Focus Group ‘Local plant genetic resources in view of climate change and biodiversity loss’

Chania, Greece
20-21 May 2025

What is a ‘research need from practice’?

- a *challenge* (problem) that professionals from the farming and forestry sectors (such as farmers, foresters and advisers) and other relevant rural actors *come across in their daily work*, and for which multi-actor research or innovative projects of EIP-AGRI OGs *may provide solutions*

- a *possible solution for a challenge* (problem) or constraint, or *new method found* in practice identified by a farmer, forester or adviser, or other relevant rural actor, including agribusiness, which *need further development/research or methodology* if it is to be implemented on a broader scale

- *new knowledge and/or an invention for an innovative solution* discovered by a farmer, forester or adviser, or any other relevant rural actor, including agribusiness or non-food sectors, *which could benefit from research or innovative projects* to improve or commercialise it or allow it to be applied or adapted elsewhere

What is the use of ‘research needs from practice’?

1. feed ***networking*** activities and ***information*** actions

2. feed into the ***programming*** of European ***Research and Innovation*** activities

3. ***national*** and ***regional*** authorities may decide to take up the topics in their ***calls for innovative projects***

4. ***others*** with an interest in the same issue ***can review*** them and provide an ***answer to the problem***

5. ***others may try to solve*** it, for instance by setting up an ***innovative project*** with other partners

Formulating ‘research needs from practice’?

1. ***Title: formulate clearly*** if it is a ***challenge (problem) or solution*** that needs research and ***use 1 or 2 keywords***

2. ***Describe*** the problem or solution ***which needs further research*** in 1 - 3 sentences

3. ***Specify*** the ***geographical area(***s) where the need has been identified or where this need could potentially exist

4. ***Choose*** the ***sector(s)*** where the issue is relevant

Ideas for research needs from practice

MP	Tittle	Challenge	Description/research needs	Area	Sector
MP 1	Conservation and monitoring of genetic resources	The genetic composition and diversity of the germplasm conserved on farm and in situ is largely unknown. The lack of comprehensive monitoring limits our knowledge of what is stored on-farm, which can lead to the loss of valuable germplasm.	Use of long-term Genetic Diversity Monitoring to evaluate the genetic diversity maintained on farms. New methods (DNA barcoding, DNA genetic monitoring) with increased speed of genetic analysis and lower costs are today available. Some further development on the methodology and the guidelines for in situ and especially on farm application is needed to be implemented on a broad scale.	Across EU, priority in southern Europe	Conservation, Agrobiodiversity,
MP 1	Identification and characterization of germplasm	Identification and characterization of germplasm for important adaptive traits, particularly those related to climate change adaptation: drought and heat tolerance, waterlogging, increasing CO2 and ozone concentrations, disease resistance.	Development of long-term combined molecular and classical breeding program. Use of DNA fingerprinting, and state of the art molecular breeding and omics techniques, such as genome wide association mapping (GWAS) to gain knowledge. Use pre-breeding activities to enhance the value of local cultivars and CWR: selection of promising genotypes. Evaluate in pilot projects, testing genotype x environment interaction, introducing cultivars with positive characteristics into cultivation and promote this best practice and the resulting cultivars along the value chain in the agrifood sector.	Across EU	Reproductive/planting material, Agrobiodiversity

Ideas for research needs from practice

MP	Tittle	Challenge	Description/research needs	Area	Sector
MP 1	Financial and technical support for Conservation	Sustainability of conservation efforts requires ongoing financial and technical support, especially in southern Europe in areas close to environmental niche margins where higher genetic diversity could be expected related to adaptation to changing environments. A lack of funding and resources can often lead to the abandonment of conservation projects and practises.	Integrated long-term national and international programmes for the preservation and sustainable use of the perennial PGR are necessary. Application of a multidisciplinary approach combining genetic research, modern and traditional practices, socio-economic insights, better policy frameworks, and formulation of sustainable investment frameworks to successfully conserve PGR on farms.	Across EU, with priority for southern Europe.	Financing
MP 1	Germplasm propagation, sanitation and transfer	Propagation, sanitation and transfer across regions and countries of interesting germplasm for conservation is not optimal.	Investigate state of the art propagation and sanitation methods to preserve cultivar identity and health status of perennial LGs; develop in vitro protocols for recalcitrant species.	Across EU	Reproductive material
MP 1	Preservation of traditional knowledge	Traditional knowledge linked to local cultivars and CWRs is being lost at accelerating rates.	Inventory of traditional knowledge linked to local cultivars and CWRs as a legacy of cultural identity Implementation of the UN Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) into practice, at national and regional levels.	Across EU, priority in southern Europe	Arboriculture, conservation, agriculture,

Ideas for research needs from practice

MP	Tittle	Challenge	Description/research needs	Area	Sector
MP 1	Balancing traditional farming practices with newer agricultural techniques	Balancing traditional farming practices with newer agricultural techniques. On-farm germplasm storage farmers are interested in introducing the latest cultivation technologies to bring economic opportunity to their farms. This may be at odds with preserving the germplasm in the collection — this plant material is usually more suited to the principles of low input or near-wild growing. Integrating modern technology without disrupting existing ecosystems is essential for effective on-farm conservation.	Integrating modern technology without disrupting existing ecosystems is essential for effective on-farm conservation.	Across EU	Agriculture
MP 1	Socio-economic factors in the maintenance of traditional germplasm	Inadequate apprehension of the socio-economic factors influencing farmers' decisions to maintain traditional crop cultivars complicated the formation of conservation plans, which is particularly important for perennial species germplasm, the conservation of which must be long-term. Approached vary widely between regions, influenced by local customs, market access, and governmental support.	Identification of traditional germplasm conservation and its linkage to socio-economic factors at the local and regional scales	Across EU	Agriculture, Conservation
MP 1	Updating policy and legal frameworks	Existing policy and legal frameworks often do not support well on-farm conservation efforts. Significant gaps in legislation and enforcement mean that farmers do not always receive the support and protection needed to continue cultivating traditional varieties.	Identification of relevant gaps in agricultural policy and proposals for solutions	Across EU	Agricultural Policy

Ideas for research needs from practice

MP	Tittle	Challenge	Description/research needs	Area	Sector
MP 2	Acceptance of traditional varieties in general public	The issue stems from a mix of economic, societal, and environmental factors that diminish the viability and importance of traditional varieties. Industrial agriculture, market demands, policy frameworks, limited public awareness, and the decline of traditional farming methods have all contributed to the diminishing presence of these varieties. Furthermore, challenges related to access, infrastructure, and support for farmers wishing to grow traditional crops exacerbate the situation. Despite their ecological, cultural, and nutritional benefits, traditional varieties face considerable hurdles in achieving broad acceptance. These challenges are both societal and systemic, impacting everything from food production to public perception.	Research is needed to improve the agronomic traits of traditional perennials, such as yield, pest resistance, and adaptability to different climates. Investment in breeding programs and agronomic studies could enhance the performance and appeal of these crops, making them more attractive to both farmers and consumers.	European Union-wide, with emphasis on regions where rural identity and food culture are strong, such as France, Italy, and Croatia.	The issue is relevant in food marketing, rural development, agricultural heritage and consumer psychology.

Ideas for research needs from practice

MP	Tittle	Challenge	Description/research needs	Geographical area	Sector
MP 2	Public Awareness & Ecosystem Services	Traditional perennial crops provide substantial ecological, cultural, and economic benefits, yet they remain under-recognized in public discourse and policy frameworks.	There is a pressing need for research that quantifies and highlights their ecosystem services—such as carbon sequestration, improved soil health, biodiversity support, and natural pest control—which are often overlooked in agricultural planning and public awareness.	Southern and Eastern Europe, including Mediterranean countries like Spain, Italy, and Greece, as well as Central and Eastern regions such as Romania and Bulgaria, where underutilized native perennials like carob, fig, elderberry, and sea buckthorn hold significant untapped potential.	Agrobiodiversity, climate-smart agriculture, perennial horticulture, and public engagement.

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Ideas for research needs from practice

MP	Tittle	Challenge	Description/research needs	Geographical area	Sector
MP 2	Evaluation of ecosystem services	Local and underutilised perennial crops offer significant ecosystem services—such as enhancing soil health, capturing carbon, and supporting biodiversity—but these benefits are often under-researched and rarely reflected in agricultural policy or land use strategies	More interdisciplinary research is needed to substantiate and elevate their ecological value especially in the field of agricultural work as well as in exploring social value of green spaces.	In Europe, especially in Southern and Eastern regions, including Mediterranean countries like Spain, Italy, and Greece, where crops such as carob, fig, and almond are not fully utilised, as well as in Central and Eastern areas like Romania and Bulgaria, where native perennials like elderberry and sea buckthorn hold considerable but underexplored environmental potential.	Agriculture Forestry Fishery Urban development Protected areas

Ideas for research needs from practice

MP	Tittle	Challenge/Gap	Description/research needs	Area	Sector
MP3	Recover lost traditional Knowledge	Valuable farming knowledge is disappearing due to urbanization, aging farmers, and changing food systems.	Document traditional knowledge systematically through field surveys and farmer interviews. Create local, accessible repositories that respect cultural heritage. Support the minority keepers who maintain these varieties. Create easy ways to communicate between local stakeholders and national germplasm collections.	Remote rural farming area(s) in Europe to cover various pedo-climatic conditions	Fruit tree & grape sector, rootstocks included.
MP3	Develop a more efficient Knowledge Transfer System	Farmers and stakeholders need better access to information and training on TGRs while they often lack digital literacy	Develop user-friendly databases and online platforms (like EURISCO and Digital Green) for sharing TGR information. Provide on-farm training, farmer-to-farmer exchanges, and peer to peer learning. Train agricultural advisors to act as "knowledge brokers." to translate scientific information into actionable guidance. Utilize video-based learning modules and virtual farmer meet-ups.	Remote rural farming area(s) in Europe	Farmer(s) training and education, extension and advisory services.

Ideas for research needs from practice

MP	Tittle	Challenge/Gap	Description/research needs	Area	Sector
MP3	Enhance tools for better access to knowledge and advisory support	Producers often lack direct contact with trained agronomists and advisory services, limiting their ability to implement innovative and sustainable farming practices	Deploy user-friendly mobile applications and platforms (like WhatsApp) powered by AI, to deliver direct advice on cultivation to farmers. Farmer-Lead Learning Networks: Support local farmer networks to foster- peer-to-peer learning through field days, workshops, and knowledge-sharing platforms, promoting the exchange of practical, context-specific expertise. Integrate On-Farm Training with Digital Resources: Combine traditional on-farm training and demonstrations with digital resources (videos, guides,) to cater to diverse learning styles ensuring farmers have continuous access to best practices.	Rural and remote agricultural regions where digital infrastructure and training opportunities are limited	Researchers and agricultural support services, agricultural extension and advisory services, adult education centres.

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Ideas for research needs from practice

MP	Tittle	Challenge/Gap	Description/research needs	Area	Sector
MP4	Germplasm characterization and accessibility	Perennial crop germplasm is often poorly characterized and difficult to access, making it challenging for researchers, breeders, and farmers to identify and use suitable materials for breeding and conservation.	Develop centralized, standardized, and openly accessible databases to document and share diverse perennial crop germplasm, enabling broader use and exchange while complying with biodiversity laws.	Across EU	Agriculture Forestry Research Policy makers
MP4	Environmental impact and G×E analysis	There is limited understanding of genotype-by-environment (G×E) interactions and environmental adaptation. Perennial crops grow over multiple years and are exposed to variable environmental conditions (e.g., climate, soil, pests, management practices). However, there is a lack of long-term, multi-location data on how different genotypes perform under diverse environment, also comparing organic vs. conventional systems.	Conduct long-term, multi-location trials under both organic and conventional systems to understand genotype-by-environment interactions and guide selection of climate-resilient and regionally adapted varieties.	Across EU –– in different edaphoclimatic areas	Agriculture Research
MP4	Utilizing wild relatives in EPB networks	Wild crop relatives remain underused in perennial crop improvement due to limited knowledge of their traits and potential, poor integration into breeding pipelines, and the absence of networks that facilitate their conservation, evaluation, and use. This gap is especially critical in marginal environments, where the adaptive traits of wild relatives are most valuable but least leveraged.	Leverage the resilience traits of wild crop relatives by establishing EPB networks, especially in marginal environments, and promote on-farm conservation and co-evolution strategies.	Across EU -– in different edaphoclimatic areas	Agriculture Forestry Policy makers Research

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Ideas for research needs from practice

MP	Tittle	Challenge/Gap	Description/research needs	Area	Sector
MP4	Climate adaptation research infrastructure	Insufficient climate adaptation data and lack of infrastructure for long-term monitoring, which is crucial to understand and adapt perennial crops to climate variability and extreme weather events.	Create dedicated research observatories and long-term monitoring stations to study climate impacts on perennial crops and support adaptive breeding strategies.	Across EU – in different edaphoclimatic areas	Agriculture Research
MP4	Tailored information systems for perennial breeding	Complexity in managing and utilizing breeding data in perennial crops. There is a lack of tailored, user-friendly tools to efficiently manage and analyze this data. Breeders of perennial cropos face challenges in real-time phenotyping, genomic prediction, and data traceability, making it difficult to make informed decisions and optimize breeding outcomes.	Develop perennial crop-specific, user-friendly digital tools to manage complex breeding data, with features like real-time phenotyping, genomic prediction, and traceability.	Across EU	Agriculture Forestry Policy makers Research
MP4	Stakeholder Integration in the Breeding Process	Lack of stakeholder involvement in the breeding process. Limited collaboration between key stakeholders, such as farmers, researchers, the private sector, and policymakers. This disconnect often results in breeding goals that may not fully align with the practical needs of farmers or the broader agricultural community.	Establish inclusive mechanisms, such as Open Participative Digital Platforms, to allow farmers, researchers, private sector, and policymakers to collaboratively shape breeding goals and participate in cultivar development and evaluation.	Across EU	Agriculture Forestry Policy makers Research

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Ideas for research needs from practice

MP	Title	Challenge/Gap	Description/research needs	Area	Sector
MP5	Market studies	Lack of understanding consumer behaviour and demand patterns (consumer preferences, purchasing motivations, and consumption trends) for local perennial premium products. Effective product differentiation (unique selling points and intrinsic added values), appropriate pricing strategies (consumer willingness-to-pay), optimal market placement (effective channels: short supply chains, gastronomy, tourism, and e-commerce platforms), and successful promotional approaches (branding, storytelling, regional identity communication).	Conduct in-depth market studies for local perennial premium product positioning, analyzing specific consumer segments and evaluating willingness-to-pay for unique added values such as ecological sustainability and cultural heritage.	Across EU in rural and urban areas	Agronutritional sector, food marketing, rural development, agricultural heritage
MP5	Transfer innovation to farmers (digital tools, mentoring)	Digital tools and date collections can help to organise local/regional value chains of perennial products more effective. There is a gap between innovation and practice by farmers and local rural actors. This gap is promoted by the lack of mentoring and tools to transfer this knowledge and tools.	Investigate the state of the art of digital tool for local/regional coordination and cooperation and develop best ways to transfer innovation to farmers and rural actors (digital tools, mentoring). Identify scalable digital solutions specifically suitable for small-scale and traditional farming	Across EU in rural areas	Agronutritional sector, digital and rural development, local/regional value chains

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MP	Title	Challenge/Gap	Description/research needs	Area	Sector
MP5	Economic incentives	Underdeveloped understanding of effective economic incentives and policy tools to support the cultivation and commercialization of local varieties, ensuring biodiversity and farmer profitability. Current economic incentives and policy tools primarily target mainstream agricultural practices and varieties. There is insufficient attention given to minority or local perennial varieties, putting these at risk of disappearing due to their perceived lower economic viability.	Study about economic incentives and policy tools and supportive policy frameworks that enhance the profitability of cultivating and commercializing local perennial varieties, with particular focus on biodiversity conservation outcomes.	Across EU, especially regions with rich agricultural heritage.	Agronutritional sector, rural economic development, policy instruments.
MP5	Consumer trends and regional branding	There are many different regional or geographical brandings in the EU and its various rural regions, particularly in the context of local perennial crop valorisation. But the knowledge of effectiveness of branding in shaping consumer perceptions and how branding strategies influence consumer market trends, is limited. High effectiveness of branding and communication of local perennial crop products is a challenge.	Exploring branding impacts aligns with consumer market trends.Investigation of a selection of successful regional or geographical rural brandings in the context of local perennial valorisation. Networking of the rural regions and actors to improve effectiveness of branding strategies and develop general factors for successful branding strategies.	EU regions with regional or geographical brandings in the context of local perennial crops.	Agro-nutritional sector, Agri-tourism sector, branding of regional local/geographical food production.

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MP	Tittle	Challenge/Gap	Description/research needs	Area	Sector
MP6	Research on the genetic resources and breeding of perennial arable crops for food and feed.	Limited information exists on the adaptability of perennial species across European climate zones. Key traits include summer dormancy, consistent regrowth, high multi-year yields (especially in grains), tolerance to abiotic stresses (e.g. drought, heat, nutrient deficiency), and pest and disease resistance. In colder regions, winter hardiness and resilience to temperature fluctuations are essential.	Further research is needed to identify suitable local genotypes for pasture mixes and uses in food, bioenergy, and non-food sectors. Breeding efforts should explore new technologies, assess the potential to convert annuals into perennials, and study underutilized species for traits that support domestication.	In different pedoclimatic areas in Europe.	Entire food and feed sector
MP6	Ecosystem services and importance of perennial arable crops under changing climate	Perennial crops differ significantly from annuals, offering larger root systems that enhance soil carbon sequestration and organic matter. They support biodiversity by providing nectar, pollen, and shelter for insects and animals, and can produce unique products not available from annuals. Perennials are valuable for food and feed production, particularly under climate change pressures in Europe	Critical information is still missing—such as their true potential in climate mitigation, food and feed output, and the full production chain requirements, from breeding and inputs to processing, marketing, and consumption.	In different pedoclimatic zones and agroecosystems in Europe	Entire sectors, (breeders to consumers)

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MP	Tittle	Challenge/Gap	Description/research needs	Area	Sector
MP6	Sustainable crop husbandry practises of perennial arable crops: best practices and the development of new methods.	There is a huge gap on the knowledge related to how perennial crops should be cultivated and managed during the growing seasons, what are their soil and nutrient requirements, what are the optimum cropping systems (crop rotations, mixed systems), how harvesting and post-harvest managements should be carried out. Also, the potential risks considering plant diseases and pests should be studied.	The research should include the gathering and analysis of available information as well as the development of new sustainable crop production methods.	Various pedoclimatic areas and agroecosystems in Europe	Entire food and feed systems in Europe

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EU CAP Network Focus Group
‘Local plant genetic resources in view of climate change and biodiversity loss’

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All information on the Focus Group is available on the webpage:
https://eu-cap-network.ec.europa.eu/focus-group-local-perennial-plant-genetic-resources-view-climate-change-and-biodiversity-loss