Genetic Resources for EU Agriculture: Status and Vision

Background Paper

Brussels, 9th June 2016

The one-day Conference (Brussels, 9 June 2016) will present the findings, draft conclusions and the preliminary recommendations of the "*Preparatory action on EU plant and animal genetic resources*".

The aim of this preparatory action is to deliver inputs on how to improve communication, knowledge exchange, and networking among all the actors potentially interested in activities related to the conservation of genetic resources.

The preparatory action also aims to find ways towards a sustainable and economically viable use of these resources.

This document, prepared by the Consortium, provides the background information and context to the findings and recommendations that will be presented and discussed during the Conference.

Introduction

Context to the Study

Genetic resources are the biological basis of global food and nutrition security. Apart from the potential economic importance (ranging from the contribution of specific qualities to breeding programmes, to the production of quality meat and other products for niche markets), local or regional breeds and varieties can also be of ecological importance. Moreover, cultivated and domesticated genetic resources are part of our cultural heritage. In addition, some genetic resources are an important source of renewable raw materials and energy. Their important role for the environment is undisputable, while particularly forests and natural areas containing diverse genetic resources also offer ample opportunities for leisure and tourism. The diversity of microorganisms (MIGRs) plays a major role in maintaining the biosphere and provides a vast and largely untapped resource for humankind.

Global losses of genetic resources for agriculture and food production have been substantial over the last 100 years (FAO 2007[1)]; FAO 2010[2]). Agricultural intensification with its focus on high yielding breeds and the change of land management with a strong decline of pastures has led to almost 50% of all European livestock breeds being extinct or having an endangered or critical status. Major drivers for the loss of genetic resources include the standardisation of production processes, consumer preferences, technological change (e.g. modern breeding techniques), as well as international competition and globalisation. Recent developments in genetic improvement (e.g. molecular breeding, genomics, etc.) have helped to increase agricultural productivity. However, concerns have been raised about risks related to pests and disease outbreaks, in regards to the short term strategy of relying on relatively few species, breeds and varieties. At the same time, hobby breeders are becoming increasingly important actors for the conservation of rare breeds, as well as of traditional crops and crop varieties, representing an opposing trend.

Objectives and Scope of the Preparatory Action

The EU Biodiversity Strategy to 2020 includes an action on conserving Europe's agricultural genetic diversity by encouraging the uptake of agri-environmental measures (see above) and exploring the scope for developing a strategy for the conservation of genetic diversity.

Following an initiative taken by the European Parliament, a Community budget was set aside for a preparatory action for an EU programme for the conservation and sustainable use of genetic resources for food and agriculture. The evaluation of the second Community programme on genetic resources highlighted the need for further actions in relation to the sustainable use of genetic resources. Particular attention needs to be given to the potential of further developing genetic diversity, to adjust to changing local conditions, integrate the use of genetic diversity along the whole production chain and make conservation and use, including locally adapted breeding, a cost-effective and profitable business. The tender specifications of this preparatory action further highlight that dedicated efforts to increase the economic viability of managing, using and breeding local and/or rare breeds and crops should be undertaken.

Therefore, the objectives of this preparatory action are twofold:

- To **provide a comprehensive description and analysis of the state of the art of genetic resources-related activities in the EU** for:
    - Plant genetic resources (PGRs);
    - Animal genetic resources (AnGRs);
    - Forest genetic resources (FGRs); and
    - Microbial and invertebrate genetic resources (MIGRs).

[1)] FAO (2007) The State of the World's Animal Genetic Resources for Food and Agriculture. Barbara Rischkowsky & Dafydd Pilling (eds.). Food and Agricultural Organisation of the United Nations (FAO), Rome. 512p.
[2] FAO (2010) The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture. Food and Agricultural Organisation of the United Nations (FAO), Rome. 399p

- To provide **practical recommendations** to ensure the effective conservation and sustainable use of genetic resources in agriculture as a matter of general interest, not only by looking at research and breeding activities but also considering the complete agro-food supply chain. Recommendations will take into consideration differences between MS regarding the state of agro-biodiversity and related (conservation) policies.

The analysis addresses the objectives stated above across **seven different themes**:

1. **Improvement of the communication between MS** concerning best practices and the harmonisation of efforts in the conservation and sustainable use of genetic resources;
2. **Enhancing networking among key stakeholders and end-users** in view of exploring marketing (and other cooperation) opportunities, such as provided by quality schemes and short supply chains;
3. **Improvement of the exchange of knowledge and research** on genetic diversity in agriculture systems;
4. **Adaptation of breeding methods and legislation** to the need of conservation and sustainable use of genetic resources;
5. **Contribution to the successful implementation of rural development measures** concerning genetic diversity in agriculture;
6. **Explore bottlenecks and enabling conditions for the sustainable use** of genetic resources in agriculture; and
7. **Reduction of the unnecessary administrative burden** so as to provide better access to actions.

The preparatory action outputs provide a wide ranging overview of efforts towards the conservation and sustainable use of agricultural genetic resources in the EU, and in particular address the following terms of reference:

- **Identify, describe and analyse the activities on the conservation and sustainable use of genetic resources for food and agriculture**, in order to provide relevant information concerning the seven different themes described above;
- **Identify missing links and areas to be addressed in future actions** on the conservation and sustainable use of genetic resources for food and agriculture i.e. as a contribution to the exploration of the scope for developing a strategy on the conservation of genetic diversity in the EU.

The geographic coverage of the preparatory action is the EU-28.

Preparatory Action Methodology

The research was organised in a set of structured tasks which includes mainly a mapping of activities and stakeholders in the field of GR, a literature review of the current R&D trends, interviews (330), case studies (21), and workshops (7).

The results of these tasks are published on
www.geneticresources.eu

Conclusions of the Preparatory Action

This section first presents the conclusions per theme, and then the overall conclusions of the study.

Theme 1: Improvement of the communication between Member States concerning best practices and the harmonisation of efforts in the conservation and sustainable use of genetic resources

Past and current efforts at MS and EU levels as regards conservation and sustainable use of genetic resources are recognised by a large majority of stakeholders met and interviewed during the Preparatory Action. However, the same stakeholders consider that Member State authorities are not strongly enough involved in shaping and coordinating genetic resources activities at the European level. The current financial situation of Member State authorities (budget cuts and staff reductions) leads to a very limited involvement in the functioning of the European networks. This is also true for the European Commission where coordination regarding the development and implementation of a genetic resources policy is not sufficiently developed. Interviewees have acknowledged that the importance of genetic resources for food and agriculture is not sufficiently recognised and reflected in wider biodiversity supporting policies of most Member States and the European Commission.

At present, the formal structures at the European level, including the networks ECPGR, EUFORGEN, ERFP, and MIRRI, do not have sufficient impact to promote the conservation and sustainable use of GR at the European level. This is mainly due to lack of funding and recognition from the part of the Member States, the European Commission and stakeholder groups. Furthermore, the expertise and capacities of these networks seem to be underexploited by the Member States and the Commission.

A related issue is the fact that the European networks are not well connected to the current EU policy frameworks (see Theme 4 and 5). The European Union would benefit from an intensified involvement of the European networks in the policy setting of the EU, through e.g. establishing a platform coordinated by an EU focal point for agrobiodiversity. The FAO National Focal Points on Genetic Resources for Food and Agriculture may also play an instrumental role in such initiative. Due to their financial shortcomings, these networks are currently not properly equipped to deal with future challenges, especially following the implementation of the Nagoya protocol in the EU, and resulting from the effects of climate change. The current networks have a strong technical orientation and expertise; however, their impact in practice is limited and often lacks policy focus. An improved balance might enhance the role these networks could play at the EU level, to the benefit of the Member States and the European Commission.

For proper *in situ* management, most of stakeholders consider that existing networks are few and poorly funded, and their span and outreach can be regarded as unnecessarily limited by bureaucratic burden. This type of collaboration should be further strengthened to safeguard Europe's bio-cultural heritage and increase its visibility and attractiveness. The often local dimensions of such initiatives create issues regarding knowledge exchange across MS (including language issues). In this context, one may consider that the current communication channels between *in situ* communities and with *ex situ* oriented programmes to foster integration between *in situ* and *ex situ* approaches, are insufficient. Instead of fully integrating *in situ* in *ex situ* coordination platforms, the alternative could be to develop specific tools to intensify networking. Too often, such exchange hinges on personal contacts. Success stories on collaboration and knowledge exchange across MS and in different sectors should be publicised in order to trigger the interest of additional sectors and to promote further and stronger collaboration across the EU Member States. In addition, *ex situ* conservation and *in situ* management are too often undertaken in different stakeholder communities, isolated from each other and with only limited interest in finding synergies and complementarities. *In situ* and *ex situ* conservation programmes need to collaborate more closely towards the common goal to protect endangered genetic diversity. The European Commission has decided to respond to this need in its H2020 work programme[3]. These programmes also need tools to measure the impact on microbial populations in specific areas and habitats, and should not be limited to plants and animals.

[3] See Horizon 2020 Work Programme, topic SFS-4-2017 on page 23: http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-food_en.pdf

Theme 2: Enhancing networking among key stakeholders and end-users in view of exploring marketing (and other cooperation) opportunities, such as provided by quality schemes and short supply chains.

According to the mapping exercise conducted in the context of the preparatory action, the utilisation of GR and their sustainable use seem to be key for the conservation of the diversity of GR but also for R&D activities. Indeed, utilisation of GR is an increasingly addressed issue in scientific literature. Sustainable use of genetic resources needs a user-friendly legal framework and proportional legal requirements for small producers. The seed marketing directives of cultivated plants have negative effects in the context of valorisation of rare PGR, and has shown to be limiting for small and local producers. More freedom to operate is required to allow for an easier exchange of germplasm between and across seed savers.

A sufficient critical mass is required to develop a sustainable commercial activity. It is important to consider a first stage of up-scaling to guarantee that the number of available animals and seeds is significant enough for the supply chain under development and for the marketing objectives. Successful valorisation projects are often initiated and developed in added value food supply chains. The use of rare GR in organic production system has potential for economic growth of the organic farming sector. The successful development of a "*genetic resource product*" often implements criteria such as the development of traditional products, the set-up of new commercial approaches such as short supply chains, and the development of tourism, with a focus on heritage, local culture and tradition. The regional scope of valorisation projects has a positive impact on the marketing of GR. The use of local trade-marks and quality signs such as the European geographical indications is also seen as an important tool to be used during valorisation projects. These quality signs allow a differentiation at market level and especially at consumer level. Marketing activities should include the dissemination of information, publications, and research results, as well as awareness raising and efforts to bring knowledge and information about GR to the general public.

User guides and methodologies on how to approach these dedicated marketing developments are currently missing and would provide added value. Success stories on valorisation of rare GR and value chain developments should be compiled and distributed via the existing networks. Projects involving a mix of organisations and stakeholders, including both public and private stakeholders, were identified as successful in the context of the preparatory action. A two-step approach is suggested:

- A first step consisting in analysing and characterising products in order to market and label the products accordingly, raise awareness and show consumers the quality and characteristics of these products; and
- In a second step, a network or platform should be reinforced for producers to sell their products, since resources and knowledge required to set up a business are not always available. There are, already, a number of SME promotion programmes (including in the agricultural domain) and support related to the Enterprise Europe Network. Such platforms could also involve stakeholders with a more business oriented approach that could team up with producers.

It has been reported by various stakeholders that funding made available for valorisation projects is in many cases insufficient, and the development of new supply chains are often limited due to the lack of available resources. A large number of valorisation projects may exist but their development does not take-off because resources are not available to initiate the first steps. Additionally, the EU farm promotional programmes could be a very important tool for GR. However, today they do not correspond to the needs of the GR actors. While there are certain exceptions for PGI/PDO products, in general they are focused on export, multi-national cooperation and on big marketing campaigns. The establishment of a "*light version"* for small initiatives with genetic resources would be a positive contribution. Furthermore, the administrative burden overall limits the development of valorisation projects.

The utilisation of rare GRFA could be facilitated by specific local/regional competence centres. These competence centres can take the forms of e.g. Operational Groups from the European Innovation Partnership (EIP) 'Agricultural Productivity and Sustainability'. These coordination groups should include different and complementary actors, and should not be limited to traditional economic actors of the agro-food supply chain. One could consider that local/regional actors acting on tourism, territorial development should also be included in these groups. They would need to act at local level to be able to secure engagement of local actors.

Theme 3: Improvement of the exchange of knowledge and research on genetic diversity in agricultural systems.

Three different aspects of knowledge were considered in this discussion:

- Technical conservation methodologies to preserve the genepools and make these available to potential users (including through *in situ*, *ex situ*, and on-farm approaches);
- Coherent organisation and coordination of GR conservation and sustainable use at the international and national level; and
- Utilisation of GR in breeding and for other services.

It could be observed that the lack of knowledge coupled with the systematic lack of funding to create and disseminate that knowledge, is a major obstacle for the actors in the formal sector. In the informal sector, the difficulty is rather related to accessing the existing knowledge and lessons learnt from other actors involved in similar initiatives elsewhere.

The main conclusion of the analysis can be formulated as follows: Increased knowledge with regard to conservation methodologies will enhance efficiency and efficacy. Most actors involved in conserving GR have to act on a narrow scientific basis. This is mainly due to two factors:

- *The necessary knowledge is not existent due to a lack of dedicated research.* This is true where it concerns typical *ex situ* methodologies (e.g. optimisation of cryo-preservation techniques, tools for optimal characterisation of GR material), *in situ* methodologies (e.g. the effects of climate change on CWR reserves,) and on-farm (e.g. the ability of crops to adapt to a changing environment, effects of in-breeding in animal populations, and the so called "*continued evolution*"); and
- *The knowledge does not sufficiently reach the actors that need it, or is insufficiently adopted.* The knowledge generally resides amongst the academia, in the public sector, and in private companies. Farmers and producers are often reluctant to take advice from the research sector, as the relationship between the two stakeholder groups is not sufficiently developed.

The available knowledge is not fully translated in accessible tools and capacity building materials in the appropriate languages and for the various stakeholder groups. Lessons can be learnt from on-going and past projects in the GR sector that will increase the impact of new GR utilisation initiatives. Due to the lack of coordination and lack of research capacity, the options for non-commercial utilisation of GR in breeding or for other services (e.g. landscape management) are very limited. As many case studies showed, most of the activities were "*re-inventing wheels*", not building on prior experiences or available dedicated research. This concerned most aspects of this utilisation: (alternative) breeding, processing, marketing but also communication and creating sustainability[4]. The strengthening of the documentation aspect of characterisation and evaluation (C&E) data for plant breeders and universities (e.g. C&E-data in national inventories) for monitoring the implementation of FAO´s 2nd global plan for action (GPA) for PGR, EURISCO or a global information system, Art. 17 of the ITPGRFA) should be addressed and recommended.

Theme 4: Adaptation of breeding methods and legislation to the need of conservation and sustainable use of genetic resources.

Breeding methods: Technological developments increasingly offer opportunities for breeding with the help of marker assisted selection, and the use of other molecular tools. These technologies have already significantly changed breeding practices. Modern, highly efficient genotyping methods increase the volume of DNA sequence data and hence the value of genebank collections. These methods are helpful in creating new pre-breeding materials, though efficiency of phenotyping is lagging behind in characterisation of materials and breeding populations.

Most breeding methods are aimed at, or result in, uniformity. However, in organic and low-external-input agriculture, and in the efforts of seed savers, breeding for diversity (and thus increased resilience) is seen

[4] See case studies reports

as a priority, preferably through participatory approaches. In order to conserve and sustainably use local genetic resources, one must develop and implement proper breeding strategies, taking advantage of the specific features of local breeds and varieties, such as pest or disease resistance and higher tolerance to sub-optimal conditions (animal breeds and new tolerant plant varieties). Again, marker-assisted and sequence-based selection will be helpful in improving efficiency of breeding and characterization of plant materials and in the maintenance of traditional animal breeds. However, not all breeders, and not all crops, can afford to use these advanced technologies. With the fast development in sequencing technology, marker-assisted selection is becoming less costly. Nevertheless, crops with high return and top commercial values are the ones that benefit from the use of these technologies first, and benefits are harder to achieve for small crops. Therefore, a need to re-inforce capacities for the phenotypic and genotypic characterisation of accessions was highlighted by stakeholders. These efforts would need support from public funding or in the case of high-value crops; this could ideally be done in the form of public/private partnership approaches.

Legislation: Legislation is focused on mainstream agriculture. This includes in particular seed legislation, and phytosanitary and veterinary legislation. For small/medium (organic) companies and NGOs (seed savers), this legislation may be difficult to comply with because of different objectives and lack of resources. The following legislations were put forward as highly relevant:

ABS regulation may limit access to genetic resources to be used and/or conserved. There are several issues surrounding the implementation in the EU of the Nagoya Protocol (2010), which provides an international legal framework for the effective implementation of the Convention on Biological Diversity (CBD) related to fair and equitable sharing of benefits arising from utilisation of genetic resources. Most interviewees have indicated that the current status of implementation leads to uncertainty regarding which GR exchanges will be feasible or not. A second issue observed is related to the compilation of information required to complete the legal requirements on documentation of the transactions, in particular in the form of the agreed Material Transfer Agreements (MTAs). These requirements lead to an increased administrative burden. Interviewees also clearly mentioned that complementary implementation of both the Nagoya Protocol and the ITPGRFA should be kept in mind by all actors and that collaboration by relevant authorities should be intensified.

The seed marketing directives may form a major obstacle for the development of commercially viable activities and supply chains based on non-uniform material. Farmer's varieties, old varieties, conservation and amateur varieties, and landraces are often genetically heterogeneous and for that reason many of them may not pass DUS criteria required for the registration of new varieties. The current legislation, and more particularly the legislation on conservation varieties, is seen as restricting and costly for small and local producers. The newly proposed and rejected EU Regulation on marketing of plant productive material meant to improve the situation, though various stakeholders expressed concerns that this will be insufficient to facilitate the use and to stimulate the commercial exploitation of such varieties and landraces. The rejection of the Commission's proposal in 2014 implied that measures perceived by many stakeholders as improvements will not be implemented.

With regard to **intellectual property**, the issue related to the patenting of native traits is being seen as a threat for local breeding programmes, on-farm development of varieties, and participatory breeding, as the outcome of their breeding activity may not be freely marketable. Breeding for such traits may become restricted to companies that will be able to afford to pay for the access to these proprietary traits. To some extent, genebanks can address this issue with the standard MTA. However, genebanks are also increasingly confronted with a privatisation of traits in their publicly available collections.

The current EU legislation for animal genetic resources should be reviewed in order to better support the conservation and sustainable use of local and transboundary breeds, to ensure sustainability, and to limit the negative impacts of necessary rules and avoidance of unnecessary burdens for breeders (e.g. obligations for genetic evaluation for bulls).

Theme 5: Contribution to the successful implementation of rural development measures concerning genetic diversity in agriculture.

The agri-environment measures, forming part of the most recent reform of the Rural Development policy, offer Member States the opportunity to target the level of practical farming to perform on-farm

conservation of genetic resources[5]. Agri-environment measures include the possibility to compensate farmers for additional costs and income foregone resulting from conservation activities aiming to preserve endangered breeds and crops under threat of genetic erosion. These were made available only two years ago. As a consequence, it is difficult to draw any conclusions on the success of the implementation of these measures. Serious monitoring and evaluation of these measures have not yet been performed. Nevertheless, a few preliminary conclusions might be formulated:

The legal basis for payments for agri-environmental measures (including payments for the maintenance of traditional grasslands and rare breeds or traditional/ conservation varieties), organic farming (closely related to agrobiodiversity) and Natura 2000 (established to protect biodiversity) are in place. However, in some countries, e.g. the Netherlands, rural development measures hardly address genetic diversity objectives. The current set-up of the rural development framework at the EU level leaves room for this. The main factors explaining the limited success of current and previously implemented rural development measures concerning genetic diversity in agriculture include limited awareness of agri-environmental measures to support genetic diversity conservation among stakeholders, relatively low levels of financial support, and high levels of administrative burden. Maximum grants for these measures need to be increased to become more effective. The newly established European Innovation Partnership "*Agricultural Productivity and Sustainability*" (EIP-AGRI) allows for the establishment of operational groups at the local level that would perfectly serve the need of conservation of genetic resources *in situ* and on-farm; and could also be considered as attractive platforms to initiate a valorisation project of neglected/underutilised crops or rare breeds. Additionally, it may be considered that these platforms could recognise the importance of farmers as drivers for attaining economic, social and environmental goals, and for the purpose of maintaining genetic resources on-farm.

Theme 6: Explore bottlenecks and enabling conditions for the sustainable use of genetic resources in agriculture.

A widely felt bottleneck that immediately surfaced during the study is the lack of a correct understanding and appreciation of the subject matter by various target groups. Too often, genetic resources are considered by the general public as simply biodiversity issues. In that context, the issue of genetic resources is only associated with traditional varieties, rare breeds, and neglected crops, while genetic resources are not understood in a wider sense, including not only old cultivars but also modern varieties and breeds. In fact, the distinction between biodiversity at large and the special role of agro-biodiversity is not well understood along the supply chain and by its various actors.

The consequence of this limited understanding and separation between biodiversity and agrobiodiversity leads to the risk that the focus of EU policy and funding is on all genetic resources as defined in the CBD Convention rather than on the specific character of agro genetic resources. Concrete communication on the relevance of agro-biodiversity and cultivated biodiversity is needed to address its special features in relation to biodiversity in general.

In addition, sustainable use of genetic resources for food and agriculture would benefit from an increased awareness regarding its relevance. Currently, the field of genetic resources conservation is often limited to researchers and experts. Initiatives related to awareness raising, education, and other activities aiming to bring information about genetic resources for food and agriculture to the general public were mentioned as enabling conditions for their sustained management.

Genetic resources of all domains play an important role in the formal agro-food value chains, in particular in local supply chains. Therefore, when developing R&D and valorisation programmes addressing potential applications of genetic resources, it is central to have a clear overview of all associated actors in the chain. Farming plays a critical role in this supply chain as it represents the primary production phase, and the very start of the chain. Valorisation and sustainable use of GRs start at farming level for most of the PGRs and AnGRs. At this primary production stage, there is a clear bottleneck for increasing the genetic variability, and thus also for the potential to develop new products, whereas one can observe a reduction of cultivated biodiversity and life-support functions at the field level. When several research

[5] Commission Delegated Regulation (EU) No 807/2014 supplementing Regulation (EU) No 1305/2013 and Commission Implementing Regulation (EU) No 808/2014 laying down rules for the application of Regulation (EU) No 1305/2013

projects already exit, stakeholders consider that these types of research should be further enhanced (see Theme 3). [6]

In food processing, genetic resources and in particular microbial genetic resources (e.g. fermenting microorganisms; or biotechnological derivatives of genetic resources such as enzymes, protein extracts or nano-proteins) play an important role. Here again, the reduction of variability in the genetic resources available may restrict the potential to develop new innovative and high-value food products.

Sustainable use of underutilized, local genetic resources at local levels should be promoted. Financial support targeting family farmers undertaking such efforts would certainly benefit conservation as their local knowledge helps to preserve the genetic diversity and adds to the culture of the region. Furthermore, agro-tourism and gastro-tourism are key in the sustainable use of GR. Tourism companies are the immediate partners and without local and regional gastronomy and charm, farmers would not be able to offer and market their traditional and regional products. Tourist activities were reported to provide a means of supporting the conservation of GR.

Projects which are not demonstrating added value for the final actors /end users in the value chain appear to be hardly sustainable. Once a product has been developed and interest and demand from end users have been demonstrated, a critical mass and proper expertise are required to develop a marketing plan. In a number of cases, these conditions are not fulfilled. As a consequence, business opportunities are reduced and the economic sustainability of the project appears at risk. Finally, the lack of proper funding implies a threat to the continuity of most activities. A variety of interesting projects are initiated through project funding, but encounter difficulties once the funding period ends.

The main enabling conditions identified under theme 6 can be summarised as follows:

Public private partnerships (PPPs) are seen as an interesting tool to resolve the lack of characterisation of *ex situ* collections. Public sector scientists and breeders should be encouraged to invest in characterisation (phenotyping and genotyping) and to share the acquired knowledge with all actors which are part of the PPP project. The collaboration undertaken by both NordGen and Breedwheat form clear good practices in this context.

The development of alternative products marketed via alternative supply chains benefits from the existence of networks of farmers at local levels. There is a need to further develop these alternative supply chains at the EU level and to further disseminate good practices on the valorisation of GRs. The operational group approach of the European Innovation Partnership (EIP) potentially offers expertise, capacities and funding for the development of local initiatives, communication channels for their target groups, and for dissemination of good practices. In these EIPs, links can be created between different actors who need to work together but whom, too often, are not aware of each other's activities.

The current data management systems that have been created by the European networks (ECPGR, ERFP, MIRRI, EUFORGEN) offer a robust basis to further develop pan-European data management and data sharing between *ex situ* collections and with user communities. Data harmonisation and inter-operability of data management systems are still limiting data exchange and data dissemination across countries and communities, and between *in situ* conservation experts themselves.

Theme 7: Reduction of the unnecessary administrative burden so as to provide better access to actions.

Many stakeholders that were consulted in the context of the preparatory action generally agreed that a substantial administrative burden is related to the undertaking of efforts to conserve and use genetic resources. In particular, the implementation of the Nagoya Protocol, the application process for getting subsidies from the EARFD, and the administration of EU DG-AGRI projects were raised as main issues. For smaller organisations, such as NGOs and SMEs, this is an even more critical issue as the capacity and resources available to deal with the administrative burden are limited. As a consequence, such organisations often choose not to make the efforts to access certain measures and thus abandon opportunities to participate in these actions.

[6] see for example projects DIVERSIFOOD, TRADITOM and TREASURE funded under topic SFS-7-2014 of Horizon 2020 Work Programme 2014/2015 (see page 15):

Overall recommendations (the Vision)

The general conclusions allow the formulation of preliminary recommendations which are built on practical and detailed suggestions formulated by stakeholders and public authorities met during the Preparatory Action. Major recommendations that have emerged from the discussions per theme have been grouped to allow a clear identification of problem areas. The order in which these recommendations are placed does not necessarily reflect their relative priority.

1. **Define agro-biodiversity in the EU agricultural legislation:** Secure a correct understanding of the term agricultural biodiversity, with reference to the much wider definition of genetic resources in the Convention on Biological Diversity (CBD). Agricultural biodiversity includes all components of biological diversity (at the genetic, species and ecosystem levels) relevant to food and agriculture which are necessary to sustain the key functions of agro-ecosystems.

2. **Re-inforce EU governance and optimise links with international and national activities by setting up a EU platform to secure an optimal coordination between the different existing bodies and to tackle new challenges (e.g. legal, funding capacities)**, the role of which will be to:
   - Assign formal responsibilities and create transparency on the distribution of competence and responsibilities between regional, national and EU stakeholders and institutions, as well as between these and international bodies and organisations;
   - Enhance dialogue and coordination across the different EC DGs dealing with genetic resources;
   - Liaise with FAO as a further means to secure the coordination of actions at international, EU, and Member States level. Use and actively promote synergies which may emerge from strengthened cooperation at national, transnational and international levels;
   - Improve the involvement of farmers' organisations in policy development and activities related to plant genetic resources for food and agriculture (PGRFAs) as incorporated in the International Treaty that calls on governments to create a stronger involvement of farmers in policy development related to PGRFA;
   - Create an EU platform to foster information exchange in order to promote the EU-wide adoption of best practices and harmonisation of efforts, involving the established European-wide networks ECPGR, ERFP, MIRRI and EUFORGEN; and
   - Communicate on new challenges such as the implementation of ABS Regulation.

   A new coordination platform could take different forms and should build on already existing expert and thematic groups. Mid-term, such a platform may eventually take other forms such as an EU technical secretariat or agency.

3. **Support partnerships and cooperation between actors at all levels in the supply chain:**
   - Complement the existing European networks on genetic resources by supporting the creation of a network addressing MIGR (and possibly AqGR);
   - Actively support EU users' networks (farmer networks, seed savers, others NGOs) in the exchange of knowledge and best practices in the field of on-farm and *in situ* conservation and use, in order to promote the development of regional and local supply chains as well as traditional and local products; and
   - Promote integrated approaches between *in situ* and *ex situ* activities (coordinated by the coordination platform).

4. **Further develop R&D programmes for the dynamic conservation and management of GR, and promote European, national and regional R&D programmes exploring the sustainable use of genetic resources for better food and nutrition.** R&D programmes often exist but there are not enough known at local level. Further dissemination and awareness raising regarding these programmes and support possibilities are required.

5. **Develop an appropriate infrastructure for pre-breeding activities**, addressing *inter alia* the characterisation on a genetic level to build up knowledge about the genetic diversity and evaluation on a phenotypic level to receive information about priority genetic and agronomic traits of GRs in *ex situ* collection through the adoption of new approaches and the establishment of interdisciplinary teams. The infrastructure would preferably be through a public and private partnership (PPP). Improve the accessibility of public *ex situ* collection to end-users.

6. **Strengthen advisory services as a robust link between research and production (between scientists and farmers/producers).** Traditional advisory services (e.g. technical institutes) should ideally act as knowledge brokers/facilitators to 1) secure the correct transfer of information from research to production for valorisation, and 2) to re-orient stakeholders in the product chain to better understand what users want and how to respond to these needs in a sustainable way.

7. **Establish European Innovation Partnerships (EIP) operational groups to develop and reinforce GR valorisation projects of neglected and underutilised crops as well as rare breeds**. Use EIP to develop new business models adapted to GRs. NGOs, universities, producers, and entrepreneurs all play a role in fostering such valorisation. EIP operational groups can provide a framework (and funding) for such cooperation, in connection with H2020 projects activities and results dedicated to genetic resources exploitation (e.g. as in the 2014-2015 topics SFS-7).

8. **Improve value chain cooperation for rare breeds and underutilised/neglected crops by facilitating up-scaling of the their number of breeding animals and seeds, promoting the added value (biodiversity, tourism, cultural heritage) and the use of European geographic indications of rare GR and offering funding for such cooperation.**

9. **Promote wider public/consumer awareness for the attractiveness of more diverse food, nutritious diet, and non-food products, and promote consumer demand accordingly**, through the platforms established above (e.g. technical secretariat, operational groups of EIP, public authorities, and advisory services) and R&D programmes.

10. **Review and secure coherence of existing legislation to facilitate and promote the conservation and sustainable use of genetic resources for food and agriculture.** This legislation includes veterinary, phytosanitary, seed marketing, GMO, invasive species, novel food, and ABS legislation as well as the different EU regulatory frameworks and national legislation**.**

11. **Review and promote effective conditions to grant funding via the agri-environmental measures (AEMs) of the rural development policy (RDP) on the maintenance and use of genetic diversity in agriculture (e.g. adding collective financial support for collective measures).** These financial supports could be granted to support activities of EIP Operational Groups when established.

12. **Reduce administrative burden, especially for SMEs,** given their pivotal role in exploring the use of genetic resources for food and agriculture, in particular in the context of the implementation of the Nagoya Protocol and in relation to AEMs in the Rural Development policy.

13. **Secure long term funding for the actions identified above by developing a European Union agrobiodiversity strategy and planning for activities during forthcoming EU budget negotiations.** Particular attention should be given to the following options:

    - Identify synergies with technical institutes in charge of variety registration in each MS to fund *ex situ* collections; and
    - Review options for the EC to participate in funding of the existing regional networks. These may serve as platforms to enhance science-policy-practice dialogues, to increase cooperation and coordination among Member States, to assess and communicate relevant scientific knowledge, and to coordinate the development of common strategies. A permanent source of funding from the Commission will ensure the long-term commitments needed to coordinate the conservation and the sustainable use of genetic resources for food and agriculture in the EU.

In summarising these main recommendations, the EU needs to develop **an EU agro-biodiversity strategy that considers conservation and valorisation of GRs in harmony with the EU Biodiversity Strategy (Target 3)[7].** This strategy should encompass different domains and different Directorate Generals (DGs) of the European Commission (EC). It has to be considered as complementing and strengthening the current Biodiversity strategy developed by DG Environment, by securing the full coverage of "*cultivated biodiversity issues*". The EU coordination platform as mentioned above should be the central body for further elaborating this strategy. Opportunities of using existing tools such as the EIP Operational Groups should be fully explore in order to develop valorisation projects at local/regional level.

[7] http://ec.europa.eu/environment/nature/biodiversity/strategy/index_en.htm