survey (KM 2), partners indicated their capacity to perform evaluations for the different crops, including whether funding would be needed for specific experiments or traits. The final selection of trial locations will be based on the priority traits (D2.2), experimental protocols (D2.3) and the work plans developed for each crop (D5.1), with the minimum number of trials dependent on the traits evaluated.

The list of possible trial locations for each crop, according to survey results, is included in the Annex 6 Report on the online survey of ForEVA to EVA Legumes.

D4.1 Plan and workflow to ensure necessities in terms of seeds and D5.1 Work plan, these will be agreed in the frame of the EVA Legumes network.

- In EVA Legumes, as in other EVA networks, all seed exchanges are to be made using SMTA.

- During this initial phase, partners agreed on the number of exchanged accessions for each crop and number of seeds needed for each accession, according to seed availabilities and spaces and resources available for multiplications and evaluations. This workflow will be consolidated within experimental protocols and keeping in mind necessities in terms of the number of trial locations and traits per accession as well as the growing season.
- Key elements to consider in the work plan for EVA Legumes: regeneration of enough seed material, including development of SSDs where possible, consistent use of SMTA for material exchange, timely seed distribution according to proper crop calendars, standardized protocols for experiments and trait scoring, data management within the EURISCO-EVA intranet.

D5.2 List of recommendations – this list is included with the conclusions and deliverables achieved.
As a supplementary suggestion, but in relation to other EVA network initiatives a: "Guide on how to establish an evaluation crop network" can be developed and published in open access.

D5.3 Publishing strategy (protocols, survey)
A survey was conducted, and the results are reported in Annex 6.
A paper was planned and its plan for publication is under discussion in the framework of the orphan crop group. The subject is a Review of orphan legumes: role, history, presence and status in different areas, potential to be used in agri-food chain and in breeding.
A protocol or guide is planned – How to establish an evaluation network?
Trait scoring protocols will be developed for each crop within the EVA Legumes network and published on the EVA website.
All publications by the EVA Legumes network will be available as open access.

D5.4 Template for an EVA Legume Consortium Agreement was developed based on agreements used in other EVA networks. It has recently been finalized and is now in the phase of agreement. The structure includes:
Cooperation agreement v1 EVA Legumes Network, and associated

Appendix 1: List of Evaluation Partners per each Crop Group of the EVA Legumes Network

Appendix 2: Overview of plant material provided for Evaluation by the EVA Legumes network's crop groups

Appendix 3: Evaluation Protocol EVA Legumes 2024-2027

CONCLUSION

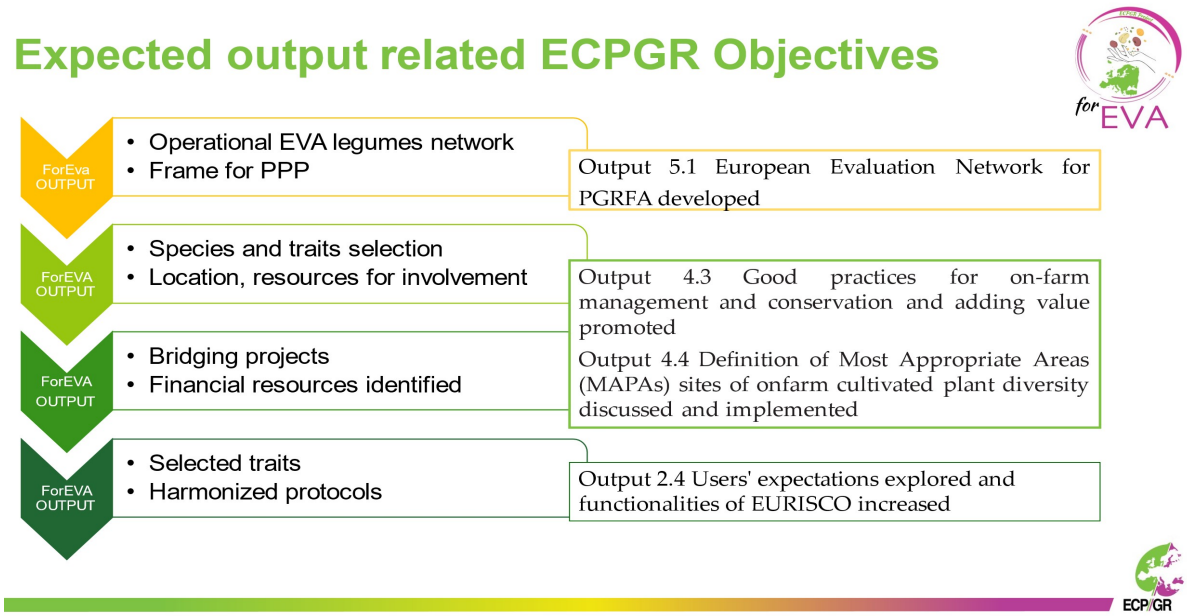

Figure 5 Expected output

1. The ForEva Activity through its progress and implementation, demonstrated there is an evident interest in implementing an EVA Legumes network.
2. The ForEva Activity has successfully achieved its goal of identifying the potential for establishing a robust EVA Legumes network, attracting interest beyond the Grain Legumes WG and partner countries. This initiative has proven to be a powerful catalyst, bringing together a diverse expertise of stakeholders and partners. Currently, 51 partners are listed on the new EVA Legumes website, cooperation agreements being under discussion and signing process. This achievement sets a strong foundation for future knowledge exchange and collaborative activities within EVA and generally in the legume community.
3. Through its implementation, ForEva provided evidence for the successful application of the EVA framework for public–private partnerships to create new EVA networks. The initiative was supported by stakeholders, participants in the meetings, and involved in the exchange of seeds based on SMTA. Additionally, seed increase and field experiments were started, before the formal establishment of EVA Legumes.

4. In the framework of ForEVA: from a diverse list of grain legume species, the first set of species was selected, seven groups being created, together with a crop group leader.
5. The establishment of PGR collection started not only in terms of data and information but a series of sets of materials were also selected, and some have already been multiplied and characterized.
6. Projects with a focus on legumes were linked through ForEVA (e.g. Belis, Legume Generation, INCREASE, BRESOV, ExploDiv). Specific activities based on a common interest in species and traits were identified. Providing materials developed in other projects is one of the first activities implemented. Another is referred to traits' documentation for selection, proposal of different collections.
7. Financial resources for EVA Legume implementation were identified through the recently granted EVA Boost project funded by Germany.
8. In terms of selected traits and harmonized protocols it was agreed by each group the need to have a reference list, based on agreed descriptors and protocols, and to take into consideration specific aspects related to each evaluation cycle.

Special acknowledgements from the ForEVA coordinator

1. Lorenzo Maggioni and ECPGR staff – for all support and encouragement related to Grain Legumes group initiatives, for funding opportunity in the frame of Grant Schemes.
2. The German Ministry for Food and Agriculture for financially supporting the organization of the ForEVA project meeting through an amendment of the EVA project GenR 2019-2 and their continued support for the implementation of the EVA Legumes network through the EVA Boost project.
3. Prof. Florin Stanica, Vice-rector of University of Agronomic Sciences and Veterinary Medicine from Bucharest for amiability to host the ForEVA meeting in the university, in October 2023.
4. All ForEVA partners and stakeholders who made ForEVA initiative achievable. Especially, to all crop group leaders that kindly agreed to assume the role, contributing in this manner to the progress from ForEVA to EVA legumes.
5. Filippo Guzzon – for technical support in organizing seven online meetings, dedicated Teams channels and for valuable contribution related survey and data collection.
6. VRDS Bacau, Romania staff and management for financial and time resources offered for organizing the meeting. For valuable contribution to EVA Legume implementation, promotion and for developing graphic of materials (Andreea Antal Tremurici), and video materials for EVA network presentation.
7. Artist, DariART (Daria Brezeanu), for giving legumes an artistic dimension.
8. Not last, Dr Sandra Goritschnig, EVA coordinator for vision, perseverance and involvement in this initiative.

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5. Establishment of the European PGRFA Evaluation Network (EVA)
6. Objectives of ECPGR for Phase X (2019-2023) (agreed at the 15th Steering Committee meeting, May 2018) (264,3 KB)
7. The Plant Genetic Resources Strategy for Europe, ECPGR, 2021 Objectives and targets of PGR Strategy for Europe and associated priorities for ECPGR Phase XI (272,6 KB)(Annex 3 of the report of the 16th ECPGR Steering Committee meeting)

ANNEX 1 A

Progress of D1.1 achievement _List of available grain legume collections

Table 1
D1.1 List of available grain legume collections at KM1_in person meeting
(info selected from partners presentation offered during the in-person meeting)

Nr.	Title of presentation	Affiliation	*Species*	Accessions no, %
1	COLLECTION OF GRAIN LEGUMES IN THE REPUBLIC OF SRPSKA, B&H	Institute of Genetic Resources University of Banja Luka	*Phaseolus vulgaris L*	170
			Phaseolus coccineus L.	14
			Lathyrus sativus L.	10
2	OVERVIEW OF AVAILABLE GRAIN LEGUMES MATERIALS IN BULGARIAN NATIONAL GENE BANK AND ONGOING RESEARCH	Agricultural Academy Institute of Plant Genetic Resources	*Phaseolus sp.*	24%
			Pisum sp.	14%
			Vicia faba	13%
			Glycine max	13%
			Arachis hypogaea	13%
			Lens sp.	7%
			Lathyrus sp.	6%
			Cicer sp.	5%
			Vigna sp.	3%
			Lupinus sp.	1%
			Vicia ervilia	1%
3	LEGUMES IN ESTONIA	Centre of Estonian Rural Research and Knowledge - METK	*Pisum sativum*	225
			Phaseolus vulgaris	23
			Vicia faba/sativa	51
			Pisum sativum	
			Vicia faba	
			Glycine max	
			Cicer arietinum	
			Vicia sativa	
			Lens culinaris	
			Lupinus albus	
			Phaseolus vulgaris	
4	GRAIN LEGUMES PGR AT GEVES	GEVES	*Phaseolus vulgaris*	400
			Phaseolus coccineus	
			Vigna sp.	
			Lens culinaris	
			Lathyrus sp.	3400
5	Plant Genetic Resources for Food and Agriculture	Scientific Research Center of Agriculture (SRCA)	*Beans*	200 (8 varieties)

6	GRAIN LEGUME LANDRACES - AUA	Laboratory of Plant Breeding and Biometry & Institute of Plant Genetic Resources Agricultural University of Athens	*Vigna unguiculata*	23
			Lupinus sp.	
			Vicia faba	
			Pisum sativum	
			Vicia ervilia	
			Lathyrus sp.	
			Phaseolus vulgaris	
7	MINOR CROPS AGRONOMY & ALTERNATIVE MARKETS	Crops Research – Teagasc	*Vicia faba*	
			Pisum sativum	
			Lupinus sp.	
8	EXPLORING OF GRAIN LEGUMES DIVERSITY FOR SUSTAINABLE EUROPEAN AGRI-FOOD SYSTEMS (EXPLODIV): THE CONTRIBUTION OF IBBR	CNR – Institute of Bioscience and BioResources (IBBR)	*Lens culinaris*	
			Cicer	
			Phaseolus vulgaris	
9	GRAIN LEGUMES COLLECTION IN LATVIA	Crop research department. Priekuli research center. Institute of agricultural resources and economics. Latvia	*Pisum sativum*	51
			Vicia faba	26
			Vicia sativa	21
			Glycine max	9
10	GRAIN LEGUMES GENETIC RESOURCES IN PORTUGAL	INIAV/BPGV	*Phaseolus vulgaris*	3352
			Pisum sativum	478
			Vicia faba	723
			Vigna unguiculata	298
			Cicer arietinum	489
			Lathyrus sativus	73
			Lens culinaris	456
			Lupinus albus	393
			Phaseolus coccineus	97
11	GRAIN LEGUMES: GERMPLASM AND RESEARCH AT VRDS BACAU	Vegetable Research and Development Station, Bacau, Romania	*Phaseolus vulgaris*	902
			Phaseolus coccineus	32
			Phaseolus lunatus	25
			Cicer arietinum	2054
			Pisum sativum	4
			Vicia faba	6
			Glycine hispida	3
			Vigna radiata	7
			Vigna unguiculata	3
			Lupinus nanus	48
			Lathyrus sativus	21
			Lens culinaris	463

12	THE GRAIN LEGUMINOUS COLLECTION PRESERVED AT PLANT GENETIC RESOURCES BANK „MIHAI CRISTEA" SUCEAVA	Suceava GeneBank	*Phaseolus vulgaris*	3530
			Glycine sp.	11
			Cicer sp.	27
			Lens sp.	89
			Lupinus sp.	58
			Pisum sp.	236
			Vicia sp.	1563
			Vigna	82
13	Grain Legumes Overview from the Institute of Field and Vegetable Crops, Novi Sad	Institute of Field and Vegetable Crops, National Institute of the Republic of Serbia	*Glycine max*	950
			Phaseolus vulgaris	728
			Phaseolus coccineus	12
			Lathyrus sativus	40
			Cicer arietinum	20
			Pisum sativum	280
			Vicia faba	60
			Vicia pannonica	2
			Vicia sativa	10
			Vicia villosa	1
			Lupinus albus	10
			Vigna unguiculata	1
14	GENETIC RESOURCES OF GRAIN LEGUMES IN THE SLOVAK REPUBLIC	NPPC	*Lathyrus sativus*	63
			Cicer arietinum	324
			Lupinus spp.	71
			Phaseolus vulgaris	1282
			Lens esculenta	284
			Glycine max	551
			Pisum spp.	654
			Vicia faba	59
			Vicia spp. (other species)	65
15	FOREVA ACTIVITIES ASSOCIATED WITH OTHER PROJECTS AT KIS	Crop Science Department, Slovenia	*Phaseolus vulgaris*	1037
			Phaseolus coccineus	62
			Vicia faba	36
			Pisum sativum	3
			Vigna unguiculata	1
			Lathyrus sativus	1
			Lupinus albus	1
			Lathyrus pratensis	11
16	CRF GRAIN LEGUMES COLLECTION FOR EVA	CRF, INIA-CSIC, Spain	*Phaseolus vulgaris*	3512
			Vicia faba	1345
			Vicia sativa	1050
			Cicer arietinum	879

			Pisum sativum	719
			Lens culinaris	631
			Vigna unguiculata	499
			Vicia ervilia	293
			Lathyrus sativus	236
			Glycine max	129
			Lathyrus cicera	196
			Lathyrus (others)	118
			Vicia articulata	113
			Phaseolus coccineus	108
			Lens wild	68
			Vicia narbonensis	39
			Phaseolus lunatus	41
			Lupinus mutabilis	21
			Trigonella foenum-graecum	11
			Arachis hypogaea	19
17	LEGUMES GERMPLASM AND RESEARCH AT THE MBG-CSIC (PONTEVEDRA, SPAIN)	Misión Biológica de Galicia (MBG)-Spanish National Research Council (CSIC). Pontevedra, Spain. Unidad Asociada (Associated Unit) MBG-CSIC/CiQUS-USC	*Phaseolus vulgaris*	800
			Phaseolus coccineus	42
			Pisum sativum	261
			Vigna spp	104
			Lupinus spp.	215
18	NORDIC GRAIN LEGUMES	NordGen - Nordic Genetic Resource Center	*Pisum sativum*	2414
	NORDIC GRAIN LEGUMES	NordGen - Nordic Genetic Resource Center	*Phaseolus vulgaris*	144
	NORDIC GRAIN LEGUMES	NordGen - Nordic Genetic Resource Center	*Vicia faba*	136
	NORDIC GRAIN LEGUMES	NordGen - Nordic Genetic Resource Center	*Glycine max*	161
	NORDIC GRAIN LEGUMES	NordGen - Nordic Genetic Resource Center	*Phaseolus coccineus*	2

Table 2

D1.1 List of available grain legume collections at KM2_survey (info - summarized in accordance to survey)

	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.

Table 3
D2.1 Sets of EVA materials_the final updated version of D2.1 at KM 4 _EVA
EVA document Appendix 2: Overview of plant material provided for Evaluation by the EVA Legumes network's crop groups

Partner	Chickpeas	Common beans	Fava beans	Lentils	Lupines	Peas	orphan legumes
Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), Germany	450 genebank acc.	>8000 genebank acc., partly SSD lines	ca. 2000 genebank acc, partly SSD lines (not yet public avaialable)	450 genebank acc.	2400 genebank acc.	5300 genebank acc.	500 Lathyrus, 500 Vigna, 1400 Vicia
Universidade NOVA de Lisboa (ITQB NOVA), Portugal		landraces and SSD					Landraces and SSD
CGN-WUR, the Netherlands		4 accessions are available, next year 40 and increasing to ±500 accessions in a few years	720 accessions are available, of which 390 landraces		68 accessions, and only 2 landraces and 19 cultivars	1000 accessions are available, of which 350 landraces (250 from Asia and Africa)	
AGRI OBTENTIONS, France	1 commercial variety		~ 10 commercial varieties.	~ 10 commercial varieties		~ 15 commercial varieties (winter and spring peas)	
LIDEA-Pro'Pulse, France	Commercial varieties, external genetic resources	Commercial varieties and breeding varieties of dry beans					
Centre of Estonian Rural Research and Knowledge, Estonia			10-15 Landraces and varieties			30+ Landraces and varieties	
Ca' Colonna srl Soc. Agr., Italy			fava super aguadulce				
Polytechnic University of Marche, Italy (UNIVPM)	SSD lines from INCREASE project; 430 T-CORE; 2500 R-CORE	SSD lines from BEAN_ADAPT, BRESOV and INCREASE projects. ~450 T-CORE; >5000 R-CORE		SSD from INCREASE project; ~430 T-CORE, ~2500 R-CORE	SSD from INCREASE project T-Core of 2 species *Lupinus albus* (300) and *Lupinus mutabilis (250).*		
CREA-ZA (Council for Agricultural Research and Economics), Italy					Lupinus albus. A world collection of ~ 240 landrace genotypes + 30 intl cultivars + 400 SSD-derived inbred lines	A world collection of 210 landraces + 30 intl cultivars + ~ 500 own SSD-derived lines	World mini-core collection of cowpea ~ 150 accessions (generated by UC Riverside)
Institute of Biosciences and				Italian landraces	some italian populations		some italian populations

Partner	Chickpeas	Common beans	Fava beans	Lentils	Lupines	Peas	orphan legumes
BioResources (CNR-IBBR), Italy							
National Agriculture and Food Centre, Slovakia	3 slovak varieties	slovak varieties, landraces		5 slovak varieties			
Institute of Agricultural Resources and Economics in Latvia			six old local varieties (populations)			32 accessions of *Pisum sativum* ssp. *arvense*, and 27 of *Pisum sativum*	
Agricultural Institute of Slovenia		landraces, 967 ACCs	landraces, 36				landraces, 11
Regional Service for Agrofood Research and Development (SERIDA)		100 selected lines from Spanish Diversity Panel and Snap Bean Panel (BRESOV)				20 landraces	
Republic of Turkey MAF, Field Crops Central Research Institute	registered chickpea varieties with high yield and resistances			registered varieties			
gzpk (Getreidezüchtung Peter Kunz), ETHZ (Agroecological Transitions Group), Switzerland					5-10 breeding lines of L. albus	10-20 breeding lines	landraces of grass pea
Institute of Field and Vegetable Crops, Novi Sad, Serbia		~500 landraces					30 landraces
Rete Semi Rurali, Italy	landraces	landraces		Italian local varieties			local varieties of grass pea and cow pea
INIAV/BPGV, Portugal		20 - 30 landrace accessions					
Institute of genetic resources, University of Banja Luka, Bosnia and Herzegovina		80 landrace accessions			*Lupinus albus*		10 *Lathyrus sativus* landraces
CRF, INIA-CSIC, Spain	~400, mainly landraces			~400 mainly landraces			Landraces and wild populations of Vicia and Lathyrus
GEVES, France		~ 250 accessions, including old varieties and landraces		~ 400 accessions			~ 3400 accessions of Lathyrus sp. 17 accessions of Vigna sp.
CREA-OF, Pontecagnano, Italy	7 landraces		1 landrace	1 landrace			9 landraces
Institute of Field and Vegetable Crops, Novi Sad, Serbia						several breeding	

Partner	Chickpeas	Common beans	Fava beans	Lentils	Lupines	Peas	orphan legumes
						lines and five varieties	
Vegetable Research and Development Station Bacau, Romania	10 landraces	~ 50 Landraces					
Aberystwyth University, UK			varieties				
CSIC, Institute for Sustainable Agriculture, Spain			300 landraces	300 landraces		SSD, 340 accessions	*Lathyrus cicera, L. sativus, L. ochrus, Vicia sativa, Vicia narbonensis*
Misión Biológica de Galicia (MBG), CSIC, Spain		~ 800 landraces. ~30 breeding lines.				185 landraces few breeding lines.	109 cowpea landraces
GAUTIER SEMENCES, France		15 landraces mainly French beans					
NordGen, Sweden		In total 146 accessions (2 *Phaseolus coccineus* and the rest P. vulgaris). All P. vulgaris available as SSD but in very low seed amounts.	In total, ~ 150 accessions no SSD lines. Both faba and equina types.	2 accessions (landraces), not SSD.	5 accessions (1 cultivar and 4 breeding/research lines) of Lupinus angustifolius, no SSD.	~ 2400 accessions are available at NordGen (including CWR). No SSD lines available.	~ 25 acc. of *Lathyrus sp.*, 1 *Vigna unguiculata* (wild), 10 accessions of vetches (*Vicia sativa*) plus a minor number of other *Vicia species*. No SSD.
Agricultural University of Athens, Institute of Plant Genetic Resources, Greece	landraces only 3	landraces 100	Landraces 30				50 *V. unguiculata* landraces and 35 *Lathyrus* spp landraces
Agroscope, Switzerland		Old varieties	Landraces		landraces	land races and old varieties	
Institute for forage crops Kru□evac, Croatia							*Lathyrus* CWR (9 L. pratensis; 1 *L. niger*; 3 *L. silvestris; 1 L. latifolius*).
University of Basilicata, Italy	100 italian landraces	Landraces		Landraces and SSD			
Faculty of agriculture and Life Sciences, University of Maribor, Slovenia	25 accessions. (landrace populations, Italian, hungarian		20 landrace populations	five landrace populations from former Yugoslavia			

Partner	Chickpeas	Common beans	Fava beans	Lentils	Lupines	Peas	orphan legumes
	and US accessions.)						

ANNEX 1 B

D1.2 List of stakeholders that intended to support the ForEVA implementation (letters of commitment collected in preparatory phase of the meeting)

- ✓ Institute of Agricultural Resources and Economics, Latvia
- ✓ AGROSA SEMILLAS SELECTAS S.A., Spain
- ✓ Romanian Association for Sustainable Agriculture, Romania
- ✓ Asociația Biomold, Romania
- ✓ Centre for Genetic Resources, the Netherlands
- ✓ Field Crops Central Research Institute, Ankara
- ✓ Agroland® da APO1 XP. KATEH, Greece
- ✓ Amarant, Kooperativa d.o.o. Golisce 3, Slovenia
- ✓ FAMUS AGRO LTD IMPORT EXPORT PLOVDIV, Bulgaria
- ✓ RGA research genetics and agrochemistry, Ltd Krog, Brodarska ulica 27, Slovenia
- ✓ Asociatia Grupurilor și Organizatiilor de Producatori Agricoli “FRULEG- RO”, Romania
- ✓ gzpk - Getreidezüchtung Peter Kunz, Switzerland
- ✓ Vandinter Semo B.V. / Vandinter Research B.V. , Netherlands
- ✓ Genetics and Genomics of Plant Complex Traits Lab (PLANTX LAB, ITQB NOVA), Universidade Nova De Lisboa, Portugal
- ✓ Hodowla Roslin Smolice Sp. Zo. O. Grupa IHAR, Kobylin, Poland
- ✓ Semillas Y Cereales Baldominos S.A (Secebalsa), Spain
- ✓ Semetica Srl, Italy
- ✓ Rete Semi Rurali ETS, Italy
- ✓ Agri Obtentions, France
- ✓ Limagrain Vegetable Seeds Division, France
- ✓ Ankara University, Faculty of Agriculture, Department of Plant Protection, Ankara, Turkey
- ✓ Centre de Ressources de Botanique Appliquée - CRBA, France
- ✓ Gautier Semences, France
- ✓ GSN Semences, France
- ✓ Semences De Provence, France
- ✓ Sas Pro’Pulse, France
- ✓ Protealis NV, Belgium
- ✓ Seed House Sadovo LTD, Bulgaria

ANNEX 1 C

D1.2 List of EVA Legumes partners – including ForEVA stakeholders, at KM4

(BC - breeding company, GB - genebank, RI - Research institute, O – others)

	BC	GB	RI	O	Country	Entity name	Stakeholder of ForEVA
1					**Belgium**	Protealis, Ghent	
2					**Belgium**	Flanders Research Institute for Agriculture, Fisheries & Food, Merelbeke	
3					**Bosnia and Herzegovina**	Genetic Resources Institute, University of Banja Luka, Banja Luka	
4					**Denmark**	Aarhus University, Aarhus	
5					**Estonia**	Centre of Estonian Rural Research and Knowledge (METK), Jõgeva	
6					**France**	Agri Obtentions, Guyancourt	
7					**France**	Semences de Provence, Fourques	
8					**France**	Lidea/Euralis, Lescar	
9					**France**	Gautier Semences, Eyragues	
10					**France**	Centre de Ressources de Botanique Appliquée, Charly	
11					**France**	GSN Semences, Riscle	
12					**France**	Terres Inovia, Paris	
13					**France**	Groupe d'Étude et de contrôle des Variétés Et des Semences, Beaucouzé	
14					**Georgia**	Scientific Research Center of Agriculture, Tbilisi	
15					**Germany**	Leibniz-Institut für Pflanzengenetic und Kulturpflanzenforschung	
16					**Germany**	Deutsche Saatveredelung AG, Lippstadt	
17					**Greece**	Agricultural University of Athens, Athens	
18					**Italy**	Semetica s.r.l., Montevarchi, Arezzo	
19					**Italy**	Ca' Colonna srl Soc. Agr., Ravenna	
20					**Italy**	Universita Politecnica delle Marche, Ancona	
21					**Italy**	National Research Council, Institute of Biosciences and BioResources, Bari	
22					**Italy**	Rete Semi Rurali, Scandicci	
23					**Italy**	University of Basilicata, Potenza	
24					**Italy**	Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (CREA-OF), Pontecagnano Faiano	

25					Italy	Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (CREA-ZA), Lodi	
	BG	GB	RI	O	Country	Entity name	Stakeholder of ForEVA
26					Latvia	Institute of Agricultural Resources and Economics, Priekuli	
27					Netherlands	Wageningen University and Research. Centre for Genetic Resources, The Netherlands, Wageningen	
28					Netherlands	Van Dinter Semo, Scheemda	
29					Norway	Norwegian University of Life Sciences, As	
30					Poland	Smolice Plant Breeding Limited Liability Company, Przebędowo	
31					Portugal	Instituto de Tecnologia Química e Biológica - Universidade NOVA de Lisboa, Oeiras	
32					Portugal	Instituto Nacional de Investigação Agrária e Veterinária, I.P. (INIAV, I.P.), Banco Português de Germoplasma Vegetal, Braga	
33					Romania	Banca de Resurse Genetice Vegetale Suceava, Suceava	
34					Romania	Vegetable Research and Development Station, Bacau	
35					Serbia	Institute of Field and Vegetable Crops, Novi Sad	
36					Serbia	Institute for Forage Crops Kruševac, Globoder	
37					Slovakia	National Agricultural and Food Centre, Piestany	
38					Slovenia	Agricultural Institute of Slovenia, Ljubljana	
39					Slovenia	University of Maribor, Maribor	
40					Spain	Servicio Regional de Investigacion y Desarrollo Agroalimentario, Villaviciosa	
41					Spain	Misión Biológica de Galicia (Consejo Superior de Investitaciones Científicas), Pontevedra	
42					Spain	Institute for Sustainable Agriculture, Cordoba	
43					Spain	CSIC, Centro Nacional INIA, Madrid	
44					Sweden	Nordic Genetic Resources Centre (NordGen), Alnarp	
45					Switzerland	Getreidezüchtung Peter Kunz, Hombrechtikon	
46					Switzerland	Agroscope, Nyon 1	
47					Türkiye	Ankara University, Faculty of Agriculture, Ankara	
48					Türkiye	Field Crops Central Research Institute, Ankara	
49					United Kingdom	School of Biosciences, University of Birmingham, Birmingham	

50					United Kingdom	Aberystwyth University, Aberystwyth	
51					United Kingdom	Earlham Institute, Norwich	

ANNEX 2

D2.2 Sets of prioritized traits for each crop
The final list of traits will be defined by crop groups during their work planning in EVA Legume

Table 2.1: Chickpea traits for evaluation

EVA trait code	Trait description	Evaluation 2nd year (#reps)	Evaluation 3rd year (#reps)	Embargo	Reference
Plant data (4)					
ECH_GH	Growth habit (4.1.1)	50x2	50x2	yes	**IPGRI 1985**
ECH_FL	Days to 50% flowering (4.2.1)	50x2	50x2	yes	**IPGRI 1985**
ECH_MT	Days to maturity (4.2.4)	50x2	50x2	yes	**IPGRI 1985**
ECH_NP	Number of pods per plants (4.2.7)	50x2	50x2	yes	**IPGRI 1985**
ECH_NS	Number of seeds per pod (4.2.8)	50x2	50x2	yes	**IPGRI 1985**
ECH_GY	Grain yield (4.2.11)	50x2	50x2	yes	**IPGRI 1985**
ECH_SC	Seed color (4.3.1)	50x2	50x2	yes	**IPGRI 1985**
ECH_SDW	100 seed weight (4.3.5)	50x2	50x2	yes	**IPGRI 1985**
ECH_PC	Seed protein content (6.3.1.1)	50x2	50x2	yes	**IPGRI 1985**
ECH_photo	Picture of plants/seed				--
Pest and disease susceptibility (6)					
ECH_AS	Ascochyta blight (6.2.2)	50x2	50x2	yes	**IPGRI 1985**
ECH_FS	Fusarium wilt (6.2.4)	50x2	50x2	yes	**IPGRI 1985**
Stress susceptibility					
ECH_DR	Drought (7.1)	50x2	50x2	yes	**IPGRI 1985**
ECH_CO	Susceptibility to cold (7.4.1)	50x2	50x2	yes	**IPGRI 1985**

Table 2.2: Common bean traits for evaluation

EVA trait code	Trait description	Evaluation 2nd year (#reps)	Evaluation 3rd year (#reps)	Embargo	Reference
Plant data					
ECB_GH	Growth habit (4.1.2)	35x2	35x2	yes	**IBPGR 1982**
ECB_FL	Days to 50% flowering (4.2.2)	35x2	35x2	yes	**IBPGR 1982**
ECB_MT	Days to maturity (6.1.7)	35x2	35x2	yes	**IBPGR 1982**
ECB_NP	Number of pods per plants (6.2.18)	35x2	35x2	yes	**IBPGR 1982**
ECB_PC	Pod color (6.2.17)	35x2	35x2	yes	**IBPGR 1982**
ECB_GY	Grain yield (4.2.11)	35x2	35x2	yes	**IBPGR 1982**
ECB_SCP	Seed coat pattern (4.3.1)	35x2	35x2	yes	**IBPGR 1982**
ECB_SCDC	Seed coat darker color (4.3.2)	35x2	35x2	yes	**IBPGR 1982**
ECB_SCLC	Seed coat lighter color (4.2.3)	35x2	35x2	yes	**IBPGR 1982**
ECB_SP	Percentage seed protein (6.3.1)	35x2	35x2	yes	**IBPGR 1982**
ECB_SW	100 seed weight (6.3.3)	35x2	35x2	yes	**IBPGR 1982**
ECB_HFP	Height of the first pod	35x2	35x2	yes	---
ECB_photo	Picture of plants/seed				---

Table 2.3: Faba bean traits for evaluation

EVA trait code	Trait description	Evaluation 2nd year (#reps)	Evaluation 3rd year (#reps)	Embargo	Reference
Plant data					
EFB_FL	Days to 50% flowering (4.2.1)	30x2	30x2	yes	**IBPGR 1985**
EFB_MT	Days to maturity (4.2.2)	30x2	30x2	yes	**IBPGR 1985**
EFB_NS	Number of seeds per pod (4.3.2)	30x2	30x2	yes	**IBPGR 1985**

EFB_SC	Seed testa color (4.3.4)	30x2	30x2	yes	**IBPGR 1985**
EFB_SW	100 seed weight (4.3.3)	30x2	30x2	yes	**IBPGR 1985**
EFB_GY	Seed yield (6.3.6)	30x2	30x2	yes	**IBPGR 1985**
EFB_photo	Picture of plants/seed				**--**
EFB_PP	Protein content (6.3.2)	30x2	30x2	yes	**IBPGR 1985**
EFB_TC	Tannin content	30x2	30x2	yes	**--**
Pest and disease susceptibility					
EFB_BF	Botrytis fabae (8.2.1)	30x2	30x2	yes	**IBPGR 1985**
EFB_AF	Ascochyta fabae (8.2.3)	30x2	30x2	yes	**IBPGR 1985**

Table 2.4: Lentil traits for evaluation

EVA trait code	Trait description	Evaluation 2nd year (#reps)	Evaluation 3rd year (#reps)	Embargo	Reference
Plant data					
ELE_GH	Growth habit	30x2	30x2	yes	**---**
ELE_FL	Days to 50% flowering (4.2.1)	30x2	30x2	yes	**IBPGR 1985**
ELE_MT	Days to maturity (4.2.2)	30x2	30x2	yes	**IBPGR 1985**
ELE_NS	Number of seeds per pod (4.3.1)	30x2	30x2	yes	**IBPGR 1985**
ELE_SW	100 seed weight (4.3.2)	30x2	30x2	yes	**IBPGR 1985**
ELE_SC	Testa colour (4.3.3)	30x2	30x2	yes	**IBPGR 1985**
ELE_SC	Lodging susceptibility (6.1.1)	30x2	30x2	yes	**IBPGR 1985**
ELE_HLP	Height of lowest pod (6.2.2)	30x2	30x2	yes	**IBPGR 1985**
ELE_GY	Seed yield (6.3.2)	30x2	30x2	yes	**IBPGR 1985**
ELE_photo	Picture of plants/seed				**--**
Stress susceptibility					
ELE_DR	Drought (7.3)	30x2	30x2	yes	**IBPGR 1985**
Pest and disease susceptibility					
ELE_AS	Ascochyta (8.2.2)	30x2	30x2	yes	**IBPGR 1985**
ELE_FS	Fusarium (8.2.3)	30x2	30x2	yes	**IBPGR 1985**

Table 2.5: Lupins traits for evaluation

EVA trait code	Trait description	Evaluation 2nd year (#reps)	Evaluation 3rd year (#reps)	Embargo	Reference
Characterization (4.)					
ELU_GH	Plant habit (4.2)	15x2	15x2	yes	**IBPGR 1981**
ELU_NP	Pod number per plant (4.7.1)	15x2	15x2	yes	**IBPGR 1981**
ELU_SC1	Seed primary color (4.8.5)	15x2	15x2	yes	**IBPGR 1981**
ELU_SC2	Seed secondary color (4.8.7)	15x2	15x2	yes	**IBPGR 1981**
ELU_photo	Picture of plants/seed				**--**
Preliminary Evaluation (5.)					
ELU_MT	Days to total ripening (5.2)	15x2	15x2	yes	**IBPGR 1981**
ELU_SW	100 seed weight (5.3)	15x2	15x2	yes	**IBPGR 1981**
ELU_AL	Presence of alkaloids (5.4)	15x2	15x2	yes	**IBPGR 1981**
ELU_ALC	Alkaloid content (5.5)	15x2	15x2	yes	**IBPGR 1981**
Agronomic Characters (6.)					
ELU_HFP	Height of first pod (6.6)	15x2	15x2	yes	**IBPGR 1981**
ELU_VR	Vernalization requirement (6.7)	15x2	15x2	yes	**IBPGR 1981**
Susceptibility to stress (8.)					
ELU_LT	Low Temperature (8.1)	15x2	15x2	yes	**IBPGR 1981**
ELU_DR	Drought (8.3)	15x2	15x2	yes	**IBPGR 1981**
ELU_TAS	Tolerance to alkaline soil	15x2	15x2	yes	**----**
Susceptibility to disease (10.)					
ELU_AT	Anthracnose (10.1.1)	15x2	15x2	yes	**IBPGR 1981**
ELU_FS	Fusarium wilt (10.1.4)	15x2	15x2	yes	**IBPGR 1981**

Table 2.6: Pea traits for evaluation

EVA trait code	Trait description	Evaluation 2nd year (#reps)	Evaluation 3rd year (#reps)	Embargo	Reference
Chemical composition					
EPE_PP	Protein percentage	25x2	25x2	Yes	**USDA 2024**
Disease descriptors					
EPE_AS	Asocochyta blight	25x2	25x2	Yes	**USDA 2024**

EPE_FS	Fusarium wilt		25x2	Yes	**USDA 2024**
EPE_PM	Powdery mildew		25x2	Yes	**USDA 2024**
Morphological descriptors					
EPE_NP	Pods per plant	25x2	25x2	Yes	**USDA 2024**
EPE_SW	100 seed weight	25x2	25x2	Yes	**USDA 2024**
EPE_NS	Seed per pod	25x2	25x2	Yes	**USDA 2024**
EPE_photo	Picture of plants/seed	25x2	25x2		--
Phenological descriptors					
EPE_FL	Days to flower	25x2	25x2	Yes	**USDA 2024**
EPE_MT	Days to maturity	25x2	25x2	Yes	**USDA 2024**
Production descriptors					
EPE_GY	Yield	25x2	25x2	Yes	**USDA 2024**

ANNEX 3

D. 3.1 Comprehensive list of possible locations and experiments
The final locations and experiments in frame of EVA Legumes will be defined in crop-group specific work plans according to available material and funding.

Table 3.1. Potential chickpea field trial locations

Evaluation Partner	Evaluation site (country)	Chickpea cultivar type	#plots per year	Growing season	comments
Semences de Provence	France	both	90	early March-August	regeneration
National Agriculture and Food centre - Research Institute of Plant Production	Slovakia	kabuli	3	april-july,august	
Institute of Field and Vegetable Crops, National institute of the Republic of Serbia	Serbia	kabuli	20	Late February/early March - July	could also do molecular markers with funding
Field Crops Central Research Institute	Turkey	kabuli	50-100	March - July, spring sown	
NordGen (Nordic Genetic Resource Center)	Sweden	both	TBD	March/June - Aug/Sept	funding required
SEMETICA SRL	Italy		20		
LIDEA-Pro'Pulse	South East and South West of France	kabuli	200		
Centre of Estonian Rural Research and Knowledge	Estonia, Jõgeva		max 20		Chemical analyses
Ankara University	ANKARA/ TURKEY		200		biotic stresses, funding required
National Agriculture and Food Centre	Piešťany, Slovakia		3x3m		funding required for regenerations
gzpk (Getreidezüchtung Peter Kunz), ETHZ (Agroecological Transitions Group)	Switzerland/Germany		20-100		funding required (except small field trials). drought stress experiments under controlled conditions.
Rete Semi Rurali	Sicily, Tuscany		up to 50-100 per location.		farmers' network, abiotic stresses
SCDL Bacau /Vegetable Research and Development Station Bacau	Bacau, Romania		50		funding needed for development of SSD, biotic and abiotic stresses
ILVO	Melle, Belgium		tbd		small scale evaluation for disease resistance
Agricultural University of Athens, Institute of Plant Genetic Resources	Athens		3		no

University of Basilicata	South Italy		50		additional plots require funding
Faculty of agriculture and Life Sciences, University of Maribor	Maribor and Murska Sobota, Slovenia		500		functional foods and intercropping (agroforestry, cereal-legume based intercrops).

Table 3.2. Potential common bean field trial locations

Evaluation Partner	**Evaluation site (country)**	**Common bean cultivar type**	#plots per year	Growing season	comment
Gautier Semences	France	green bushy	60	april - july	quality traits, heat stress
ILVO	Melle Belgium	dry bushy	20-30	may-september	yield/protein/disease resistance, drought stress
NPPC Slovakia	Piešťany, Slovakia	green, dry/bushy	10	may-august	descriptors, funding required for quality traits
Semences de Provence	France	dry bushy	100-200	may-september	regeneration
GSN Semences	North of France	green bushy	20	June-September	quality traits, heat/water stress
Agricultural Institute of Slovenia	Slovenia	dry/green and bushy	10	May-Spetember	descriptors, SNP markers
Institute of Field and Vegetable Crops Novi Sad	Serbia	dry, bushy	30	April/May - August/September	descriptors
CSIC / Misión Biológica de Galicia (MBG) / Biology of Agrosystems Research Group (BAS)	Pontevedra, Spain	Indifferent	200	May-October	
SRCA/ Farmer's field	Georgia	dry, bushy	10	April - September	morphology, farmers network
SEMETICA SRL	CALDERARA DI RENO (BOLOGNA)		20		
Instituto de Tecnologia Química e Biológica - Universidade NOVA de Lisboa (ITQB NOVA)	Oeiras, Portugal		200		drought and quality
LIDEA-Pro'Pulse	South East or/and South West of France		50		regeneration
Ca' Colonna srl Soc. Agr.	emilia romagna, italy , province of ravenna		4		
Ankara University	Ankara /Turkey		150		funding required
gzpk (Getreidezüchtung Peter Kunz), ETHZ (Agroecological Transitions Group)	Switzerland/Germany/Spain		20-100		funding required, farmers network
Centre de Ressources de Botanique Appliquée (CRBA)	In station (CRBA Headquarter)	dry	100 m2		vigour, diseases,
Rete Semi Rurali	Northern Italy, Lombardy region		TBD		Farmer's network, organic conditions
Vegetable Research and Development Station Bacau	Experimental field Romania 46.585205 N, 26.950087 E		100 plots		descriptors, for biotic/abiotic stress trials funding required
NordGen	South Sweden		TBD		balance with other crop trials
University of Basilicata	South Italy		50		more plots require funding,

van Waveren Saaten	Germany		50		yield, quality, Phasine content

Table 3.3. Potential fava bean field trial locations

Evaluation Partner	**Evaluation site (country)**	**Faba bean cultivar type**	# plots (max)	Growing season (sowing-harvest)	comment
Institute of Field and Vegetable Crops, National institute of the Republic of Serbia	Rimski šančevi, Serbia	Spring, winter, dry	20	Late february/early march - July (Spring)	descriptors, cold stress,
Agricultural Institute of Slovenia	Slovenia	Spring, winter, dry	20	March/April-August	
Centre of Estonian Rural Research and Knowledge	Estonia	Spring, dry	30	may-august/september	
The Institute of Agricultural Resources and Economics (AREI), Priekuli research center	Priekuli, Latvia	Spring, dry	20	five months	descriptors, diseases, yield
Vandinter Semo B.V.	Netherlands	Spring, winter, dry	10	March/April to August/September	descriptors, diseases (Nematodes)
Instituto de Tecnologia Química e Biológica - Universidade NOVA de Lisboa (ITQB NOVA)	Oeiras, Portugal		200		quality, drought
AGRI OBTENTIONS	northern France		20-40		yield, botrytis, cold stress
Centre of Estonian Rural Research and Knowledge	Jõgeva, Estonia		50		descriptors, diseases, yield
Ca' Colonna srl Soc. Agr.	Ravenna, Italy		4		disease, yield
Ankara University	Ankara/Turkey		150		plant pathology, funding required
Protealis	Belgium		25		descriptors, yield, quality
Rete Semi Rurali	Tuscany, Italy		20		descriptors, intercropping
Aberystwyth University	Wales, UK		120		descriptors, diseases, yield, quality
CSIC, Institute for Sustainable Agriculture	Cordoba, Spain		300-400		descriptors, diseases, quality
Norwegian University of Life Sciences	Ås, South-Eastern Norway		100		descriptors, abiotic stresses
ILVO	Melle, Belgium		TBD		disease, yield, quality, drought
NordGen	Southern Sweden		TBD		descriptors, yield, funding required
Faculty of agriculture and Life Sciences, University of Maribor	Maribor and Murska Sobota, Slovenia		500		yield, morphology, intercropping

Table 3.4. Potential lentil field trial locations

Evaluation Partner	**Evaluation site (country)**	**Lentil cultivar type**	Max # plots per year	Growing season	comment
NPPC	Slovakia	Green	5	march-july	descriptors, quality traits with funding
NordGen (Nordic Genetic Resource Center)	Southern Sweden	No preference	TBD	May/June - Aug/Sept	descriptors, yield
SEMETICA SRL	CALDERARA DI RENO (BOLOGNA)		10		production
AGRI OBTENTIONS	Center and North of France		20 to 40		yield, diseases

Semences de Provence	Castelnaudary en France		100-200		descriptors, diseases
LIDEA-Pro'Pulse	South East of France		50		descriptors, yield, diseases
Ca' Colonna srl Soc. Agr.	emilia romagna, italy province of ravenna		4	vigor, production	
Ankara University	ANKARA-TURKEY		200	pathology, funding required	
Republic of Turkey Ministry of Agriculture and Forestry Field Crops Central Research Institute	Ankara, Turkey		TBD		descriptors, machine harvesting
Rete Semi Rurali	Tuscany		50-100		descriptors, organic farming
CSIC, Institute for Sustainable Agriculture	Cordoba, Spain		300-400		descriptors, diseases, controlled conditions biotic stresses
University of Basilicata	South Italy		50		descriptors, yield, funding required
Faculty of agriculture and Life Sciences, University of Maribor	Maribor and Murska Sobota		500		descriptors, yield, intercropping

Table 3.5. Potential lupine field trial locations

Evaluation Partner	**Evaluation site (country)**	**Lupin Species**	Max # Plots per year	Growing season	comment
Agricultural Institute of Slovenia	Slovenia	white/Andean	10	April-Spetember	descriptors, alkaloid content
GZPK	Switzerland	white / blue	30	April - August	descriptors, drought stress, funding required
Deutsche Saatveredelung AG	Germany, Netherlands	White	100	March - August	descriptors, yield, alkaloid content, disease resistant
Vandinter Semo B.V.	Scheemda, Netherlands	White/Blue/Andean	30	March/April to August/September	nematode
HR SMOLICE	Przebedowo, Wielkopolska Region of Poland	White/yellow/narrow-leafed	60	March/April to July/September	descriptors, yield, interest in diseases and DH
Ankara University	ANKARA-TURKEY		150		plant pathology, funding required
Regional Service for Agrofood Research and Development (SERIDA)	Villaviciosa, Asturias, Spain		100 with 3 m2		descriptors, yield, funding required
Rete Semi Rurali	Sardinia region		20		descriptors, yield, alkaloid content
Vegetable Research and Development Station Bacau	Bacau, Romania		10 plots		descriptors, yield
ILVO	Melle Belgium		TBD		descriptors, yield, alkaloid content, disease resistant
NordGen	Southern Sweden.		TBD		descriptors, yield, alkaloid content, disease resistant

Table 3.6. Potential orphan legumes field trial locations

Evaluation Partner	**Evaluation site (country)**	**Species**	Max # plots per year	comment

Instituto de Tecnologia Química e Biológica - Universidade NOVA de Lisboa (ITQB NOVA)	Oeiras, Portugal		200	disease, drought, quality
AGRI OBTENTIONS	France	cowpea	20 to 40	yield
Ankara University	ANKARA-TURKEY		150	plant pathology, funding required
SERIDA	Villaviciosa, Asturias, Spain		100	descriptors, funding required
gzpk (Getreidezüchtung Peter Kunz), ETHZ (Agroecological Transitions Group)	Switzerland, Germany		10-50	descriptors, drought, funding required
Institute of Field and Vegetable Crops, Novi Sad, Serbia	Serbia		20	descriptors
Rete Semi Rurali	Tuscany, Lombardy, Sicily		10-20	descriptors, outreach
CRF, INIA-CSIC	Alcalá de Henares, Madrid, Spain		100	descriptors, agronomy
CSIC, Institute for Sustainable Agriculture	Cordoba, Spain		300	agronomy, disease, quality
ILVO	Melle Belgium		TBD	yield, protein
NordGen	Southern Sweden		TBD	descriptors, yield
Institute for forage crops Kruševac	In village Globoder near Kruševac, Serbia	Lathyrus	TBD	descriptors
van Waveren Saaten	Germany		30	agronomy, yield

Table 3.7. Potential pea field trial locations

Evaluation Partner	**Evaluation site (country)**	**Pea cultivar types**	Max # plots per year	Growing season (sowing-harvest)	comments
Institute of Field and Vegetable Crops, Serbia	Rimski šančevi, Serbia	Spring dry and forage	40	Late February/early March - July	descriptors, disease, cold tress, SNP markers with funding
AREI	Priekuli, Latvia	Spring, dry	30	five month	descriptors, diseases, quality, organic conditions
Protealis	Belgium	Spring, dry	40	Late March-Begining August	descriptors, diseases, quality
Centre of Estonian Rural Research and Knowledge (METK)	Estonia	Spring, dry	20	Late April-Late August	descriptors, yield, quality
HR SMOLICE	Przebedowo, Wielkopolska Region of Poland	Spring dry and fresh	60	March/April-July/August	descriptors, yield, abiotic stress
SEMETICA SRL	CALDERARA DI RENO (BOLOGNA)		20		production
Instituto de Tecnologia Química e Biológica - Universidade NOVA de Lisboa (ITQB NOVA)	Oeiras, Portugal		200		drought, quality
AGRI OBTENTIONS	Center and North of France	spring and winter	20 to 30 each		yield, disease, cold stress
Ca' Colonna srl Soc. Agr.	italy emilia romagna province of ravenna		4		production
Ankara University	ANKARA-TURKEY		150		plant pathology, funding required
Regional Service for Agrofood Research and Development (SERIDA)	Villaviciosa, Asturias, Spain		400		descriptors, funding required
gzpk (Getreidezüchtung Peter Kunz), ETHZ (Agroecological Transitions Group)	Switzerland/Germany		20-100		descriptors, drought stress, funding required
Rete Semi Rurali	Lombardy region		20		descriptors, yield, intercropping
Aberystwyth University	Wales		120		yield, quality
CSIC, Institute for Sustainable Agriculture	Cordoba, Spain		400		descriptors, disease
GAUTIER SEMENCES	France 13630 Eyragues		25 plots		descriptors, quality
GSN Semences	North of France (Coutiches department 59)		32 (multiplication), 10 (evaluation)		descriptors, disease, water stress
NordGen	Southern Sweden.		TBD		descriptors, yield

ANNEX 4

ForEVA Crop group meetings

Figure 4.1 ForEVA BEAN group meeting

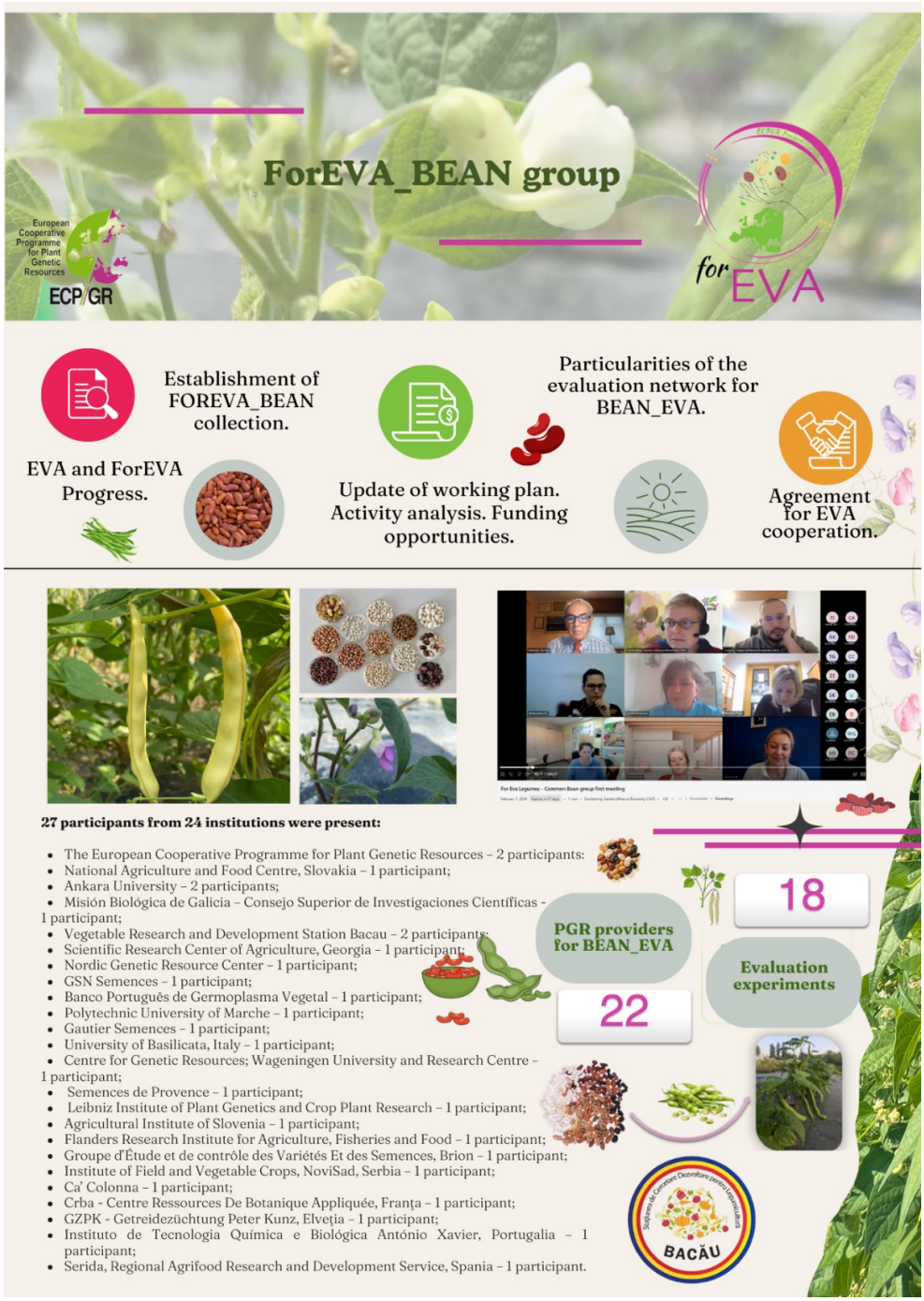
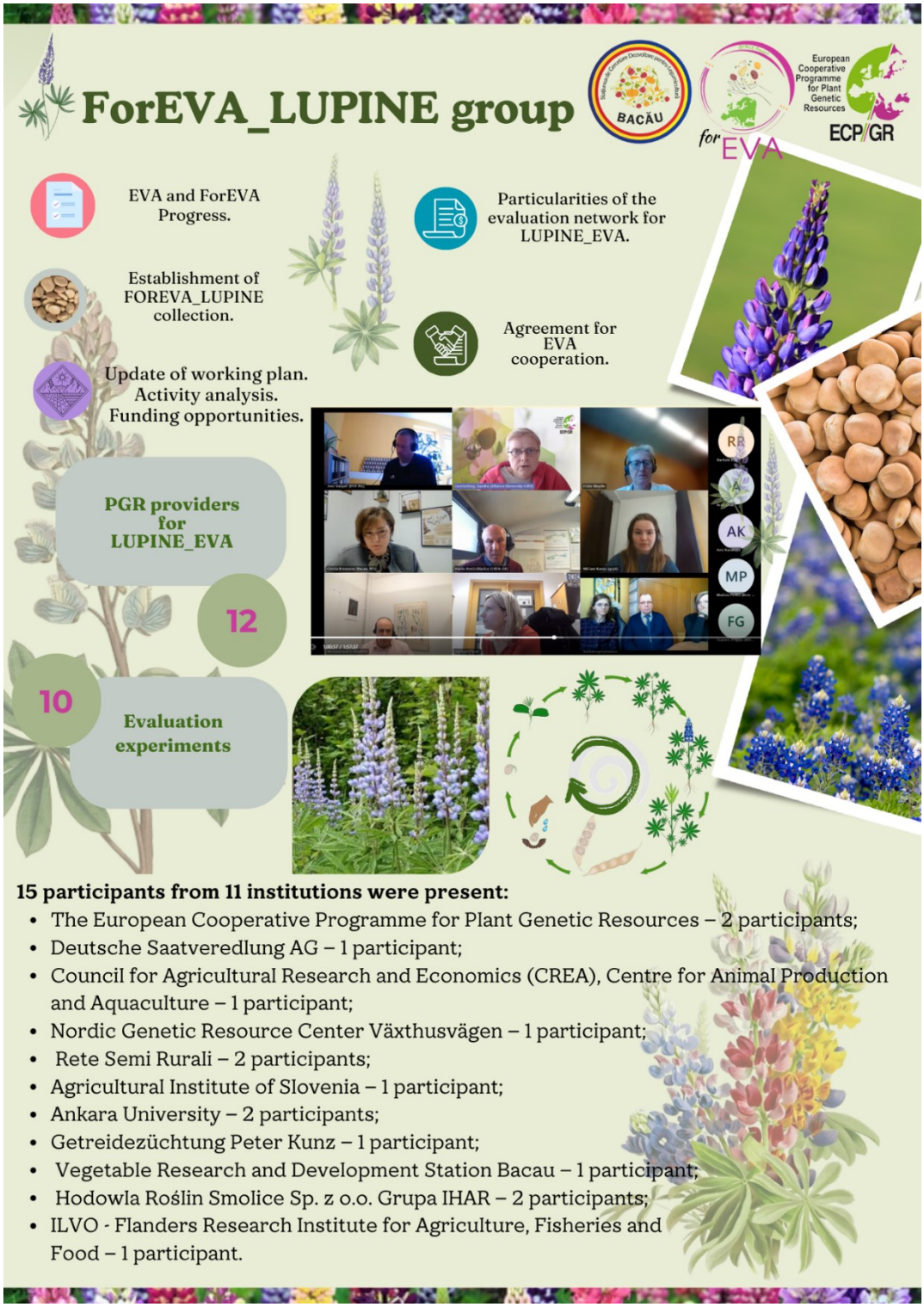


Figure 4.2 ForEVA CHICKPEA group meeting

Figure 4.3 ForEVA FABA BEAN group meeting

Figure 4.4 ForEVA PEA group meeting

Figure 4.6 ForEVA LUPINE group meeting



15 participants from 11 institutions were present:

- The European Cooperative Programme for Plant Genetic Resources – 2 participants;
- Deutsche Saatveredlung AG – 1 participant;
- Council for Agricultural Research and Economics (CREA), Centre for Animal Production and Aquaculture – 1 participant;
- Nordic Genetic Resource Center Växthusvägen – 1 participant;
- Rete Semi Rurali – 2 participants;
- Agricultural Institute of Slovenia – 1 participant;
- Ankara University – 2 participants;
- Getreidezüchtung Peter Kunz – 1 participant;
- Vegetable Research and Development Station Bacau – 1 participant;
- Hodowla Roślin Smolice Sp. z o.o. Grupa IHAR – 2 participants;
- ILVO - Flanders Research Institute for Agriculture, Fisheries and Food – 1 participant.

Figure 4.7 ForEVA ORPHAN LEGUMES group meeting

ANNEX 5A

Template of presentation

Short presentation of the institute/ organization p lease include here info related

- location, expertise, research objectives
- GL species listed according research interest/ importance
- a short overview of the most important projects on legumes: (impact, ways to continue, to consolidate, to implement the results)
- the availability of phenotypic and genotypic data and also seeds availability for sharing based on SMTA

(Gene Banks ForEVA partners will include)

Survey of GL GR along Europe

- info related National collections of Grain legumes
- highlight the interest on species and traits with breeding value,
- the availability to provide/ to receive seeds of different species (specify which ones) for exchanges and experiments
- interest and capacity to be involved in evaluation of different GL species

research units, breeding org ForEVA partners will include

Survey of GL GR along Europe please include

- highlight the interest on species and traits with breeding value,
- the availability to provide/ to receive seeds of different species (specify which ones) for exchanges and experiments
- interest and capacity to be involved in evaluation of different GL species

research units, breeding org ForEVA partners will include

Survey of GL GR along Europe please include

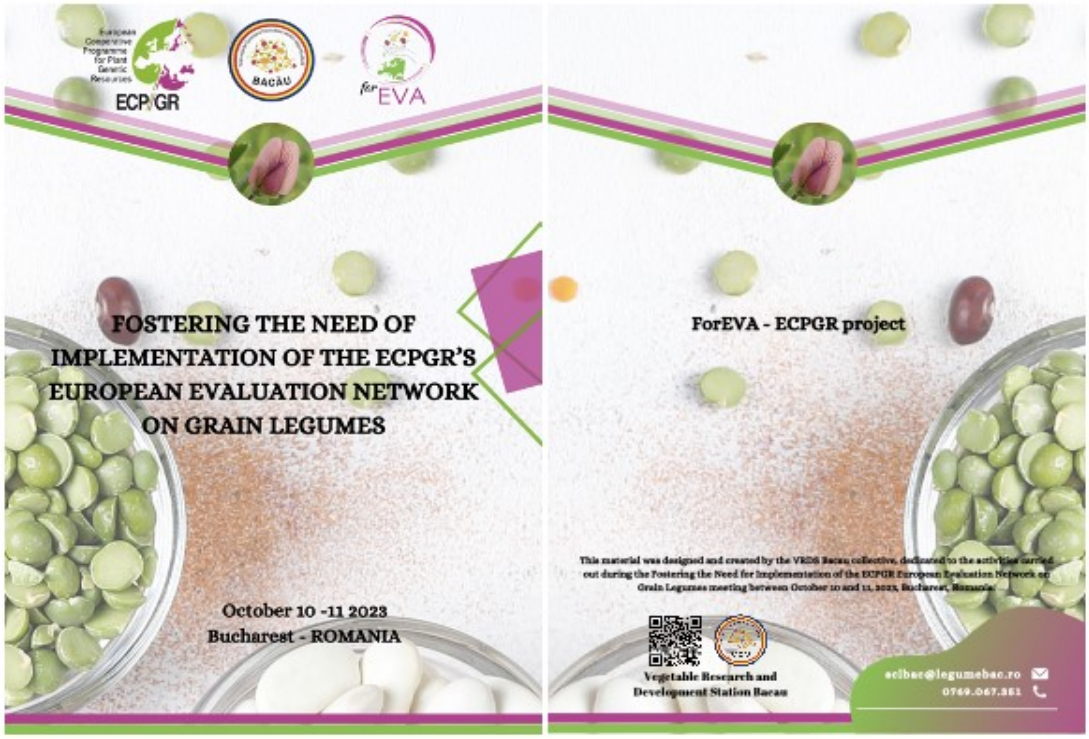
- highlight the interest on species and traits with breeding value,
- the availability to provide/ to receive seeds of different species (specify which ones) for exchanges and experiments
- interest and capacity to be involved in evaluation of different GL species

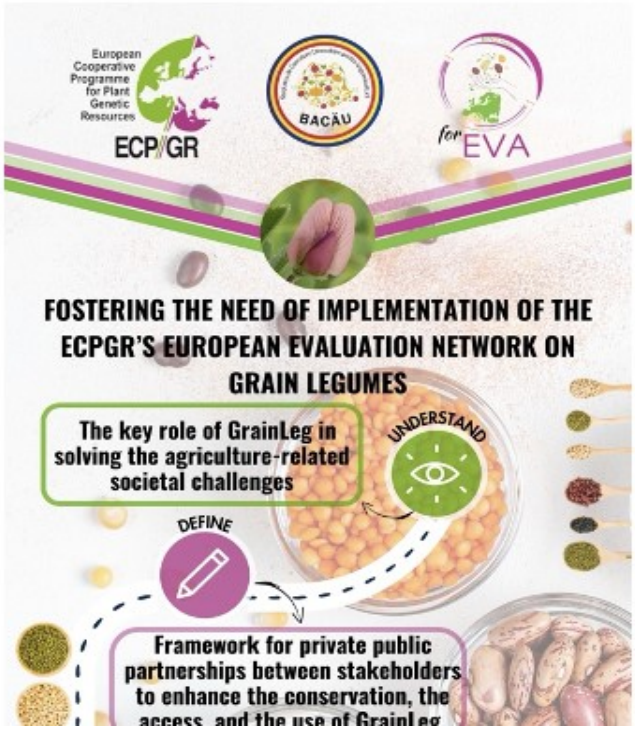
Benefits and expectations for own institute / organisation

-expectations related a EVA network from breeders/ researchers (material, traits, conditions of operation)
-constrains of breeders/ researchers view point (material, traits, conditions of operation)
-Ways to cooperate

ANNEX 5B

Project identity- logo and meeting materials folders, badges, notebook, roll up, bookmarks





From ForEVA to EVA Legumes

Report on the online survey of Eva Legumes

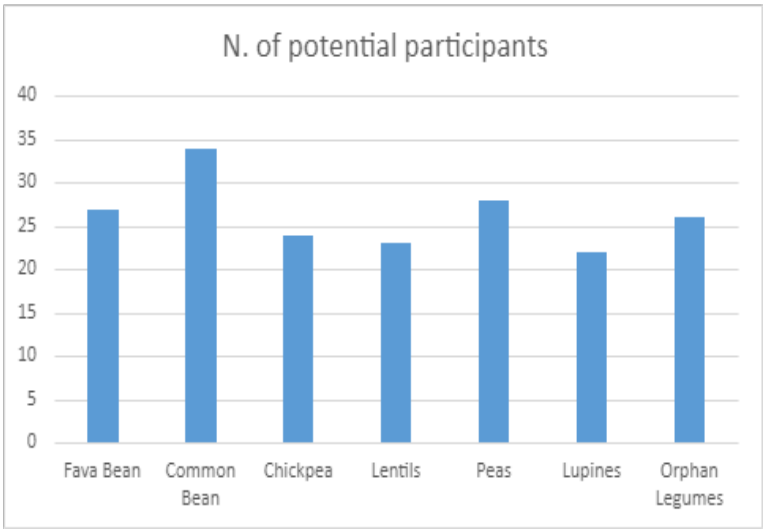
December, 2023

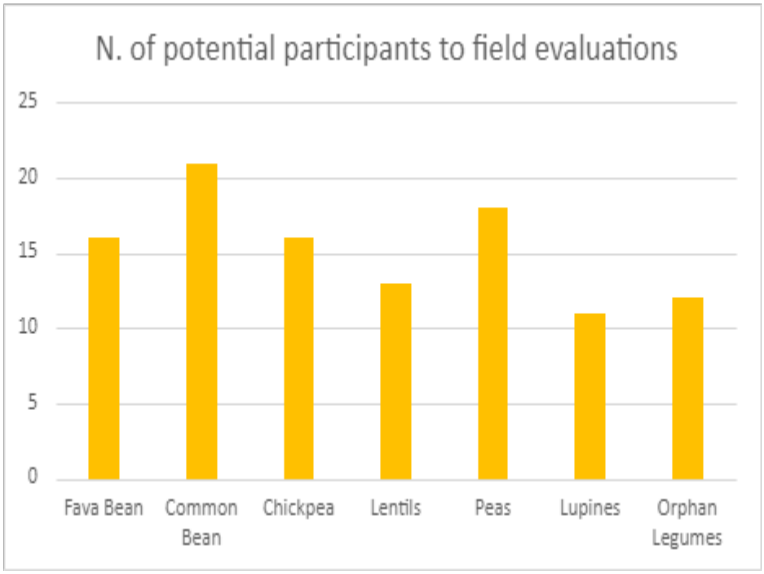
CONTENTS

INTRODUCTION

As agreed during the ForEVA meeting in Bucharest, 10-11 October 2023, information from ForEVA partners and stakeholders was collected in order to establish crop groups.

This report is based on the response of 54 participants (from 23 different countries, including 11 private companies) gathered through an online survey. It clearly emerged that the crops that interest the participants the most, also in terms of realizing in-kind field evaluations, are: common bean and beans followed by fava bean. In the lists below I indicated per each proposed crop group, the potential participants (including their contacts and further details) interested in: I) participating to each group; 2) donating germplasm material and carrying out regeneration activities; 3) realizing in-kind field evaluations.





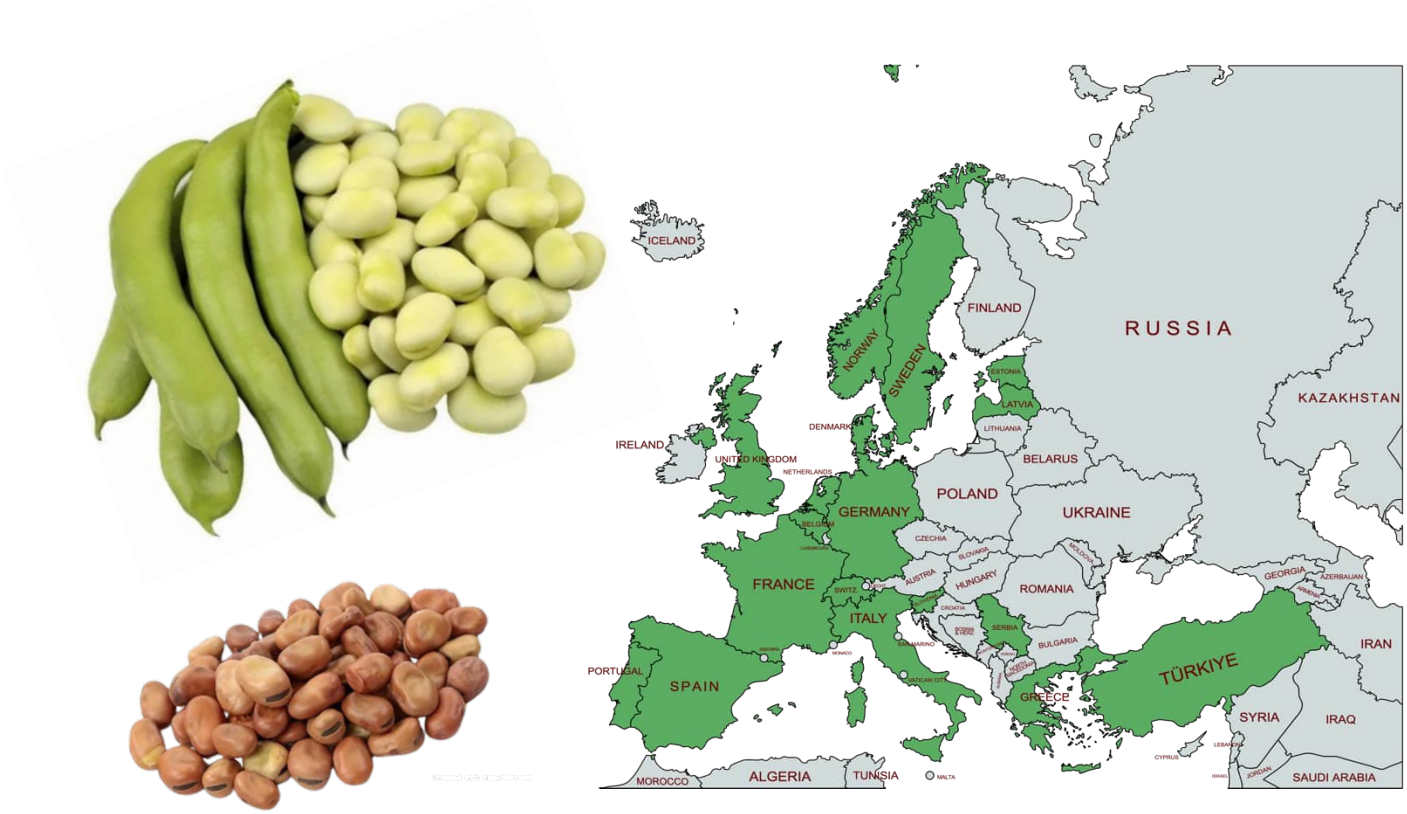
1.FAVA BEAN

Institution	Type of organization	Country	Contact person	Email address	Availability to provide material	Availability to carry out field evaluations
IPK	GB	Germany	Ulrike Lohwasser	lohwasse@ipk-gatersleben.de	**Yes**	No
CGN-WUR	GB	Netherlands	Wouter Groenink	wouter.groenink@wur.nl	**Yes**	No
AGRI OBTENTIONS	BC	France	Jerone Auzanneau	jerome.auzanneau@agri-obtentions.fr	**Yes**	Maybe
University of Birmingham	RI	UK	Nigel Maxted	nigel.maxted@dial.pipex.com	No	No
Centre of Estonian Rural Research and Knowledge	RI	Estonia	Lea Narits	lea.narits@metk.agri.ee	**Yes**	Maybe
Ca' Colonna srl Soc. Agr.	BC	Italy	Edoardo Bagnara	edoardobagnara@cacolonna.it	**Yes**	**Yes**
Ankara University	RI	Turkey	Aziz Karakaya	karakaya@agri.ankara.edu.tr	**Yes**	Maybe
Ankara University	RI	Turkey	Arzu Çelik Oğuz	acelik@agri.ankara.edu.tr	**Yes**	Maybe
AREI	RI	Latvia	Aina Kokare	aina.kokare@arei.lv	**Yes**	**Yes**
CREA	RI	Italy	Loredana Sigillo	loredana.sigillo@crea.gov.it	**Yes**	No
Aberystwyth University	RI	UK	Catherine Howarth	cnh@aber.ac.uk	**Yes**	Maybe
CSIC, Institute for Sustainable Agriculture	RI	Spain	Diego Rubiales	diego.rubiales@ias.csic.es	**Yes**	**Yes**
Aarhus University	RI	Denmark	Stig U. Andersen	sua@mbg.au.dk	No	No
Norwegian University of Life Sciences	RI	Norway	Åshild Ergon	ashild.ergon@nmbu.no	No	Maybe
ILVO	RI	Belgium	hilde muylle	hilde.muylle@ilvo.vlaanderen.be	No	**Yes**
Van Dinter Semo	BC	Netherlands	Kees Betema	bentema@vandintersemo.nl	No	Maybe
Agricultural University of Athens, Institute of Plant Genetic Resources	RI	Greece	Penelope Bebeli	bebeli@aua.gr	**Yes**	No
Agroscope	RI	Switzerland	Beate Schierscher	beate.schierscher-viret@agroscope.admin.ch	**Yes**	No
University of Maribor	RI	Slovenia	Primož Titan	primoz.titan1@um.si	**Yes**	**Yes**

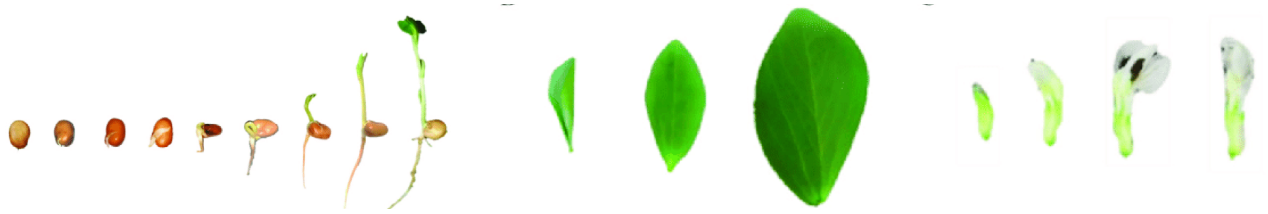
ITQB NOVA	RI	Portugal	Maria Carlota Vaz Patto	cpatto@itqb.unl.pt	No	Maybe
CREA	RI	Italy	Paolo Annicchiarico	paolo.annicchiarico@crea.gov.it	No	No
Protealis	BC	Belgium	Macarena Martin	macarena.martin@protealis.com	No	Maybe
KIS	RI	Slovenia	Barbara Pipan	barbara.pipan@kis.si	**Yes**	No
Rete Semi Rurali	O	Italy	Matteo Petitti	matteo.petitti@semirurali.net	No	Maybe
Institute of Field and Vegetable Crops	RI	Serbia	Ana Uhlarik	ana.uhlarik@nsseme.com	No	**Yes**
Deutsche Saatveredelung AG	BC	Germany	Jens Christian Vaupel	jens.vaupel@dsv-saaten.de	No	No
NordGen	GB	Sweden	Ulrika Carlson-Nilsson	ulrika.carlson@nordgen.org	**Yes**	Maybe

Type of organization is summarized as: RI - research institute, GB - genebank, BC - breeding company, O – other. ForEVA partner institutions are highlighted in green.

27 participants to the survey from 25 different institutions (18 countries, including 5 private companies), accounting for 50% of all the participant to the survey (n=54), are interested in participating in the fava bean group.



Potential participants that can provide germplasm material of fava bean			
Institution	**Material**	**Genotyping**	**Capacity for regeneration**
IPK	ca. 2000 genebank acc, partly SSD lines (not yet public avaialable)	partly genotyped (GBS),data not yet publicly available	Yes
CGN-WUR	720 accessions are available, of which 390 landraces	No	No
AGRI OBTENTIONS	Around 10 commercial varieties.	No	**Yes**
Centre of Estonian Rural Research and Knowledge	Landraces and varieties: 10-15	No	**Yes**
Ca' Colonna srl Soc. Agr.	fava super aguadulce	No	No
Ankara University (A. Karakaya, A. Çelik)	-	-	No
AREI	six old local varieties (populations)	No	**Yes (limited quantities)**
KSI	landraces, 36	No	**Yes**
CREA (L.Sigillo)	1 landrace	No	Maybe
Aberystwyth University	varieties	No	**Yes**
CSIC, Institute for Sustainable Agriculture	landraces 300	**yes**, GBS (not yet publicly available)	**Yes**
NordGen	In total, approx. 150 accessions (50 landraces, 80 breeding/research lines and 20 cultivars), no SSD lines. Both faba and equina types. Depending on interest all accessions can be available for the network, however today not enough seeds are available for all accessions for use in multilocation trials.	No, but will be genotyped/sequenced in a project performed by NordGen in 2024-2026.	**Yes**
Agricultural University of Athens, Institute of Plant Genetic Resources	Landraces 30	No	No
Agroscope	Landraces	No	**Yes (difficult)**
University of Maribor	Landraces 20	No	**Yes**



More than 3000 accessions (including more than 790 landraces) could be shared by 14 partner institutions for the evaluations. IPK, CSIC and NordGen might have genotyping data already available.

Potential participants that can carry out field trials of fava bean				
Institution	**Availability**	**Number of plots**	**Location of the plots**	**Traits to be evaluated**
Ca' Colonna srl Soc. Agr.	**Yes**	4	Ravenna Province (Italy)	yield, plant health, vigor, bearing
AREI	**Yes**	plot size 1m2 and 5m2 , the number of the replicates depends on seed amounts available	Priekuli research center	Phenological: the beginning of flowering and length of growing period. Morphological: plant height, yield components, grain quality parameters such as TGW, and protein content. Can assess the infection lever with diseases in the field if they occur
Institute of Field and Vegetable Crops	**Yes**	20	Rimski šančevi, Republic of Serbia, trial field of the Institute of Field and Vegetable Crops45°20'N, 19°51'E	phenotypic evaluation, frost tolerance
CSIC, Institute for Sustainable Agriculture	**Yes**	300-400 accessions, with reps	Cordoba, Spain	agronomic traits and detailed disease responses
ILVO	**Yes**	tbd (we have facilities for small scale evaluation - 3 rows per plot or up to plots of size 18m² individually)	Melle	yield/protein content/disease/
University of Maribor	**Yes**	500 plots	Maribor and Murska Sobota	Yield and other morpho-agronomic traits, leaf are index, intensity of chlorophyll formation.
NordGen	Maybe	Hard to say at the moment.	Southern Sweden	Morphological and phenological traits, yield.
Van Dinter Semo	Maybe	21	Scheemda	germination, flowering time, choclat spot and other visual scorable diseases
ITQB NOVA	Maybe	200	Oeiras, Portugal	drought tolerance
AGRI OBTENTIONS	Maybe	depend of the size of the plot and of the notation. 20 to 40 plots / year	northem half of France	yield, botrytis, frost in natural condition
Centre of Estonian Rural Research and Knowledge	Maybe	Depends on size of the plot, max 50	Estonia, Jõgeva	Flowering, height, maturity, diseases. If necessary, also after harvesting number of pods, seeds, etc.
Ankara University (A. Karakaya, A. Çelik)	Maybe	150	Ankara/Turkey	Plant pathology
Protealis	Maybe	25	Belgium	Height, maturity, lodging, protein content, yield
Rete Semi Rurali	Maybe	20	Tuscany	Morphological and agronomical traits, to be discussed
Aberystwyth University	Maybe	120	Wales	Yield, disease resiatance, flowering time etc.
Norwegian University of Life Sciences	Maybe	100	Ås, South-Eastern Norway	Most

16 partners could carry out the field evaluation (in-kind), in likely more than 1500 plots.

2. COMMON BEAN

Institution	Type of organization	Country	Contact	Email	Availability to provide material	Availability to carry out field evaluations
SEMETICA SRL	BC	Italy	Elisa Pinton	EPINTON.SEMETICA@GMAIL.COM	No	**Yes**
IPK	GB	Germany	Ulrike Lohwasser	lohwasse@ipk-gatersleben.de	**Yes**	No
ITQB NOVA	RI	Portugal	Maria Carlota Vaz Patto	cpatto@itqb.unl.pt	**Yes**	Maybe
University of Birmingham	RI	UK	Nigel Maxted	nigel.maxted@dial.pipex.com	No	No
Semences de Provence	BC	France	Clémence de Chabot	cdechabot@semencesdeprovence.com	No	**Yes**
LIDEA-Pro'Pulse	BC	France	Jeanson Patrice	patrice.jeanson@lidea-seeds.com	**Yes**	**Yes**
Ca' Colonna srl Soc. Agr.	BC	Italy	Edoardo Bagnara	edoardobagnara@cacolonna.it	No	**Yes**
Ankara University	RI	Turkey	Aziz Karakaya	karakaya@agri.ankara.edu.tr	**Yes**	**Yes**
Ankara University	RI	Turkey	Arzu Çelik Oğuz	acelik@agri.ankara.edu.tr	**Yes**	**Yes**
Polytechnic University of Marche, Italy (UNIVPM)	RI	Italy	Elena Bitocchi	e.bitocchi@univpm.it	**Yes**	No
KIS	RI	Slovenia	Barbara Pipan	barbara.pipan@kis.si	**Yes**	**Yes**
SERIDA	RI	Spain	Juan Jose Ferreira	jjferreira@serida.org	**Yes**	**Yes**
GZPK/ ETHZ	RI	Switzerland	Sebastian Kussmann	s.kussmann@gzpk.ch	No	**Yes**
Institute of Field and Vegetable Crops	RI	Serbia	Aleksandra Ilic	aleksandra.savic84@yahoo.com	**Yes**	**Yes**
SRCA	RI	Georgia	Ana Devidze	anadevidze@yahoo.com	No	**Yes**
Scientific Research Center of Agriculture	RI	Georgia	Tamar Jinjikhadze	tamrikoj@yahoo.com	No	**Yes**
CRBA	RI	France	Mukankubana Domitille	d.mukankubana@crba.fr	No	**Yes**
Rete Semi Rurali	O	Italy	Matteo Petitti	matteo.petitti@semirurali.net	**Yes**	Maybe
INIAV/BPGV	GB	Portugal	Madalena Vaz	madalena.vaz@iniav.pt	**Yes**	No
Institute of genetic resources, University of Banja Luka	RI	Bosnia and Herzegovina	Marina Antic	marina.antic@igr.unibl.org	**Yes**	No
Geves	RI	France	Charles-Henry Duval	charles-henry.duval@geves.fr	**Yes**	No
Vegetable Research and Development Station Bacau	RI	Romania	Creola Brezeanu	creola.brezeanu@yahoo.com	**Yes**	**Yes**
Earlham Institute	RI	UK	Jose De Vega	jose.de-vega@earlham.ac.uk	No	No
CSIC-MBG	RI	Spain	Antonio M. De Ron	amderon@mbg.csic.es	**Yes**	No
Gautier Semences	BC	France	Dalmon Frédéric	frederic.dalmon@gautiersemences.com	**Yes**	**Yes**
GSN Semences	BC	France	Dubois Ophélie	ophelie.guilbert@gsn-semences.fr	No	**Yes**
Agricultural University of	RI	Greece	Penelope Bebeli	bebeli@aua.gr	**Yes**	No

Athens, Institute of Plant Genetic Resources						
Agroscope	RI	Switzerland	Beate Schierscher	beate.schierscher-viret@agroscope.admin.ch	**Yes**	No
University of Basilicata	RI	Italy	Tania Gioia	tania.gioia@unibas.it	**Yes**	Maybe
CGN-WUR	GB	Netherlands	Wouter Groenink	wouter.groenink@wur.nl	**Yes**	No
Institute of Biosciences and BioResources	RI	Italy	Angela R. Piergiovanni	angelarosa.piergiovanni@ibbr.cnr.it	No	No
National Agriculture and Food Centre	RI	Slovakia	Erika Zetochová	erika.zetochova@nppc.sk	**Yes**	**Yes**
ILVO	RI	Belgium	Hilde Muylle	hilde.muylle@ilvo.vlaanderen.be	No	**Yes**
NordGen	GB	Sweden	Ulrika Carlson-Nilsson	ulrika.carlson@nordgen.org	**Yes**	Maybe

Type of organization is summarized as: RI - research institute, GB - genebank, BC - breeding company, O – other. ForEVA partner institutions are highlighted in green.

34 participants to the survey from 33 different institutions (18 countries, including 6 private companies), accounting for 63% of all the participant to the survey (n=54), are interested in participating to the common bean group.

Potential participants that can provide germplasm material of common bean			
Institute	**Material**	**Genotyping**	**Capacity for Regeneration.**
IPK	>8000 genebank acc., partly SSD lines	Yes, partly genotyped	Yes
ITQB NOVA	landrace and SSD	Yes, partially genotyped with SNPs, partially publicly available	depends on the nº of accessions
CGN-WUR	We just started bringing the Dutch collection back from CIAT. Right now only 4 accessions are available, next year 40 and increasing to ±500 accessions in a few years	No	No
LIDEA-Pro'Pulse	Commercial varieties and breeding varieties of dry beans	No	**Yes**
Ankara University (A. Karakaya, A. Çelik)	-	-	No
Polytechnic University of Marche, Italy (UNIVPM)	SSD lines from the BEAN_ADAPT, BRESOV and INCREASE project. T-CORE is about 450 lines; R-CORE is at least 5000 lines. Low seed availability at the moment	Yes, WGS and GBS	No (depending on funds)
National Agriculture and Food Centre	Slovak varieties, landraces	No	**Yes**
KIS	landraces, 967 ACC	some materials; mostly with SSRs	**Yes**
SERIDA	100 selected lines from Spanish Diversity Panel and Snap Bean Panel (BRESOV)	**Yes, GBS**	**Yes**
Institute of Field and Vegetable Crops	landraces, around 500 accessions	Yes, 200 accessions genotyped, SSR markers, data are publicly available	**Yes**
Rete Semi Rurali	landraces	**Yes, partially**	Yes (compensation for farmers is needed)
INIAV/BPGV	20 - 30 landrace accessions, but need to be regenerated	No	Yes (5 - 10 accessions; €200 per accession)
University of Banja Luka	landrace, 80 accessions	Yes, in cooperation with colleagues from the Institute from Ljubljana	**Yes**
Geves	around 250 accessions available including old varieties and landraces	no	**Yes**
Vegetable Research and Development Station Bacau	Landrace, about 50	No	**Yes;30 euro per acc**
CSIC-MBG	The collection includes 800 landraces, availability depends on the germination and the stock of seeds.	No	**Yes; 150-200 accessionns/year. 35 € per accessions.**
Gautier Semences	15 landraces mainly French beans	No	**Yes**
NordGen	In total 146 accessions (2 Phaseolus coccineus and the rest P. vulgaris). Around 70 landraces, 20 breeding/research lines, 56 cultivars. All P. vulgaris available as SSD but in very low seed amounts.	*P. vulgaris* will be genotyped (GBS) withing the INCREASE project.	**Yes;Approximate cost per accession is 300 Euro.;**
Agricultural University of Athens, Institute of Plant Genetic Resources	Landraces 100	No	No
Agroscope	Old varieties	**Some Yes**, Microsatellites	**Yes**
Univ. of Basilicata	Landraces	No	**Yes**

More than 16000 accessions could be shared by 21 partner institutions for the evaluations. IPK, ITBQ, UNIVPM, KIS, SERIDA, Institute of Field and Vegetable Crops (Novi Sad), Rete Semi Rurali, University of Banja Luka, Nordgen and Agrocope might have genotyping data already available.

Potential participants that can carry out field trials of common bean				
Institution	**Availability**	**Number of plots**	**Location of the plots**	**Traits to be evaluated**
SEMETICA SRL	Yes	20	Calderara di Reno, Italy	Production
Semences de Provence	Yes	100-200	Castelnaudary in France	crop circle, plant descriptions and disease descriptions
LIDEA-Pro'Pulse	Yes	50	South East or/and South West of France	Yield, earliness, diseases.
Ca' Colonna srl Soc. Agr.	Yes	4	Ravenna, Italy	yields, bearing, healthiness, vigour
Ankara University (A. Karakaya, A. Çelik)	Yes	150	Ankara /Turkey	Plant pathology
National Agriculture and Food Centre	Yes	3x10m	Research Institute of Plant Producion Piešťany	10 traits according to the available descriptor
Agricultural Institute of Slovenia	Yes	180	central Slovenia; central Europe	CPVO/IPBGR descriptors
Regional Service for Agrofood Research and Development (SERIDA)	Yes	600 with 3 m2	Villaviciosa, Asturias, Spain	Morphological, Agronomic and Disease resistance
GZPK / ETHZ	Yes	20-100	Switzerland/Germany/Spain	All parameters that can be collected visually in the field, at one location Chlorophyll fluorescence, stomatal conductivity
Institute of Field and Vegetable Crops	Yes	20-30	Serbia	all traits based on international descriptor lists, including yield related traits
SRCA	Yes	5	Georgia	morphological characterization
Scientific research center of Agriculture	Yes	5	Georgia	Morphological characterization
CRBA	Yes	100 m2	In station (CRBA Headquarter)	Vigor, all diseases and others traits evaluated on bean trial in general
Vegetable Research and Development Station Bacau	Yes	100 plots, 25-30 plants per plot	Experimental field of SCDL, located in Bacau, Romania 46.585205 N, 26.950087 E	CPVO/ IPBGR descriptors can be selected according to the size of field trial
Gautier Semences	Yes	20 plots for climbing or 50 plots for dwarf bean	France 13630 Eyragues	plant traits quality pods traits ,earlyness of flowering , ease of harvest
GSN Semences	Yes	For seed multiplication, we can multiply 32 numbers/varieties every year. For trial evaluation, we can observe only 10 plots (5 numbers for 2 repetitions or 10 numbers)	North of France (Coutiches department 59)	Flowering, plant habit, behavior for diseases, yield, pod length, pod size
ILVO	Yes	tbd (we have facilities for small scale evaluation - 3 rows per plot or up to plots of size 18m² individually)	Melle Belgium	yield/protein/disease resistance
NordGen	Maybe	.	South Sweden	Morphological and phenological traits, yield
University of Basilicata	Maybe	50, for more plots we have the capacity but we would need founding	South Italy	Morpho-physiological traits and yield traits
ITQB NOVA	Maybe	200	Oeiras, Portugal	Drought tolerance
Rete Semi Rurali	Maybe	Depends	Northern Italy, Lombardy region	Morphological and agronomical traits, to be discussed

21 partners could carry out the field evaluation (in-kind), in likely more than 1600 plots.

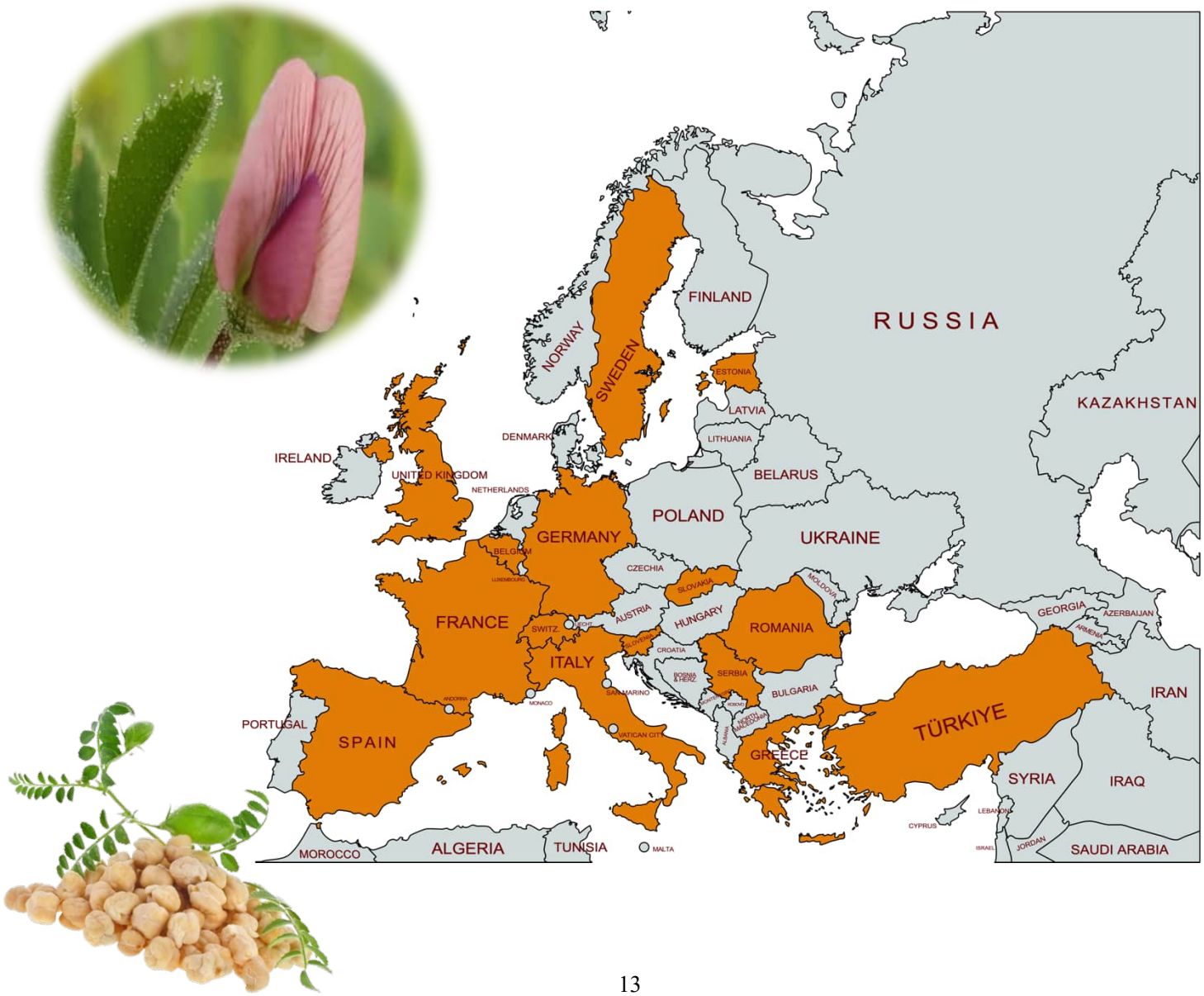
3. CHICKPEA

Institution	Type of organization	Country	Contact person	Email address	Availability to provide material	Availability to carry out field evaluations
SEMETICA SRL	BC	Italy	Elisa Pinton	EPINTON.SEMETICA@GMAIL.COM	No	**Yes**
IPK	GB	Germany	Ulrike Lohwasser	lohwasse@ipk-gatersleben.de	**Yes**	No
University of Birmingham	RI	UK	Nigel Maxted	nigel.maxted@dial.pipex.com	No	No
Semences de Provence	BC	France	Clémence de Chabot	cdechabot@semencesdeprovence.com	No	**Yes**
LIDEA-Pro'Pulse	BC	France	JEANSON Patrice	patrice.jeanson@lidea-seeds.com	**Yes**	**Yes**
Ankara University	RI	Turkey	Aziz KARAKAYA	karakaya@agri.ankara.edu.tr	**Yes**	**Yes**
Ankara University	RI	Turkey	Arzu ÇELİK OĞUZ	acelik@agri.ankara.edu.tr	**Yes**	**Yes**
UNIVPM	RI	Italy	Elena Bitocchi	e.bitocchi@univpm.it	**Yes**	No
Republic of Turkey Ministry of Agriculture and Forestry Field Crops Central Research Institute	RI	Turkey	Selin Gunduz	selin.gunduz@tarimorman.gov.tr	**Yes**	**Yes**
GZPK/ ETHZ	RI	Switzerland	Sebastian Kussmann	s.kussmann@gzpk.ch	No	**Yes**
Rete Semi Rurali	O	Italy	Matteo Petitti	matteo.petitti@semirurali.net	**Yes**	Maybe
CRF, INIA-CSIC	GB	Spain	Lucía De la Rosa	lucia.delarosa@inia.csic.es	**Yes**	No
CREA	RI	Italy	Loredana Sigillo	loredana.sigillo@crea.gov.it	**Yes**	No
National institute of the Republic of Serbia	RI	Serbia	Ana Uhlarik	ana.uhlarik@nsseme.com	No	**Yes**
Vegetable Research and Development Station Bacau	RI	Romania	Creola Brezeanu	creola.brezeanu@yahoo.com	**Yes**	**Yes**
Terres Inovia	RI	France	Claire Barbet-Massin	c.bmassin@terresinovia.fr	No	No
ILVO	RI	Belgium	hilde muylle	hilde.muylle@ilvo.vlaanderen.be	No	**Yes**
University of Basilicata	RI	Italy	Tania Gioia	tania.gioia@unibas.it	**Yes**	Maybe
Faculty of agriculture and Life Sciences, University of Maribor	RI	Slovenia	Primož Titan	primoz.titan1@um.si	**Yes**	Yes
Agri Obtentions	BC	France	Auzanneau Jerome	jerome.auzanneau@agri-obtentions.fr	**Yes**	No
National Agriculture and Food Centre	RI	Slovakia	Erika Zetochová	erika.zetochova@nppc.sk	**Yes**	**Yes**

Centre of Estonian Rural Research and Knowledge	RI	Estonia	Lea Narits	lea.narits@metk.agri.ee	No	**Yes**
NordGen	GB	Sweden	Ulrika Carlson-Nilsson	ulrika.carlson@nordgen.org	No	Maybe
Agricultural University of Athens, Institute of Plant Genetic Resources	RI	Greece	Penelope Bebeli	bebeli@aua.gr	**Yes**	Maybe

Type of organization is summarized as: RI - research institute, GB - genebank, BC - breeding company, O – other. ForEVA partner institutions are highlighted in green.

24 participants to the survey from 23 different institutions (15 countries, including 4 private companies), accounting for 44% of all the participant to the survey (n=54), are interested in participating to the chickpea group.



Potential participants that can provide germplasm material of chickpea			
Institute	**Material**	**Genotyping**	**Capacity for Regeneration.**
IPK	450 genebank acc.	no	**Yes**
Agri Obtentions	1 commercial variety	no	No
LIDEA-Pro'Pulse	Commercial varieties, external genetic ressources	Yes, snp Kaspar	**Yes**
Ankara University (A. Karakaya, A. Çelik)	N/A	N/A	No
UNIVPM	SSD lines from INCREASE project (obtained by selfing cycles starting from landraces, research materials, breeding materials and cultivars); T-CORE is 430 genotypes; R-CORE is 2500 lines, few seeds available; following the INCREASE rules any seed exchange must be done by using Easy-SMTA of FAO and becoming INCREASE stakeholder. Higher quantity of seeds could be available but multiplied in open fields so there will be a certain percentage of outcrossing	T-CORE is genotyped by WGS, data could be available soon (it depends of a paper that we will submit soon); GBS or WGS at low coverage for the remaining R-CORE genotypes is planned within INCREASE not still started.	No;yes, if we will have funds;
National Agriculture and Food Centre	3 slovak varieties	no	**Yes**
Republic of Turkey Ministry of Agriculture and Forestry Field Crops Central Research Institute	We have registered chickpea varieties with high yield and resistance we can provide them	No	we need some supports for workers during the growing period because of the burden of our other research projects;
Rete Semi Rurali	landraces	N/A	Yes;Material is regenerated on-farm under RSR supervision. Compensation to farmers is needed (usaully €1000/ear/farm) and travel cost + time for researchers, if no research project active on this topic.;
CRF, INIA-CSIC	Mainly landraces, about 400 available accessions	No	**Yes**
CREA	7 landraces	no	**Yes**
Vegetable Research and Development Station Bacau	landrace 10	not yet	**Yes;**30 euro per acc;
Agricultural University of Athens	landraces only 3	no	**Yes**
University of Basilicata	100 Italian landraces	No	Yes;it depends on the number genotypes, reps, in control conditions or in field;
University of Maribor	Chickpea (25 accessions). Five landrace populations, Italian, Hungarian and US accessions.	No	**Yes**

More than 500 accessions could be shared by 14 partner institutions for the evaluations. LIDEA and UNIVPM might have genotyping data already available

Institution	Availability	Number of plots	Location of the plots	Traits to be evaluated
SEMETICA SRL	Yes	20	Calderara di Reno, Italy	PRODUCTION
Semences de Provence	Yes	100-200 (if there are a limited number of seeds per plots: like 20- 25 seeds per plots)	Castelnaudary in France	Crop circle, plant descriptions and disease descriptions
LIDEA-Pro'Pulse	Yes	200	South East and South West of France	Yeild, earliness, diseases, protein content.....ect
Centre of Estonian Rural Research and Knowledge	Yes	Depends on the size of the plot- Max 20	Jõgeva, Estonia	Flowering, height, maturity, diseases. After harvesting number of pods, etc.
Ankara University (A. Karakaya, A. Çelik)	Yes	200	Turkey, Italy	PLANT PATHOLOGY-AGRONOMIC EVALUATION
National Agriculture and Food Centre	Yes	3x3m	Reseach Institute of Plant Production Piešťany	10 traits according to the available descriptor
Republic of Turkey Ministry of Agriculture and Forestry Field Crops Central Research Institute	Yes	We have an opportunity to carry on location studies according to project we can arrange	In Ankara, Turkey	Morphological Traits
GZPK/ETHZ	Yes	20-100	Switzerland/Germany	All parameters that can be collected visually in the field, at one location Chlorophyll fluorescence, stomatal conductivity
Institute of Field and Vegetable Crops,	Yes	20	Rimski šančevi, Republic of Serbia, trial field of the Institute of Field and Vegetable Crops 45°20'N, 19°51'E	Phenotipic evaluation, diseases
Vegetable Research and Development Station Bacau	Yes	50 plots	Bacau Romania, 46.585205 N, 26.950087 E	selection of key access and utilization descriptors for chickpea genres, according to the net interest and size of experiment
ILVO	Yes	tbd (we have facilities for small scale evaluation - 3 rows per plot or up to plots of size 18m² individually)	Melle Belgium	yield/protein content/flower color/determinacy/disease tolerance
University of Maribor	Yes	500 plots with dimensions of 6,5 m length and 1,3 m width.	Maribor and Murska Sobota	Yield and other morpho-agronomic traits, leaf are index, intensity of chlorophyll formation.
NordGen	Maybe	Hard to answer at the moment.	Southern Sweden.	Morphological, phenological, yield
Agricultural University of Athens	Maybe	3	Athens	Morphological descriptors
University of Basilicata	Maybe	50, for more plots we have the capacity but we would need founding	South Italy	Morpho-physiological traits and yield traits
Rete Semi Rurali	Maybe	Depending on projects, funding etc. Accessions can be up to 50-100 per location.	Sicily, Tuscany	Morphologic and Agronomic traits, to be discussed

16 partners could carry out the field evaluation (in-kind), in likely more than 1300 plots.

4. LENTILS

Institution	Type of organization	Country	Contact person	Email address	Availability to provide material	Availability to carry out field evaluations
Semetica SRL	BC	Italy	Elisa Pinton	EPINTON.SEMETICA@GMAIL.COM	No	**Yes**
IPK	GB	Germany	Ulrike Lohwasser	lohwasse@ipk-gatersleben.de	**Yes**	No
AGRI OBTENTIONS	BC	France	AUZANNEAU JEROME	jerome.auzanneau@agri-obtentions.fr	**Yes**	Maybe
University of Birmingham	RI	Uk	Nigel Maxted	nigel.maxted@dial.pipex.com	No	No
Semences de Provence	BC	France	Clémence de Chabot	cdechabot@semencesdeprovence.com	No	**Yes**
LIDEA-Pro'Pulse	BC	France	JEANSON Patrice	patrice.jeanson@lidea-seeds.com	No	**Yes**
Ca' Colonna srl Soc. Agr.	BC	Italy	Edoardo Bagnara	edoardobagnara@cacolonna.it	No	**Yes**
Ankara University	RI	Turkey	Aziz KARAKAYA	karakaya@agri.ankara.edu.tr	**Yes**	**Yes**
Ankara University	RI	Turkey	Arzu ÇELİK OĞUZ	acelik@agri.ankara.edu.tr	**Yes**	**Yes**
UNIVPM	RI	Italy	Elena Bitocchi	e.bitocchi@univpm.it	**Yes**	No
Institute of Biosciences and BioResources	GB	Italy	Angela R. Piergiovanni	angelarosa.piergiovanni@ibbr.cnr.it	**Yes**	No
National Agriculture and Food Centre	RI	Slovakia	Erika Zetochová	erika.zetochova@nppc.sk	**Yes**	**Yes**
CNR-IBBR	GB	Italy	Wilma Sabetta	wilma.sabetta@ibbr.cnr.it	**Yes**	No
Republic of Turkey Ministry of Agriculture and Forestry Field Crops Central Research Institute	RI	Turkey	Selin Gunduz	selin.gunduz@tarimorman.gov.tr	**Yes**	**Yes**
Rete Semi Rurali	O	Italy	Matteo Petitti	matteo.petitti@semirurali.net	**Yes**	Maybe
CRF, INIA-CSIC	GB	Spain	Lucía De la Rosa	lucia.delarosa@inia.csic.es	**Yes**	No
Geves	RI	France	Charles-Henry Duval	charles-henry.duval@geves.fr	**Yes**	No
CSIC, Institute for Sustainable Agriculture	RI	Spain	Diego Rubiales	diego.rubiales@ias.csic.es	**Yes**	**Yes**
Terres Inovia	RI	France	Claire Barbet-Massin	c.bmassin@terresinovia.fr	No	No
University of Basilicata	RI	Italy	Tania Gioia	tania.gioia@unibas.it	**Yes**	Maybe
Faculty of agriculture and Life Sciences, University of Maribor	RI	Slovenia	Primož Titan	primoz.titan1@um.si	**Yes**	**Yes**
CREA	RI	Italy	Loredana Sigillo	loredana.sigillo@crea.gov.it	**Yes**	No
NordGen	GB	Sweden	Ulrika Carlson-Nilsson	ulrika.carlson@nordgen.org	**Yes**	Maybe

Type of organization is summarized as: RI - research institute, GB - genebank, BC - breeding company, O – other. ForEVA partner institutions are highlighted in green.

23 participants to the survey from 21 different institutions (9 countries, including 4 private companies), accounting for 43% of all the participant to the survey (n=54), are interested in participating to the lentils group.

Potential participants that can provide germplasm material of lentils			
Institute	**Material**	**Genotyping**	**Capacity for Regeneration.**
IPK	450 genebank acc.	no	**Yes**
AGRI OBTENTIONS	around 10 commercial varieties	no	**Yes**
Ankara University (A. Karakaya, A. Çelik)	N/A	N/A	No
UNIVPM	SSD from INCREASE project (developed by selfing cycles from mostly landraces, but also research materials, breeding lines and cultivars); T-CORE is about 430 genotypes, R-CORE is about 2500. We don't have high quantity of seeds, unless we use the seeds multiplied in open field trials thus considering a certain percentage of outcrossing. following the INCREASE rules any seed exchange must be done by using Easy-SMTA of FAO and becoming INCREASE stakeholder.	T-CORE lines are genotyped with method reported in Rossato et al. (2023; doi: 10.1101/gr.277628.122); low coverage genotyping is planned for the remaining R-CORE lines. As for the other species data can be available after the embargo period.	No;yes, with funds;
Institute of Biosciences and BioResources	Italian landraces	no	No
National Agriculture and Food Centre	5 slovak varieties	No	**Yes**
CNR-IBBR	some landraces	not all. Few accessions have been characterized by means of microsatellite markers	No
Republic of Turkey Ministry of Agriculture and Forestry Field Crops Central Research Institute	we have registered varieties	no	worker needs as i mentioned with chickpea too;
Rete Semi Rurali	Italian local varieties	N/A	**Yes**;Material is regenerated on-farm under supervision of Rete Semi Rurali. Compensation for farmers (usually €1000/year/farm) and RSR staff and travel are needed if no EU project already covers this kind of cost.;
CRF, INIA-CSIC	Mainly landraces, about 400 accessions	No	**Yes**
Geves	around 400 accessions including landraces, old varieties and other material	no	I have already planned to multiply some material in 2024;
CREA	1 landrace	no	maybe
CSIC	300 landraces	yes, GBS, not yet publicly available	**Yes**
NordGen	2 accessions (landraces), not SSD. Depending on interest these accessions can be available for the network, however today not enough seeds are available for all accessions for use in multilocation trials.	No, but will be genotyped/sequenced in a project performed by NordGen in 2024-2026.	**Yes**;Approximate cost per accession is 300 Euro.;
University of Basilicata	Landraces and SSD	yes, within INCREASE H2020 project	**Yes**;it depends on the number genotypes, reps, in control conditions or in field;
University of Maribor	We can provide five landrace populations from the former Yugoslavia territory.	No	**Yes**

More than 1100 accessions could be shared by 16 partner institutions for the evaluations. UNIPM, CNR-IBBR, CSIC and Univ. of Basilicata might have genotyping data already available.

Potential participants that can carry out field trials of lentils				
Institution	**Availability**	**Number of plots**	**Location of the plots**	**Traits to be evaluated**
Semetica SRL	Yes	10	CALDERARA DI RENO (BOLOGNA)	PRODUCTION
Faculty of agriculture and Life Sciences, University of Maribor	Yes	500 plots with dimensions of 6,5 m length and 1,3 m width.	Maribor and Murska Sobota	Yield and other morpho-agronomic traits, leaf are index, intensity of chlorophyll formation.
Semences de Provence	Yes	100-200 (if there are a limited number of seeds per plots: like 30 seeds per plots)	Castelnaudary en France	Crop circle, plant descriptions and disease descriptions
LIDEA-Pro'Pulse	Yes	50	South East of France	Yield, earliness, lodging, diseases.....
Ca' Colonna srl Soc. Agr.	Yes	4	emilia romagna, italy province of ravenna	vigoria, portamento, rese produttive
Ankara University (A. Karakaya, A. Çelik)	Yes	200	ANKARA-TURKEY	PLANT PATHOLOGY-AGRONOMIC EVALUATION
National Agriculture and Food Centre	Yes	5x3m	Research Institute of Plant Production Piešťany	10 traits according to the available descriptor
Republic of Turkey Ministry of Agriculture and Forestry Field Crops Central Research Institute	Yes	depends on the project we have adequate opportunities	Ankara, Turkey	morphological
Rete Semi Rurali	Maybe	up to 50-100 accessions	Tuscany	Morphologic and Agronomic traits, to be discussed.
CSIC, Institute for Sustainable Agriculture	Yes	300-400, with reps	Cordoba, Spain	Agronomic traits and detaily disease assessments
NordGen	Maybe	Hard to answer at the moment.	Southern Sweden.	Morphological and phenological traits, yield
University of Basilicata	Maybe	50, for more plots we have the capacity but we would need founding	South Italy	Morpho-physiological traits and yield traits
AGRI OBTENTIONS	Maybe	20 to 40 plots per year	Center and North of France	yield, (rust)

13 partners could carry out the field evaluation (in-kind), in likely more than 1400 plots.

5. PEAS

Institution	Type of organization	Country	Contact person	Email address	Availability to provide material	Availability to carry out field evaluations
Semetica SRL	BC	Italy	ELISA PINTON	EPINTON.SEMETICA@GMAIL.COM	No	Yes
IPK	GB	Germany	Ulrike Lohwasser	lohwasse@ipk-gatersleben.de	**Yes**	No
AGRI OBTENTIONS	BC	France	AUZANNEAU JEROME	jerome.auzanneau@agri-obtentions.fr	**Yes**	Maybe
University of Birmingham	RI	UK	Nigel Maxted	nigel.maxted@dial.pipex.com	No	No
Centre of Estonian Rural Research and Knowledge	RI	Estonia	Lea Narits	lea.narits@metk.agri.ee	**Yes**	**Yes**
HR SMOLICE (Smolice Plant Breeding Limited Liability Company)	BC	Poland	Barbara Gorynowicz	barbara.gorynowicz@hrsmolice.pl	No	**Yes**
Ankara University	RI	Turkey	Aziz KARAKAYA	karakaya@agri.ankara.edu.tr	**Yes**	**Yes**
Ankara University	RI	Turkey	Arzu ÇELİK OĞUZ	acelik@agri.ankara.edu.tr	**Yes**	**Yes**
CREA (Council for Agricultural Research and Economics)	RI	Italy	Paolo Annicchiarico	paolo.annicchiarico@crea.gov.it	**Yes**	No
National Agriculture and Food Centre	RI	Slovakia	Erika Zetochová	erika.zetochova@nppc.sk	No	No
Institute of Agricultural Resources and Economics in Latvia	RI	Latvia	Aina Kokare	aina.kokare@arei.lv	**Yes**	**Yes**
Protealis	BC	Belgium	Macarena Martin	macarena.martin@protealis.com	No	**Yes**
Regional Service for Agrofood Research and Development (SERIDA)	RI	Spain	Juan Jose Ferreira	jjferreira@serida.org	**Yes**	**Yes**
GZPK /ETHZ	RI	Switzerland	Sebastian Kussmann	s.kussmann@gzpk.ch	**Yes**	**Yes**
Institute of Field and Vegetable Crops	RI	Serbia	Ana Uhlarik	ana.uhlarik@nsseme.com	**Yes**	**Yes**
CSIC, Institute for Sustainable Agriculture	RI	Spain	Diego RUBIALES	diego.rubiales@ias.csic.es	**Yes**	**Yes**
Misión Biológica de Galicia (MBG), Spanish National Research Council (CSIC)	RI	Spain	Antonio M. De Ron	amderon@mbg.csic.es	**Yes**	No
GAUTIER SEMENCES	BC	France	DALMON Frédéric	frederic.dalmon@gautiersemences.com	No	**Yes**

GSN Semences	BC	France	Dubois Ophélie	ophelie.guilbert@gsn-semences.fr	No	**Yes**
NordGen	GB	Sweden	Ulrika Carlson-Nilsson	ulrika.carlson@nordgen.org	**Yes**	Maybe
Agroscope	RI	Switzerland	Beate Schierscher	beate.schierscher-viret@agroscope.admin.ch	**Yes**	No
ITQB NOVA	RI	Portugal	Maria Carlota Vaz Patto	cpatto@itqb.unl.pt	No	Maybe
CGN-WUR	GB	Netherlands	Wouter Groenink	wouter.groenink@wur.nl	**Yes**	No
Ca' Colonna srl Soc. Agr.	BC	Italy	Edoardo Bagnara	edoardobagnara@cacolonna.it	No	**Yes**
Rete Semi Rurali	O	Italy	Matteo Petitti	matteo.petitti@semirurali.net	No	Maybe
Aberystwyth University	RI	UK	Catherine Howarth	cnh@aber.ac.uk	No	Maybe
Earlham Institute	RI	UK	Jose De Vega	jose.de-vega@earlham.ac.uk	No	No
Deutsche Saatveredelung AG	BC	Germany	Dr. Jens Christian Vaupel	jens.vaupel@dsv-saaten.de	No	No

Type of organization is summarized as: RI - research institute, GB - genebank, BC - breeding company, O – other. ForEVA partner institutions are highlighted in green.

28 participants to the survey from 26 different institutions (16 countries, including 7 private companies), accounting for 52% of all the participant to the survey (n=54), are interested in participating to the lentils group.

Potential participants that can provide germplasm material of peas			
Institute	**Material**	**Genotyping**	**Capacity for Regeneration.**
IPK	5300 genebank acc.	no	Yes;
CGN-WUR	1000 accessions are available, of which 350 landraces (250 from Asia and Africa)	No	No;
AGRI OBTENTIONS	around 15 commercial varieties in total (winter and srping peas)	no	Yes;
Centre of Estonian Rural Research and Knowledge	30+. Landraces and varieties	No	Yes;
Ankara University (A. Karakaya, A. Çelik)	N/A	N/A	No;
CREA	A world collection of 210 landraces + 30 international cultivars + about 500 own SSD-derived lines	Yes, all of it, by genotyping-by-sequencing. Data available at https://www.ncbi.nlm.nih.gov/bioproject/719084 (project ID PRJNA719084) for landraces, and in various public repositories for different sets of inbred lines	Landrace collection: 38,000 euro ;
Institute of Agricultural Resources and Economics in Latvia	32 accession of landraces and old varieties and some breeding lines of Pisum sativum ssp. arvense, and 27 old varieties and some breeding lines of Pisum sativum	no	Yes;
SERIDA	20 landraces	No	Yes;
GZPK/ETHZ	breeding lines, 10-20 lines	no	Yes;
Institute of Field and Vegetable Crops	several breeding lines and five varieties	no	Yes;
CSIC, Institute for Sustainable Agriculture	SSD, 340 accessions	yes, DArt-Seq, available	Yes;
Misión Biológica de Galicia (MBG), Spanish National Research Council (CSIC)	The collection includes 185 landraces (153 duplicated at the CRF) and few breeding lines.	NO	Yes;We use to regenerate 50 accessions/year, the cost per accession is 40 €;
NordGen	In total approx. 2400 accessions are available at NordGen (including Pisum fulvum (4 acc.), P. abyssinicum (16 acc.)). Of the 2400 acc., 30 are wild material, 490 are landraces, 1370 are breeding/research lines, 470 are cultivars and 40 of unknown type. No SSD lines available. Out of these we would like around 200 acc. to be included in multisite trials. However, depending on interest, all accessions can be available for the network, however today not enough seeds are available for all accessions for use in multilocation trials.	No, but will be genotyped/sequenced in a project performed by NordGen in 2024-2026.	Yes;Approximate cost per accession is 300 Euro.;
Agroscope	land races and old varieties	No	Yes;Difficult culture for regeneration;

More than 10000 accessions could be shared by 14 partner institutions for the evaluations. CREA and CSIC might have genotyping data already available.

Potential participants that can carry out field trials of peas				
Institution	**Availability**	**Number of plots**	**Location of the plots**	**Traits to be evaluated**
SEMETICA SRL	Yes	20	Calderara di Reno, Italy	PRODUCTION
Centre of Estonian Rural Research and Knowledge	Yes	Max 50	Estonia, Jõgeva	Flowering, height, maturity, diseases. After harvesting number of pods, etc.
Ca' Colonna srl Soc. Agr.	Yes	4	italy emilia romagna province of ravenna	vigor, bearing, production yields
HR SMOLICE	Yes	60	Przebedowo, Wielkopolska Region of Poland	description of plant characteristic (phenotyping), seed yield, thousand seed weight etc.
Ankara University (A. Karakaya, A. Çelik)	Yes	150	ANKARA-TURKEY	PLANT PATHOLOGY
Institute of Agricultural Resources and Economics in Latvia	Yes	1m2 and 5m2 plots, the number of the replicates depends on seed amounts available	in trial field under conventional conditions.	Phenological: the beginning of flowering and length of growing period. Morphological: plant height, yield components, grain quality parameters such as TGW, and protein content. Can assess the infection lever with diseases in the field if they occur
Protealis	Yes	50	Belgium	Height, maturity, lodging, protein content, yield, diseases tolerance
SERIDA	Yes	400 with 3 m2	Villaviciosa, Asturias, Spain	Morphology and agronomy
GZPK/ETHZ	Yes	20-100	Switzerland/Germany	All parameters that can be measured visually in the field at one location Chlorophyll fluorescence, stomatal conductance
Institute of Field and Vegetable Crops,	Yes	40	Rimski šančevi, Republic of Serbia, trial field of the Institute of Field and Vegetable Crops 45°20'N, 19°51'E	Phenotypic evaluation, disease, frost tolerance
CSIC, Institute for Sustainable Agriculture	Yes	400 accessions, with reps	Cordoba, Spain	Agronomic traits and pest and disease responses
GAUTIER SEMENCES	Yes	25 plots	France 13630 Eyragues	plants traits , pod quality traits, earlyness of flowering
GSN Semences	Yes	For seed multiplication, we can multiply 32 numbers. For trial, we can evaluate 10 plots (5 numbers for 2 repetitions or 10 numbers)	North of France (Coutiches department 59)	Flowering, plant height, behavior for diseases, number of pods, type of pod, yield, pea size, color, alcohol-insoluble solids (AIS)
ITQB NOVA	Maybe	200	Oeiras, Portugal	drought tolerance
AGRI OBTENTIONS	Maybe	20 to 30 plots per year for spring peas and 20 to 30 plots per year for winter peas	Center and North of France	yield, ascochytose, frost in natural conditions
Rete Semi Rurali	Maybe	20	Lombardy region	Morphologic and agronomic traits, to be discussed
Aberystwyth University	Maybe	120	Wales	yield etc.
NordGen	Maybe	Hard to say at the moment. Normally we perform pea cultivation in raised pots with individual drip irrigation either in a greenhouse or outdoors because of problems with different diseases. This system works well but of course is quite labor extensive when it comes to large trials. We also use permanent constructions to support climbing types. If needed, we can of course consider more traditional ways of cultivation.	Southern Sweden.	Morphological and phenological traits, yield.

18 partners could carry out the field evaluation (in-kind), in likely more than 1600 plots.

6. LUPINES

Institution	Type of organization	Country	Contact person	Email address	Availability to provide material	Availability to carry out field evaluations
IPK	GB	Germany	Ulrike Lohwasser	lohwasse@ipk-gatersleben.de	**Yes**	No
Agroscope	RI	Switzerland	Beate Schierscher	beate.schierscher-viret@agroscope.admin.ch	**Yes**	No
University of Birmingham	RI	UK	Nigel Maxted	nigel.maxted@dial.pipex.com	No	No
HR SMOLICE	BC	Poland	Barbara Gorynowicz	barbara.gorynowicz@hrsmolice.pl	No	**Yes**
Ankara University	RI	Turkey	Aziz KARAKAYA	karakaya@agri.ankara.edu.tr	**Yes**	**Yes**
Ankara University	RI	Turkey	Arzu ÇELİK OĞUZ	acelik@agri.ankara.edu.tr	**Yes**	**Yes**
UNIVPM	RI	Italy	Elena Bitocchi	e.bitocchi@univpm.it	**Yes**	No
CREA (Council for Agricultural Research and Economics)	RI	Italy	Paolo Annicchiarico	paolo.annicchiarico@crea.gov.it	**Yes**	No
Institute of Biosciences and BioResources	GB	Italy	Angela R. Piergiovanni	angelarosa.piergiovanni@ibbr.cnr.it	**Yes**	No
Agricultural Institute of Slovenia	RI	Slovenia	Barbara Pipan	barbara.pipan@kis.si	No	**Yes**
CNR-IBBR	GB	Italy	Wilma Sabetta	wilma.sabetta@ibbr.cnr.it	**Yes**	No
GZPK/ETHZ	RI	Switzerland	Sebastian Kussmann	s.kussmann@gzpk.ch	**Yes**	**Yes**
Rete Semi Rurali	0	Italy	Matteo Petitti	matteo.petitti@semirurali.net	No	**Yes**
Institute of genetic resources, University of Banja Luka	RI	Bosnia & Herzegovina	Marina Antic	marina.antic@igr.unibl.org	**Yes**	No
Deutsche Saatveredelung AG	BC	Germany	Dr. Jens Christian Vaupel	jens.vaupel@dsv-saaten.de	No	**Yes**
ILVO	RI	Belgium	hilde muylle	hilde.muylle@ilvo.vlaanderen.be	No	**Yes**
NordGen	GB	Sweden	Ulrika Carlson-Nilsson	ulrika.carlson@nordgen.org	**Yes**	Maybe
Van Dinter Semo	BC	Netherlands	Kees Betema	bentema@vandintersemo.nl	No	Maybe
SERIDA	RI	Spain	Juan Jose Ferreira	jjferreira@serida.org	No	**Yes**
CGN-WUR	GB	Netherlands	Wouter Groenink	wouter.groenink@wur.nl	**Yes**	No
Vegetable Research and	RI	Romania	Creola Brezeanu	creola.brezeanu@yahoo.com	No	**Yes**

Development Station Bacau						
Aberystwyth University	RI	UK	Catherine Howarth	cnh@aber.ac.uk	No	No

Type of organization is summarized as: RI - research institute, GB - genebank, BC - breeding company, O – other. ForEVA partner institutions are highlighted in green.

22 participants to the survey from 20 different institutions (13 countries, including 3 private companies), accounting for 41% of all the participant to the survey (n=54), are interested in participating to the lentils group.

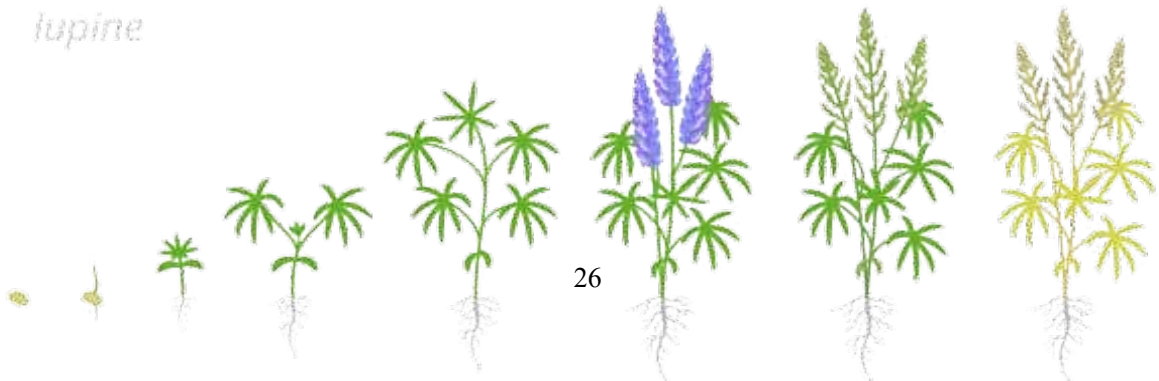
Potential participants that can provide germplasm material of lupines			
Institute	**Material**	**Genotyping**	**Capacity for Regeneration.**
IPK	2400 genebank acc.	no	**Yes**
CGN-WUR	68 accessions, and only 2 landraces and 19 cultivars	No	No
Ankara University (A. Karakaya, A. Çelik)	N/A	N/A	No
UNIVPM	SSD from INCREASE project of 2 species Lupinus albus and Lupinus mutabilis. About 300 T-CORE of albus and 250 of mutabilis. Quantity of seeds is low. Following the INCREASE rules any seed exchange must be done by using Easy-SMTA of FAO and becoming INCREASE stakeholder. Higher quantity of seeds could be available but multiplied in open fields so there will be a certain percentage of ourcrossing.	yes, for T-CORE genotypes of albus; R-CORE of albus and T- & R-CORE of mutabilis is planned. As for the other species of INCREASE the availbility is dependant on publication of results.	No;Maybe some partners of INCREASE but with funds;
CREA	All is Lupinus albus. A world collection of about 240 landrace genotypes + 30 international cultivars + 400 SSD-derived inbred lines	Yes, all of it, by genotyping-by-sequencing. Data publicly available for large subsets of entries as Supplementary	World collection of landrace

		material in various published articles (e.g. https://doi.org/10.5281/zenodo.5142130)	genotypes: 43,200 euro ;
Institute of Biosciences and BioResources	some italian populations	no	No
CNR-IBBR	Italian populations	no	No
GZPK/ETHZ	Breeding lines of white lupine, 5-10	partly, data not public	**Yes**
Institute of genetic resources, University of Banja Luka	Lupinus albus	no	**Yes**
NordGen	5 accessions (1 cultivar and 4 breeding/research lines) of Lupinus angustifolius, no SSD. Depending on interest all accessions can be available for the network, however today not enough seeds are available for all accessions for use in multilocation trials.	No	**Yes;**Approximate cost per accession is 300 Euro.
Agroscope	landraces	no	**Yes**, but still in regeneration

More than 3000 accessions could be shared by 11 partner institutions for the evaluations. CREA and UNIVPM might have genotyping data already available.

Potential participants that can carry out field trials of lupines				
Institution	**Availability**	**Number of plots**	**Location of the plots**	**Traits to be evaluated**
HR SMOLICE	Yes	60	Przebedowo, Wielkopolska Region of Poland	description of plant characteristic (phenotyping), seed yield, thousand seed weight etc.
Ankara University (A. Karakaya, A. Çelik)	Yes	150	ANKARA-TURKEY	PLANT PATHOLOGY
Agricultural Institute of Slovenia	Yes	180	central Slovenia; central Europe	Following Kroc et al. 2021 descrptors published in Current protocols journal
SERIDA	Yes	100 with 3 m2	Villaviciosa, Asturias, Spain	Morphological and agronomic, mainly
GZPK/ETHZ	Yes	10-50	Germany, Switzerland	All parameters that can be measured visually in the field at one location Chlorophyll fluorescence, stomatal conductance
Rete Semi Rurali	Yes	20	Sardinia region	Morphologic and agronomic traits, to be discussed
Vegetable Research and Development Station Bacau	Yes	10 plots	Bacau, Romania	related flowering, yield components...
Deutsche Saatveredelung AG	Yes	100	01665 Käbschütztal OT Leutewitz, additional locations Germany and Nederlands possible!	flowering date, plant heigth, yield, protein content
ILVO	Yes	tbd (we have facilities for small scale evaluation - 3 rows per plot or up to plots of size 18m² individually)	Melle Belgium	yield/protein/disease
NordGen	Maybe	Hard to estimate at the moment.	Southern Sweden.	Morphological, phenological, yield.
Van Dinter Semo	Maybe	21	Scheemda	nematode resistance (see fava bean)

11 partners could carry out the field evaluation (in-kind), in likely more than 600 plots.



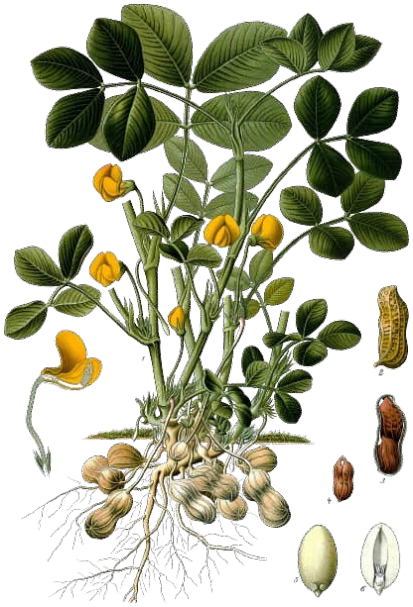
7. ORPHAN LEGUMES

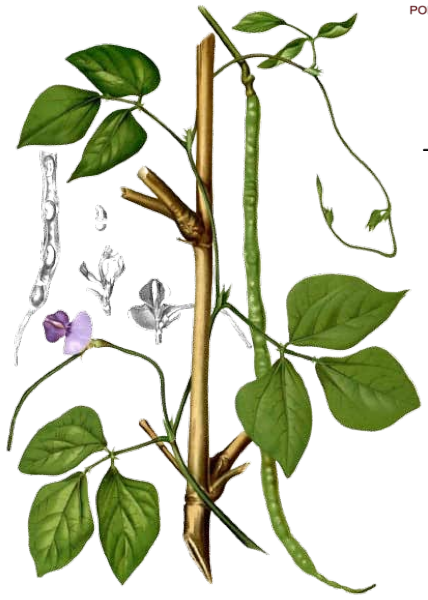
Institution	Type of organization	Country	Contact person	Email address	Availability to provide material	Availability to carry out field evaluations
IPK	GB	Germany	Ulrike Lohwasser	lohwasse@ipk-gatersleben.de	**Yes**	No
ITQB NOVA	RI	Portugal	Maria Carlota Vaz Patto	cpatto@itqb.unl.pt	No	Maybe
University of Birmingham	RI	UK	Nigel Maxted	nigel.maxted@dial.pipex.com	No	No
Ankara University	RI	Turkey	Aziz KARAKAYA	karakaya@agri.ankara.edu.tr	**Yes**	**Yes**
Ankara University	RI	Turkey	Arzu ÇELİK OĞUZ	acelik@agri.ankara.edu.tr	**Yes**	**Yes**
Agricultural Institute of Slovenia	RI	Slovenia	Barbara Pipan	barbara.pipan@kis.si	**Yes**	No
SERIDA	RI	Spain	Juan Jose Ferreira	jjferreira@serida.org	No	**Yes**
GZPK / ETHZ	RI	Switzerland	Sebastian Kussmann	s.kussmann@gzpk.ch	**Yes**	**Yes**
Institute of Field and Vegetable Crops, Novi Sad, Serbia	RI	Serbia	Aleksandra Ilic	aleksandra.savic84@yahoo.com	**Yes**	**Yes**
Rete Semi Rurali	O	Italy	Matteo Petitti	matteo.petitti@semirurali.net	**Yes**	Maybe
Institute of genetic resources, University of Banja Luka	RI	Bosnia & Herzegovina	Marina Antic	marina.antic@igr.unibl.org	**Yes**	No
CRF, INIA-CSIC	GB	Spain	Lucía De la Rosa	lucia.delarosa@inia.csic.es	**Yes**	**Yes**
CREA Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria	RI	Italy	Loredana Sigillo	loredana.sigillo@crea.gov.it	**Yes**	No
CSIC, Institute for Sustainable Agriculture	RI	Spain	Diego RUBIALES	diego.rubiales@ias.csic.es	**Yes**	**Yes**
Earlham Institute	RI	UK	Jose De Vega	jose.de-vega@earlham.ac.uk	No	No
Misión Biológica de Galicia (MBG), Spanish National Research Council (CSIC)	RI	Spain	Antonio M. De Ron	amderon@mbg.csic.es	**Yes**	No
ILVO	RI	Belgium	hilde muylle	hilde.muylle@ilvo.vlaanderen.be	No	**Yes**
NordGen	GB	Sweden	Ulrika Carlson-Nilsson	ulrika.carlson@nordgen.org	**Yes**	**Yes**
Agricultural University of Athens, Institute of Plant Genetic Resources	RI	Greece	Penelope Bebeli	bebeli@aua.gr	**Yes**	No
Institute for forage crops Kruševac	RI	Serbia	Mirjana Petrović	mirjana.petrovic@ikbks.com	**Yes**	**Yes**
AGRI OBTENTIONS	BC	France	AUZANNEAU JEROME	jerome.auzanneau@agri-obtentions.fr	No	Maybe
CREA (Council for Agricultural Research and Economics)	RI	Italy	Paolo Annicchiarico	paolo.annicchiarico@crea.gov.it	**Yes**	No

Institute of Biosciences and BioResources	GB	Italy	Angela R. Piergiovanni	angelarosa.piergiovanni@ibbr.cnr.it	**Yes**	No
Geves	RI	France	charles-henry duval	charles-henry.duval@geves.fr	**Yes**	No
Norwegian University of Life Sciences	RI	Norway	Åshild Ergon	ashild.ergon@nmbu.no	No	No
Van Dinter Semo	BC	Netherlands	Kees Betema	bentema@vandintersemo.nl	No	No

Type of organization is summarized as: RI - research institute, GB - genebank, BC - breeding company, O – other.

26 participants to the survey from 23 different institutions (15 countries, including 2 private companies), accounting for 48% of all the participant to the survey (n=54), are interested in participating to the lentils group.





Potential participants that can provide germplasm material of orphan legumes			
Institute	**Material**	**Genotyping**	**Capacity for Regeneration.**
IPK	500 Lathyrus genebank acc., 500 Vigna acc., 1400 Vicia acc.	no	**Yes**
ITQB NOVA	Landraces and SSD	partially genotyped by SNPs, partially publicly available	depends on the number of accessions to regenerate;
Ankara University (A. Karakaya, A. Çelik)	N/A	N/A	No
CREA	World mini-core collection of cowpea including about 150 accessions (generated by the University of California, Riverside)	Cowpea iSelect Consortium Array. Data made publicly available by the University of California	For about 100 accessions that were able to produced substantial seed in Southern Europe; 20,000 euro;
Institute of Biosciences and BioResources	some italian populations	no	No
Agricultural Institute of Slovenia	landraces, 11	some it is	**Yes**
GZPK/ ETHZ	landraces of grass pea	no	**Yes**
Institute of Field and Vegetable Crops	landraces, 30 accessions	no	**Yes**
Rete Semi Rurali	local varieties of grass pea and cow pea	N/A	**Yes;**Regeneration is carried out on-farm under the supervision of Rete Semi Rurali. Compensation for farmers (usually €1000/year/farm) and RSR staff time and travel;
Institute of genetic resources, University of Banja Luka	Lathirus sativus, landraces, 10 accessions	no	**Yes**
CRF, INIA-CSIC	Landraces and wild populations of genus Vicia and Lathyrus	No	**Yes**
Geves	Lathyrus : around 3400 accessions of L. sativus, L. sylvestris, L. latifolius, L. tuberosus, L. cicera and L. heterophyllus ; maily landraces BUT the availability is to be discussed and the material is old. 17 accessions of Vigna sp.	no	No
CREA	9 landraces	no	maybe
CSIC, Institute for Sustainable Agriculture	Lathyrus cicera, L. sativus, L. ochrus, Vicia sativa, Vicia narbonensis	Vicia sativa collection is genotyped by GWAS, data not yet publicly available	**Yes**
MBG-CSIC	We have 109 cowpea landraces, availability depends on the seed stock	NO	**Yes;**We car regenerate 50 accessions/year, the cost is 35 €/accession;
NordGen	No accessions of Lathyrus sativus but around 25 acc. of L. pratensis, L. latifolius and some minor other species (wild or semi-natural), 1 acc. of Vigna unguiculata (wild), 10 accessions of vetches (Vicia sativa) (7 old cultivars, 2 landraces and 1 breeding line) plus a minor number of other Vicia species. No SSD. Depending on interest all accessions can be available for the network, however today not enough	No	**Yes;**Approximate cost per accession is 300 Euro.

	seeds are available for all accessions for use in multilocation trials.		
Agricultural University of Athens,	Vigna unguiculata 50 landraces and Lathyrus spp 35 landraces	Some yes, morphological traits, yes published	10000 Euros for Vigna;
Institute for forage crops Kruševac	I can provide material collected from the nature: Lathyrus species (pratensis - 9 genotypes; niger - 1 genotype; silvestris - 3 genotypes; latifolius - 1 genotype. Samples are small and material could be evaluated as a single plant trail in the field or pots. il	No	**Yes**

More than 6000 accessions could be shared by 18 partner institutions for the evaluations. ITQB Nova, CREA, Agricultura Institute of Slovenia, CREA, CSIS, Agriculture University of Athens might have genotyping data already available.

Potential participants that can carry out field trials of orphan legumes				
Institution	**Availability**	**Number of plots**	**Location of the plots**	**Traits to be evaluated**
Ankara University (A. Karakaya, A. Çelik)	Yes	150	ANKARA-TURKEY	PLANT PATHOLOGY
SERIDA	Yes	100 with 3 m2	Villaviciosa, Asturias, Spain	Morphological and agronomic, mainly
GZPK/ETHZ	Yes	10-50	Switzerland, Germany	All parameters that can be measured visually in the field at one location Chlorophyll fluorescence, stomatal conductance
Institute of Field and Vegetable Crops	Yes	20	Serbia	according to international descriptor lists
CRF, INIA-CSIC	Yes	100	Alcalá de Henares, Madrid, Spain	Agro/morphological traits
CSIC, Institute for Sustainable Agriculture	Yes	300	Cordoba, Spain	Agronomic traits, detaily disease responses
ILVO	Yes	tbd (we have facilities for small scale evaluation - 3 rows per plot or up to plots of size 18m² individually)	Melle Belgium	yield/protein
NordGen	Yes	Hard to say at the moment.	Southern Sweden	Morphological and phenological traits, yield
Institute for forage crops Kruševac	Yes	It could be only single plant trail, the number of plants depends of starting germination ability.	In village Globoder near Kruševac, Serbia	Mention before
ITQB NOVA	Maybe	200	Oeiras, Portugal	drought and disease resistance
AGRI OBTENTIONS	Maybe	20 to 40 plots per year	France	yield
Rete Semi Rurali	Maybe	10-20	Tuscany, Lombardy, Sicily	Morphologic and agronomic traits, to be discussed

12 partners could carry out the field evaluation (in-kind), in likely more than 900 plots.