

**ECPGR Activity Grant Scheme  
Proposal Form**

**Sixth Call**

**Activity Proposal**

Activity	
Full title	<b>Lathyrus diversity:</b> available resources with relevance to crop improvement – progress reviews and relationship with AEGIS
Acronym (or short title)	EUGrainLeg
Duration of Activity (in months)	17
Start date – End date <i>Please indicate start date not earlier than 3 months after deadline of call</i>	1 <sup>st</sup> of August 2018

**Applying Working Group(s)**

	Working Group	Indicate name and surname of Working Group Chair
1.	Grain Legume	Creola BREZEANU

**Activity Coordinator**

Activity Coordinator	
Name and Surname	Creola BREZEANU
Nationality	Romanian
Current position	Senior researcher
Institute	Vegetable Research and Development Station, Bacau
Country	Romania
Telephone	+40744642567
Email	<a href="mailto:creola.brezeanu@yahoo.com">creola.brezeanu@yahoo.com</a>

**Activity Partners**

*Please note that each partner needs to be a member of a Working Group's Pool of Experts to be eligible.*

*A maximum of 12 funded partners can be listed. For self-funded partners please use the separate box below.*

Partner ID No.	Name and Surname	Institute	Country
1	Creola Brezeanu	Vegetable Research and Development Station, Bacau	Romania
2	Sofia Petrova	Institute of Plant Genetic Resources "K.Malkov"	Bulgaria
3	Vladimir Meglič	Kmetijski inštitut Slovenije	Slovenia
4	Marina Antić	Genetic Resources Institute University of Banjaluka Univerzitetski grad	Bosnia and Herzegovina
5	Penelope Bebeli	Agricultural University of Athens	Greece

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6	Miguel Angelo A. Pinheiro de Carvalho	Banco de Germoplasma ISOPlexis Universidade de Madeira Campus da Penteadá Portugal	Portugal
7	Mirjana Vasić	Institute of Field and Vegetable Crops	Serbia
	<b>Invited</b>		
8	Nigel Maxted	School of Biosciences University of Birmingham Edgbaston - acts as invited partner and he could contribute effectively on the <i>in situ</i> side of activities	UK

**Self-funded partners**

Partner No. Name and Surname	Institute	Country
1. Aleksandra Savić	Institute of Field and Vegetable Crops	Serbia
2. Silvia Strajeru	Romanian Gene Bank	Romania
3. Burlyaeva Marina*-	The N.I.Vavilov All Russian Institute of Plant Genetic Resources,	Russia
4. All WG members (1/country) will be provided a possibility to attend in the work shop via video contact, if this can be arranged		All GL country members

\*- brings in this consortium a significant *Lathytus* GR. Another strong point can be represented by exchange of knowledge related to PGR management of evaluation, characterization and conservation

**Description of Activity (suggested max. 1000 words)**

*Please address the following aspects:*

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

The Working Group covers a range of species from (*Arachis*, *Cicer*, *Glycine max*, *Lens*, *Lupinus*, *Lathyrus*, *Phaseolus*, *Pisum*, *Vicia faba* and *Vigna*), which have enormous benefits for environment (significant N source), food security (high protein content) and as breeding material but despite its huge potential, a lots of species are not well represented in European collection, and not enough exploited for different purposes. As starting point in this Activity members will use previous results/experiences from SMARTLEG project, (the project was focused on *Phaseouls* species – *Ph. vulgaris* and *Ph. coccineus*, where a significant number of accessions was assessed: phenologically, morphologically and molecularly – with the final purpose to be recommended/flagged for AEGIS. According to EURISCO and AEGIS data, there is still need for focus on Grain Legumes species due to the low number of accessions for some species (*Lathyrus*) and not well systematized data. The current Activity will act in two directions: (1) AEGIS progress and improved data on European Grain Legumes PGR (2) Improvement of group strategy work – in view of subgroup establishment based on species interest, in order to facilitate experience and knowledge exchange.

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

The task of establishing the European Grain Legume Collection needs updates and improvements, taking in account the large number of species managed inside the group. GL WG would like to continue SMARTLEG project achievements, working towards this goal and to provide high quality data

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on GL PGR. The members of GL WG needs a frame for interaction, in order to ensure the exchange of knowledge and biological material with the aim of speed up the process of recommendation of GL GR as AEGIS accessions. In many cases, members highlighted the existence of significant diversity of *Lathyrus* sp. PGR, but in same time there are difficulties/ gaps in order to identify accessions as AEGIS accessions, recording to registered data.

**–Rationale for the choice of partners:** Explain why the selected partners are the most suitable to carry out the proposed Activity and briefly describe their respective roles in the Activity.

The members and the topic of activity were decided based on survey, before submission.

The steps of decision, involved:

(step 1) Survey in GL WG in order to detect member’s interest on different species, activities and aviability to act as members or coordinators of team’s project. Each member mentioned the most important species for each country.

(step 2) Search of Grain Legumes collection in EURISCO and AEGIS (in order to identify the species that need improvement of accessions number and data)

In this manner (following step 1, and 2) *Lathyrus* species was prioritized.

(step 3) Cooperation with ECPGR Secretariat in order to check member’s eligibility.

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

The proposed activity will include:

(A) Inventory and collecting of PG material - study focused on improvement of each country *Lathyrus* collection.

(B) Workshop with the aim to analyze the national collection of *Lathyrus*, establishment of a *Lathyrus* panel, exchange material and knowledge.

(C) Investigations towards the establishment of a high quality *Lathyrus* according to the principles of AEGIS.

(D) The results will be documented and future activities planned, according to the group interact strategy.

Improvement of WG strategy work is imperatively needed – in view the meeting/ workshop with a large participation is recommended, in order to facilitate experience and knowledge exchange. There are envisaged some other invited speakers to the meeting.

One important purpose of the meeting is to ensure the frame and to stimulate subgroups establishment based on species interest and synergic activities.

Activity	Month (duration) of the project																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Month																
	aug	sept	oct	nov	dec	jan	febr	mar	apr	may	jun	jul	aug	sept	oct	nov	dec
*Inventory and collecting of PG material																	
*,**Workshop																	
Preparatory phase																	
Exchange																	

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of materials																	
<i>Lathyrus</i> panel																	
*** Establishment of <i>Lathyrus</i> - specific descriptors																	
<b>*Investigations</b>																	
Evaluation and characterization																	
Entering C&E data of <i>Lathyrus</i> accessions into EURISCO (Activity 2.2.1)																	
Evaluation of selection of AEGIS candidates (Activity 1.2.1)																	
Strategy to increase the AEGIS candidates (Activity 1.2.1)																	
<b>*Results documentation</b>																	
<b>*Improved strategy to interact in WG</b>																	

\*- funded members 1-7 and self funded 1-4 as they are listed at pg 2 **Activity Partners**

\*\*-funded member 8 – invited to the workshop

\*\*\* -Taking in consideration our set of traits, the diversity of material and sites where material will be evaluated we estimate the possibility to estimate possible additional traits related to pest and pathogen tolerance, drought tolerance and protein content.

**–Description of genetic material:** If your Activity is focusing on genetic material, please describe in detail, as far as possible, who is providing this genetic material, its status and the number of accessions under investigation (for example: *This Activity aims at molecularly analyse/safety-*

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*duplicate/evaluate/collect XY accessions (listed) of “Genus species”, provided by genebank Z/ farmers in country W /to be collected in country P..., etc.).*

**Our main purpose is to investigate a large variability to accomplish results able to be exploited in different direction as follows: feed, food, organic cultivation, use as green fertilizer. The importance of GL\_WG proposal is highlighted by the current global interest to find solutions in terms of providing enough vegetal protein resources and clean environment for the world population.**

This activity aims to collect and investigate accessions of *Lathyrus sp.*

The activity will focus on collection of new material which was signaled to be present in different countries **and also on existing collection**. The existing collection will be the starting point in our inventory and it won't be neglected in our evaluation and characterization. The aim of new collection activity is to include in evaluation and characterization, material neglected till now.

Each member will collect and propose for *Lathyrus* panel a number of accessions.

In some countries *Lathyrus sp* is low represented, in other, a large number of *Lathyrus sp.* is available.

A *Lathyrus* core collection of Activity it will be established, according to each partner interest, based on each partner proposal, and will envisage the inclusion of a large number of species of *Lathyrus*.

Our project collection will include firstly, the species already present in all country collection: *Lathyrus sativus* and additionally at least three to five other species. The core collection it will be evaluated in different sites upon a common set of traits.

Members will exchange material to be investigated in different environmental condition.

All members will accomplish characterization and evaluation on proposed material.

A minimum number of 15 to 20 accessions will be characterized and evaluated by each partner.

After establishment of core collection, a **common set of traits for characterization and evaluation** it will be decided at consortium level. We will investigate:

2 categories of traits:

➤ **priority1 (mandatory for all partners)**

- phenological traits (days to beginning of flowering, days to flowering, days to maximum flowering, days to the end of flowering, days to harvest, days to maturity)
- growth habit and architectural traits: plant height, height to first pod
- symptoms of pest and diseases
- pod traits: shape, size
- seed traits colour, shape, coat surface,
- seed productivity (number of branches, number of pods per plant, number of seeds per pod, number of seeds per plant, weight of seed per plant, mass per 100 seeds)
- protein content in seeds it will be decided on which accessions it will be accomplished.

➤ **priority 2 (optional)** leaf shape, brilliance of seed, seed shape and size

➤ Moreover, each of partner can consider also to characterize a **subset of other traits** according individual interest.

Entering C&E data of *Lathyrus* accessions into EURISCO.

Proposed accessions for AEGIS.

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

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impact will be obtained.

The project will assist in meeting mainly ECPGR Objectives 1 and 2. Proposed tasks as described in Gantt Chart will ensure:

- Collection, well characterization and introduction of *Lathyrus* accessions in the European collections.
- Phenotypic data will result in improved quality and increased quantity of data and will be made available after the project via EURISCO database.
- *Lathyrus* AEGIS accessions.
- Visibility and accessibility of PGR material for potential users.
- Scientific publications
- Report
- Strategy/ Action plan in order to improve the synergies in GL WG.

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

- **H2020** (accepted for funds, beginning current May) - “**Breeding for Resilient, Efficient and Sustainable Organic Vegetable production (BRESOV)**”. The overall aim of the project is to improve the competitiveness in an organic production system. This will be achieved through capturing the unadapted genetic diversity; quantifying the new breeding resource using new genetic marker panels, and applying these tools during marker-assisted-selection (MAS). (Creola Brezeanu from the Grain Legumes WG) – the participation in that project is at institutional level but links with ECPGR projects (ex. SMARTLEG and EUGrainLeg) can be listed.
- Preparatory action on GR and Focus Group on GR (EIP-AGRI) in accordance to **Romanian Sectorial Program** Regeneration, reproduction and characterization of vegetable species with unique character - The project accomplishes the creation of a national collection of PGR with unique biological material originating from Romania, from species with special importance in agriculture, especially leguminous and keeping under safety conditions. Synergic activities of the project with previous developed ECPGR project, and current submission:
  - protection of multiplication and regeneration protocols;
  - establishment and improvement of characterization descriptors;
  - regeneration, multiplication and characterization of biological material in accordance with internationally agreed methodologies;
  - conservation of the material resulting from the multiplication or regeneration process;
  - highlighting those genotypes that have proven to be adaptive and resistant to environmental conditions and the action of different pathogens, and promotion of their use in specific breeding or farm conservation programmes.

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**Expected products and related ECPGR Objectives**

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

	Expected products/results	Corresponding ECPGR outcome, output, activity
<b>1</b>	Increasing the number of AEGIS <i>Lathyrus sp.</i> accessions	Outcome 1, output 1.2., act.1.2.1.
<b>2</b>	Morphological and agronomical data on selected set of European <i>Lathyrus spp.</i> accessions	Outcome 1, output 1.5., act.1.5.3.
<b>3</b>	Increasing quality and quantity of data in EURISCO	Outcome 1, output 1.2., activity 1.2.1.
<b>4</b>	Strengthened collaboration between ECPGR members/ institutes	Outcome 2, output 2.1., activity 2.1.2.
<b>5</b>	Acquired information will be useful for end users (e.g. breeders)	Outcome 1, output 1.2., act.1.2.1. Outcome 1, output 1.5.; act. 1.5.3. Outcome 2, output 2.1.; act. 2.1.2 Outcome 5, output 5.4., act. 5.4.1

**Workplan for the proposed period of the Activity**

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

	Type of Action <i>(indicate if "meeting" or "other action")</i>
<b>1</b> <i>"other action"</i>	<b>PRE WORKSHOP ACTIVITIES</b> – survey and inventory Inventory and collecting of PG material
<b>2</b> <i>"meeting"</i>	<b>WORKSHOP</b> , with the aim to: 2.1 Present the progress of national collection of GL PGR 2.2 Identification of strategy in order to increase the number of GL accessions in EC; identification/ proposal of legume-specific descriptors in EURISCO, in view to facilitate the AEGIS process 2.3 Knowledge and materials exchange 2.4 <i>Lathyrus</i> panel development for investigation
<b>3</b> <i>"other action"</i>	<b>POST WORKSHOP ACTIVITIES - Investigations</b> 3.1 Evaluation and characterization of <i>Lathyrus</i> 3.2 Entering C&E data of <i>Lathyrus</i> accessions into EURISCO 3.3 Evaluation of selection of AEGIS candidates 3.4 Results documentation 3.5 Improved strategy to interact in WG

**Additional remarks**

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

Remarks:

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The importance of pulses is found both on the agenda of governments that work to find solutions in terms of providing enough and healthy food for the world population and on the agenda of researchers from various fields (conservation, breeding, food, nutrition, pharmacy, agriculture, and environment).

Improvement of WG strategy work is imperatively needed – in view of subgroups establishment based on species interest, in order to facilitate experience and knowledge exchange. As well the fifth meeting of the ECPGR Grain Legumes WG (last extended group meeting) considered the need to focus on very specific areas/genera/species.

Germplasm holders need a support in order to prioritize the acc. recommendation as AEGIS acc.

A workshop and a direct dialogue between members are needed inside the group and large participation is encouraged.

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