

ECPGR Activity Grant Scheme Proposal Form

Sixth Call – Phase X (2019-2023)

Activity Proposal

Activity	
Full title	Inventoring wheat on-farm diversity
Acronym (or short title)	INWHEATORY
Duration of Activity (in months)	20
Start date – End date <i>Please indicate start date not earlier than 3 months after deadline of Call</i>	1-4-2023

Applying Working Group(s)

	Working Group	Indicate name and surname of Working Group Chair
1.	On-farm Conservation and Management	Valeria Negri
2.	Wheat	Albrecht Serfling
3.		
4.		

Activity Coordinator

Activity Coordinator	
Name and Surname	Lorenzo Raggi
Working Group	On-farm Conservation and Management
Nationality	Italian
Current position	Researcher
Institute	Dipartimento di Scienze Agrarie Alimentarie e Ambientali
Country	Italy
Telephone	+39 075 5856212
Email	lorenzo.raggi@unipg.it

Activity Partners (ECPGR-funded)

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

Partner ID No.	Name and Surname	Institute	Country
1	Lorenzo Raggi	Dipartimento di Scienze Agrarie, Alimentari e Ambientali (DSA3); Unità di Ricerca - Genetica Agraria e Biotecnologie Genetiche Facoltà di Agraria, Università degli Studi di Perugia Borgo XX Giugno, 74 06121 Perugia	Italy
2	Ioannis Mylonas	Hellenic Agricultural Organization - DEMETER Institute of Plant Breeding & Genetic Resources	Greece
3	Mr Clément Debiton	Institut national de recherche pour l'agriculture, l'alimentation et l'environnement (INRAE) 5 chemin de Beaulieu 63000 Clermont-Ferrand France	France
4	Silvia Străjeru	Banca de Resurse Genetice Vegetale Suceava Bulevardul 1 Mai nr. 17, 720224 Suceava, Romania	Romania
5	Sanja Mikić	Institute of Field and Vegetable Crops, Novi Sad	Serbia
6	Heinone Maarit	Natural Resources Institute Finland (Luke) Biotechnology and Food Research/Genetic diversity H-house 31600 Jokioinen Finland	Finland
7	Bebeli Penelope	Agricultural University of Athens Iera Odos 75 118 55 Athens Votanikos Greece	Greece

8	Jovovic Zoran	University of Montenegro Biotechnical Faculty Mihaila Lalića 1 81000 Podgorica Montenegro	Montenegro
9	Maxted Nigel	School of Biosciences University of Birmingham Edgbaston Birmingham B15 2TT United Kingdom	United Kingdom
10	Ralli Parthenopi	Hellenic Agricultural Organization - DEMETER, Institute of Plant Breeding and Genetic Resources Thessaloniki-Polygyrou National Road PO Box 60458 57001 Thermi-Thessaloniki Greece	Greece
11	Jelka Šuštar Vozlič	Agricultural Institute of Slovenia Hacquetova ulica 17 1000 Ljubljana	Slovenia
12	Ivanovska Sonja	Faculty of Agricultural Sciences and Food, Dept. of Genetics & Plant Breeding, Fac. S. Cyril and Methodius, University in Skopje Bul Aleksandar Makedonski, bb 91000 Skopje North Macedonia	North Macedonia
13	Maja Boczkowska	Plant Breeding and Acclimatization Institute - National Research Institute	Poland

Self-funded partners

Partner No.	Name and Surname	Institute	Country
13	Đurić Gordana	Foundation ALICA, Banja Luka	Bosnia and Herzegovina
14	Kondic Danijela	University of Banja Luka, Faculty of Agriculture	Bosnia and Herzegovina
15	Sarah Sensen	Federal office for Agriculture and Food, Deichmanns Aue 29, 53179 Bonn	Germany
16	Imke Thormann	Federal office for Agriculture and Food, Deichmanns Aue 29, 53179 Bonn	Germany
17	Rudolf Vögel	Landesamt für Umwelt, Gesundheit und Verbraucherschutz Brandenburg (LUGV) Abt. Technischer Umweltschutz (TUS) Ref. Klimaschutz, Umweltbeobachtung und -toxikologie (T2) Tramper Chaussee 2 16225 Eberswalde	Germany
18	Albrecht Serfling	Julius Kühn Institut, Institut für Resistenzforschung und	Germany

		Stresstoleranz, Erwin Baur Straße 27, 06484 Quedlinburg	
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Description of Activity (suggested max. 1000 words)

Please address the following aspects:

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

Although most of European agricultural production currently relies on formally registered and genetically uniform cultivars, landraces are still grown in situ. However, a European inventory of in situ-maintained landraces is still lacking and, consequently, there is limited and scattered information on where these materials are grown and to which species they belong to (Raggi et al., 2022). Without knowing where landraces are still present in cultivation and cultivation breadth, the elaboration of adequate conservation plan and their implementation is clearly hindered. In term of use, geographical distribution and pedo-climatic characteristics of involved sites are also of great relevance since landraces, cultivated in diverse environments, can hold different traits for local adaptation.

This project aims at favouring the creation of national inventories of wheat landraces “broad sense” (i.e. landraces, obsolete cultivars and conservation varieties as defined in the ECPGR concept for on-farm conservation and management of PGRFA (ECPGR, 2017), accompanied with a set of information relevant for inferring their diversity and its evolution on-farm; as such, it also aims at evaluating the usefulness of historical data, available in public databases, to infer genetic erosion. Information gathered in the project will be also useful for planning the future *ex situ* back-up of the identified resources in most need of protection.

The project is focused on phase X ECPGR objective 4 “To promote on-farm conservation and management of European PGRFA diversity”. In particular, it aims at contributing to the achievement of point 4.1 “Snapshot Inventory of the European on-farm diversity (landraces, obsolete cultivars and conservation varieties) carried out”, through 4.1.1 and 4.1.2. The selected methodology, including the analysis of historical data, will contribute to 4.2 “European on-farm diversity and trends monitored”, through 4.2.1. Finally, the collection of case studies will contribute to 4.3 “Good practices for on-farm management and conservation and adding value promoted” through 4.3.1.

This proposal is closely related to the EU funded project entitled ‘Networking, partnerships and tools to enhance in situ conservation of European plant genetic resources’ (Farmer’s Pride, GA No: 774271). In the frame of Farmer’s Pride data on more than 2.000 wheat landraces cultivation sites from 10 European countries were retrieved and analysed (Raggi et al., 2022); more detailed information were also collected for 8 wheat landrace case studies: *T. aestivum* subsp. *aestivum* (3) and *spelta* (1), *T. monococcum* subsp. *monococcum* (2), *T. turgidum* subsp. *dicoccum* (1) and *T. turgidum* subsp. *durum* (1). including local name, taxonomic classification, type of in situ conserved resource, location where cultivation occurs and mating system, the agronomic contexts, actors managing the resources, main use and actions to promote use and accessibility (Raggi et al., 2021). Already collected data will be a significant starting point for the here proposed activities and will be integrated in the foreseen National Inventories. To the purpose, protocols for collecting new data will be compatible with those already used and based on agreed international standards (Negri et al., 2012). A particular attention will be devoted to the involvement of those countries that did not provide any data yet.

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

The compilation of national inventories of wheat on farm-maintained landraces is crucial to attain ECPG objective 4.1 “Snapshot Inventory of the European on-farm diversity (landraces, obsolete cultivars and conservation varieties). This is certainly justified by the value of wheat production and by the wide distribution of wheat landraces across Europe (Raggi et al., 2022). Indeed, it has already suggested that the compilation of inventories is as a crucial prerequisite for the promotion of effective conservation actions (Maxted et al., 2009) and the ITPGRFA, to which all the 27 European Union member countries have already given consent to be bound, demands to “survey and inventory PGRFA” (Art. 5.a) (FAO, 2001). The need to provide resources and favour the development of comprehensive inventories – as a baseline for the development and implementation of strategies for complementary conservation of genetic resources in Europe – has been recently reaffirmed in the “Genetic Resources Strategy For Europe” from the GenRes Bridge project (EUFORGEN, 2021). In addition, the knowledge of the evolution of on-farm maintained diversity is of great value for promoting a long term sustainable on-farm conservation of landraces. Here proposed activities will contribute to understanding the utility of data stored in public databases (e.g. GBIF and Genesys) to attain such objective.

ECPGR (2017). *ECPGR Concept for on-farm conservation and management of plant genetic resources for food and agriculture*. Rome, IT: European Cooperative Programme for Plant Genetic Resources.

EUFORGEN, G. B. P. C. E. E. (2021). *Genetic Resources Strategy for Europe*. European Forest Institute.

FAO (2001). *International Treaty on Plant Genetic Resources for Food and Agriculture*. Rome, IT: FAO.

Maxted, N., Vetelainen, M., and Negri, V. (2009). “Landrace inventories: needs and methodologies,” in *European Landraces: On-farm Conservation, Management and Use*, eds. M. Vetelainen, V. Negri, and N. Maxted (Rome, IT: Bioversity Technical Bulletin, vol. 15.), 45–52.

Negri, V., Maxted, N., Torricelli, R., Heinonen, M., Vetelainen, M., and Dias, S. (2012). Descriptors for web-enabled national in situ landrace inventories.

Raggi, L., Caproni, L., and Negri, V. (2021). Landrace added value and accessibility in Europe: what a collection of case studies tells us. *Biodivers. Conserv.* 30, 1031–1048. doi:10.1007/s10531-021-02130-w.

Raggi, L., Pacocco, L. C., Caproni, L., Alvarez-mu, C., Barata, A. M., Batir-rusu, D., et al. (2022). Analysis of landrace cultivation in Europe: A means to support in situ conservation of crop diversity. *Biol. Conserv.* 267. doi:10.1016/j.biocon.2022.109460.

– **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.

Having already gained experience on the topic, the following members of “Wheat” and “On-farm Conservation and Management” ECPGR working groups will give rise to the project. In particular:

1. Lorenzo Raggi, researcher at University of Perugia, already matured a long experience on landraces characterization and conservation. In the frame of *Farmer’s Pride* project, together with Prof. Valeria Negri, he led the activities on monitoring landrace diversity at European level. He will contribute, as coordinator, to all the project foreseen activities.

2. Ioannis Mylonas, as crop specialist and breeder, in Institute of Plant Breeding & Genetic Resources of Hellenic Agricultural Organization, he will provide his network of farmers, will contribute the formulation of questionnaire. He will transfer his experience of on-farm wheat landraces cultivation from Greece.

3. Clément Debiton, as the genebank curator and manager of the BRC “small grain cereals” at INRAE, is responsible of the 27 000 accessions of small grain cereals held in Clermont-Ferrand (France). The biggest collection is the wheat collection constituted by 17 000 unique representatives. During this project, will take part in the Action 1 to establish an overview of the on-farm wheat landraces cultivated in France by using the INRAE network of researchers working on this subject. Will also benefit from the expertise of the French national focal point who will help in establishing a French national inventory of the wheat diversity hel in situ.

4. Silvia Străjeru, as gene bank curator with experience on-farm, she will provide her input in the formulation of the descriptors list and will transfer her experience from Romania.

5. Sanja Mikic, a researcher at the Small Grains Department in the Institute of Field and Vegetable Crops with responsibilities in the characterization and evaluation of the collection of wheat genetic resources in the field and with molecular techniques. Dr. Mikic will contribute to the descriptors, will provide her network of farmers, and will transfer her experience from Serbia.

6. Heinonen Maarit, in Finland, landrace varieties of wheat marginalized in cultivation during the first half of the 20th century, but some have been preserved in small-scale farming, especially autumn wheats whose good winter hardiness has been a valued characteristic. Ms. Heinonen has a long record of activities related to landrace conservation of herbaceous species, she will contribute to the development of the descriptors and will transfer her experience from Finland.

7. Penelope Bebeli is Director of the Plant Genetic Resources Institute of the Agricultural University of Athens Research Center. She has been studying landraces for more than three decades. She has been working on collection, characterization, evaluation, conservation of crop landraces in many parts of Greece (in the islands of Lemnos, Lesbos, Kythera, Andros, Lefkada, Skyros etc as well as many prefectures in mainland Greece such as Arcadia, Messinia etc) and she has published papers that include lists with the discovered on farm landraces. Among other landraces she has recorded on farm conserved wheat landraces, and she can contribute to the wheat landraces inventory.

8. Jovovic Zoran will help in establishing the national inventory of the wheat diversity held in situ in Montenegro, dissemination of experiences in maintenance and conservation, contribution to the sustainable use of wheat resources, activities on further inventory.

9. Maxted Nigel he led the UK element of the ‘*Inventorizing on-farm European wheat landraces Case Studies*’ in the EC funded *Farmer’s Pride* project that focused on 4 European countries. He also published a paper on the methodology and Technical Guidelines for undertaking national landrace inventories. He was the originator for creating the “In situ landraces: best practice evidence-based database” (hosted by ECPGR web site) and as an “evidence base” to produce a guide for the good practices for the on-farm conservation and sustainable use of crop landraces. He has also been instrumental in formulating EU and national support policy for crop landraces which has resulted in the UK Government introducing support payment for UK landrace maintainers in its Agriculture Bill 2020. He will provide input in the formulation of the descriptors list and data for UK.

10. Ralli Parthenopi. Took part to many collecting missions all over Greece, she takes care of the reports (including historical data, morphological and evaluation traits, area of cultivation, etc) for the Ministry of Rural Development and Food for all landraces cultivated on farm and are suggested to be included in the National Catalogue as conservation varieties (including the wheat landraces). During her career she participated in many activities and publications focused on the

creation of national inventories of landraces to favor their conservation and sustainable use. She was the alternate National Focal Point for monitoring the implementation of the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture (PGRFA) and for the preparation of country reports for The Third Report on the State of the World's PGRFA. She will contribute in the implementation of Action 1 and 3 and if needed in Action 2 too. Indeed, having participated in many collecting missions all over Greece, she can contribute to the estimation of wheat genetic erosion.

11. Jelka Šuštar Vozlič. Expertise: researcher of genetics and plant breeding at Agriculture Institute of Slovenia, gene bank curator, national coordinator for PGR, coordinator of national project of on-farm conservation. Action 1: will contribute to preparation of template for on-farm conserved wheat landraces; provide input of on-farm wheat landraces in Slovenia (the data already obtained from the pilot monitoring; extend the monitoring to regions not yet covered where wheat landraces might still be cultivated). Action 2: will contribute with the information from Slovenia. Action 3: contribute if any good practice identified through the survey.

12. Ivanovska Sonja has experience in collecting landraces from North Macedonia resulting in an inventory collection (with a small number of seeds) from over 6000 samples, out of which 200 samples of wheat obsolete varieties and landraces. She also has experience in characterizing, evaluating, and using wheat germplasm for breeding purposes. She will help in establishing the national inventory of the wheat diversity held in situ in North Macedonia.

13. Đurić Gordana is full professor of the University of Banja Luka (BIH) and member of Foundation ALICA – agrobiodiversity and agroecology initiative in BIH. Teach the Plant Genetic Resources for more than 15 years. Responsible for on farm conservation and traditional knowledge in the National Program, and Community Gene Bank in ALICA Foundation.

14. Danijela Kondić, is full professor of the University of Banja Luka (BIH) and member of Foundation ALICA – agrobiodiversity and agroecology initiative in BIH. Teach the Cereals and Locally grown neglected species. Responsible for wheat in the National Program.

15. Sarah Sensen, is managing the German national PGR inventory and is the EURISCO focal point for Germany. She will contribute in activity 1 to the discussion and agreement on descriptors and compile the national data on wheat landraces and regarding activity 3 will take care of collecting good practices examples from Germany.

16. Imke Thormann, has experience in field data collection and descriptor development and will contribute in activity 1 to the discussion and agreement. She has research experience (including her PhD research) on genetic erosion assessment, as well as on data and geographical coordinate quality control procedures and is available to advice and contribute to this work.

17. Rudolf Vögel. Vice-Chairman of the Association for the Conservation and Recultivation of Crops VERN e.V. (see www.landaces.de). The Association hosts a network of farmers that covers Germany by regional hot spots in the north east and south-east. By time now about 150 farms of different size and specifics are part of the network. Mills, technical distributors and end processors like bakers, brewers are also part of the Network. As partner of the project VERN could be updating information about i) origin, size and use of wheat landraces/cultivars, ii) regional hotspots and iii) characterisation of integrated farms. Noteworthy, some material is regularly tested and viewed by formal seed service through field trials. For some very promising accessions, fingerprint data are available or under work. VERN will contribute to the preparation of field data, farm data, questionnaires about cultivation methods and will also take part in the project discussions.

18. **Albrecht Serfling**, evaluates regularly more than 100 genotypes of wheat genetic resources in frame of the ECPGR evaluation program and the national evaluation program EVA2. Evaluation included exotic accessions in the past already. JKI is specialised in the rating of resistance to biotic and abiotic stress and participates or coordinates different projects dealing with genetic resources of wheat and host-pathogen interaction. Furthermore, JKI has experience in the field of genotyping, GWAS, mapping and QTL analysis.

19. **Maja Boczkowska** is prepared to inventory on-farm Polish wheat landraces, carry out analysis of genebank data and of available historical data in scope of diversity evolution, and contribute to documentation of good practices for the on-farm conservation of wheat landraces.

– *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.

Action 1. Inventorying on-farm European wheat landraces.

According to the expertise and specific knowledge of the project partners, during the foreseen virtual kick-off meeting a template to record characteristics of on-farm conserved wheat landraces will be discussed and agreed (Action 1.1) to be proposed to the National Coordinators (NC) of ECPGR network. The template will be based on the Descriptors for web-enabled national in situ landrace inventories document (Negri et al., 2012) and on results from Raggi et al. 2022 so that it will be possible the integration with already collected data. Once agreed, the template will be used by project partners to collect the data on on farm wheat landraces present in their respective countries and to develop the national inventories (Action 1.2); all collected data will be stored in a database.

Data analysis (Action 1.3) will be based on the “landrace name” approach, a way of describing diversity of materials used by farmers that can be relatively easily recorded through interviews, surveys, catalogues and censuses (for a comprehensive review see (Khoury et al., 2022)). Even if synonymies (i.e. different names for genetically similar landraces) and homonymies (single names for genetically distinct materials) can complicate this approach it will allow, for each recorded landrace, the direct evaluation of some crucial aspects including: i) number of farmers involved in cultivation, ii) landrace cultivation extent, according to both covered area and number of different cultivation sites, iii) main pedo-climatic characteristics of sites hosting landrace cultivation that could hinder, or not, their future maintenance. Geographic Information System (GIS) based approach will be also used to assess landraces distribution across the different European biogeographical regions, tested using the geospatial vector available from the European Environment Agency and the status ‘inside’ or ‘outside’ protected areas according to the geospatial vector of Natura 2000 Network. A density analyses based on the georeferenced EPSG: 3035 (Lambert Azimuthal Equal Area) grids, performed using the same GIS software, will also allow the identification of areas rich in wheat landraces.

Action 2. Diversity evolution and in situ gap analysis

Georeferenced data regarding past wheat landraces cultivation across Europe will be retrieved from two international biodiversity databases: the Global Biodiversity Information Facility (GBIF) and Genesys. GBIF is an international network and data infrastructure funded by the world's governments aimed at providing open access to chorological data of out all types of life on Earth that includes data from genebanks, botanic gardens, museums, and universities. Genesys is a database holding information on ex situ accessions conserved in genebanks worldwide; it is also fed by numerous national and international data providers. Retrieved data will go through Quality Control

(QC) where will be checked for crop nomenclature consistency and Latin names will be homogenised. Even if only accessions with geographic coordinates will be target of the study; when possible, other passport data including administrative region, district name as well as the distance from the nearby town will be used as proxy of geographic coordinates (Teklu and Hammer, 2006) (Action 2.1).

Data collected from GBIF and Genesys might be a basis to investigate genetic erosion in wheat landraces. To the purpose, the data collected in the project regarding the current on farm wheat landraces distribution across different european country will be compared to the historical data retrieved from the GBIF and Genesys using the same above described GIS approaches. Finally, the comparison of in situ and ex situ collated data will also allow the identification of cultivated wheat landraces not safely backuped in genbanks (in situ gap analysis) (Action 2.2).

Action 3. Good practices for the on-farm conservation of wheat landraces

Case studies on successful examples of wheat landrace cultivation and use in the different involved states will be requested to project partners. Template for providing information will be organise as described in Raggi 2021 so that to favour successive statistical analyses of collected data. Among other, the following information will be requested: basic features (e.g. local name, taxonomic classification, type of in situ conserved resource, location where cultivation occurs), the reason sustaining the cultivation (e.g. possible agronomic value for farmers or specific adaptation to specific environments or tolerance to abiotic and biotic stresses, or special quality characteristics), the agronomic contexts and management features (including seed storage conditions and conservation methods), landrace main uses and actions to promote their products, market extent and methods used to add value to landrace products (Action 3.1). Collected case studies will be made available through the “[In situ landraces: best practice evidence-based database](#)” (hosted by ECPGR web site) and as an “evidence base” to produce a guide for the good practices for the on-farm conservation and sustainable use of wheat landraces (Action 3.2).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Action 1 Inventoring on-farm European wheat landraces.																				
Action 1.1 Template discussed and agreed	■	■																		
Action 1.2 Data collection and development of landrace inventories			■	■	■	■	■	■	■	■	■	■	■	■	■					
Action 1.3 Diversity and geographical analysis												■	■	■	■					
Action 2 Monitoring evolution of on-farm maintained diversity																				
Action 2.1 Data collection from public databases and QC										■	■	■	■	■	■	■	■			
Action 2.2 Diversity evolution and in situ gap analysis																■	■	■		
Action 3 Good practices for the on-farm conservation of wheat landraces																				
Action 3.1 Collection of case studies on wheat landrace cultivation				■	■	■	■	■	■											
Action 3.2 Elaboration of a guide																				
Action 4 Reporting																				
Action 4.1 Reporting																				■
Action 5 Meetings																				
Action 5.1 Meetings	■																			
Action 5.2 Meetings																				■

Khoury, C. K., Brush, S., Costich, D. E., Curry, H. A., de Haan, S., Engels, J. M. M., et al. (2022). Crop genetic erosion: understanding and responding to loss of crop diversity. *New Phytol.* 233, 84–118. doi:10.1111/nph.17733.

Negri, V., Macted, N., Torricelli, R., Heinonen, M., Vetelainen, M., and Dias, S. (2012). Descriptors for web-enabled national in situ landrace inventories.

Raggi, L., Pacicco, L. C., Caproni, L., Alvarez-mu, C., Barata, A. M., Batir-rusu, D., et al. (2022). Analysis of landrace Cultivation in Europe : A means to support in situ conservation of crop diversity. *Biol. Conserv.* 267.

Teklu, Y., & Hammer, K. (2006). Farmers’ perception and genetic erosion of tetraploid wheats landraces in Ethiopia. *Genetic Resources and Crop Evolution*, 53(6), 1099-1113.

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

In the present project it is not foreseen the collection of accessions already stored in genebank for characterisation activities. However, results of the in situ gap analysis will be use to promote ex situ conservation of those wheat landraces currently cultivated and not safely conserved ex situ.

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

In relation with the ECPGR objective 4 (To promote on-farm conservation and management of European PGRFA diversity), the realization of this project will increase the knowledge of wheat landraces still present on-farm (4.1) and will allow for a standardized storage and elaboration of data that is of paramount importance for the implementation of a proper conservation plan for Europe. The inclusion of data on wheat landraces cultivation sites from *Farmer’s Pride* project will further increase the value of produced dataset. Indeed, according to already collected data, whit the only exception of Austria, quite a few wheat landraces as well as cultivation sites have been inventoried in the other European countries confirming the urgent need of the compilation of wheat landrace inventories. In addition, the type of collected data and foreseen analyses will also allow to shed some light on wheat landraces genetic erosion (4.2). Finally, the collection of case studies describing successful experiences of conservation and sustainable use of wheat landraces (broad sense) will facilitate the definition of good practices for on-farm management and conservation and for increasing the product added value (4.3). Evidences and lessons that will be learnt from the development of the project will be also relevant for setting-up similar studies on other cereals in the European region (e.g. maize, barley and oat).

– **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.

The project “Redesigning the exploitation of small grains genetic resources towards increased sustainability of grain-value chain and improved farmers’ livelihoods in Serbia and Bulgaria” of the Benefit-sharing Fund of the International Treaty of Plant Genetic Resources for Food and Agriculture (GRAINEFIT, PR-166-Serbia), 2020-2023, aims to preserve, evaluate and reintroduce local small grains landraces and varieties that are more resilient to climate changes and suitable low input agriculture. The data on wheat landraces, obsolete cultivars and conservation varieties that have been retrieved from local farmers and genebanks and analysed within the project, will contribute to the proposed national inventories. <https://www.fao.org/plant-treaty/areas-of-work/benefit-sharing-fund/projects-funded/bsf-details/en/c/1198871/?iso3=SRB>

Expected products and related ECPGR Objectives

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

	Expected products/results	Corresponding ECPGR output, activity
1	List of descriptors to properly survey the current cultivation of wheat landraces across Europe.	4.2 European on-farm diversity and trends monitored 4.2.1 Defining simple and effective indicators of on-farm diversity and trends
2	Inventory of on farm landraces for the main European countries with information on species, cultivation extent and number of involved farmers linked to main pedo-climatic characteristics and conservation status of sites hosting landrace cultivation	4.1 Snapshot Inventory of the European on-farm diversity (landraces, obsolete cultivars and conservation varieties) carried out 4.1.2 Promoting agreement on data exchange format 4.1.4 Collecting on-farm data
3	Evaluation of the usefulness of GBIF and Genesys data to infer genetic erosion; identification of landraces not safely backup in genbanks.	4.2.1 Defining simple and effective indicators of on-farm diversity and trends 4.2.2 Analysing on-farm diversity and trends, based on agreed indicators and the European on-farm Inventory
4	Collection of case studies of successful on farm wheat landraces management including the description of seed management and its consequences on on farm conserved diversity	4.2.1 Defining simple and effective indicators of on-farm diversity and trends 4.2.3 Establishing a knowledge base of case studies aiming to analyse genetic diversity and its trend in the field

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>
1	Month 3 (beginning)-meeting Before the meeting (i.e. during the first two months of the project), a template for recording data on wheat landraces on farm will be initially prepared by UNIPG and circulated to involved partners for discussion and amendments. A "tentative final" version will be then prepared and proposed for further discussion during the virtual meeting. A final version will be agreed upon at the end of the meeting and circulated. (MEETING, virtual)
2	Month 8-meeting. Meeting to discuss progresses and achievements obtained by the partners in the different Actions (e.g. number of inventoried wheat landraces, number of described case studies), eventual obstacles to fulfill the agreed time table and possible solutions. (MEETING, virtual)
3	Month 9-report. Short report on what presented and discussed during Month 8-meeting. (Report, OTHER)
4	Month 18-meeting. Meeting to present all the achievements obtained by the partners in the different Actions and main data analysis results (MEETING, virtual)
5	Final report (months 19-20). Report describing results obtained during the project.

Additional remarks

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

Remarks:
None.

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