

*This report is a draft version. Work is still on progress.
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**Directorate General for
Agriculture and Rural
Development**

**Preparatory action on
EU plant and animal genetic resources
(AGRI-2013-EVAL-7)**

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Genetic resources for value chain development

11-12 January 2016, Brussels

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WORKSHOP REPORT

11-12 January 2016, Brussels, Belgium

The Workshop took place in the context of the study launched by DG AGRI of the European Commission called "*Preparatory action on EU plant and animal genetic resources*" which is being conducted by a Consortium of experts and consultants. It started in July 2014 for duration of 2 years to create an overview of actors, networks, activities and issues regarding conservation and sustainable use of GR in Europe.

A total of seven workshops are planned during the period June 2015 – March 2016. Each workshop is dedicated to specific topics/issues linked to a specific regional context and/or covering sectorial or methodological issues in the field of genetic resources. These workshops cover the four different domains under scrutiny: AnGR, PGR, FGR, and MiGR.

The outcomes of the workshops should provide recommendations concerning approaches and solutions applicable for the conservation and sustainable use of GR, reflecting the objectives and themes of the preparatory action.

More information on the objectives of the study can be found on the study website: <http://www.geneticresources.eu>.

The Workshop is the fifth of the series and covered the valorisation of genetic resources in the agro food value chain.

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1 Introduction

The fifth workshop of the preparatory action titled “**Genetic resources for value chain development**” was held in Brussels, Belgium on January 11-12, 2016. It was prepared by:

- **Sebastian Winkel** (Federal Office for Agriculture and Food-BLE, Germany); and
- **Daniel Traon** (Arcadia International, Belgium)

The following additional experts provided significant input towards the success of the workshop in their capacity as presenters:

- **Bela Bartha** (ProSpecieRara, CH)
- **Christoph Zimmer** (BESH, Germany)
- **Klaus Rapf** (Arche Noah, Austria)
- **Christiane Duchêne** (European Seed Association, EU)
- **Christina Bantle** (Universität Kassel Fachgebiet Agrar-und Lebensmittelmarketing, Germany)
- **Peggy Direyckx Visschers** (EC DG AGRI, EU)

The focus of Workshop 5 was to exchange experiences on past and current valorisation of genetic resources in the agro-food supply chain. During the first part of the workshop, presentations were dedicated to describe how plant and animal genetic resources were used to develop novel and niche markets. Then additional presentations focused on presenting genetic resources uses in dedicated supply chain (e.g. organic and quality standard: PDO-PGIs).

2 Background

Plant and animal genetic resources for agriculture and food production are the biological basis of global food and nutrition security. Apart from their potential economic importance (contributing with specific qualities to breeding programmes or producing quality products for niche markets), local or regional breeds and varieties are also of key socio-ecological importance. For instance, they might be adapted to specific environmental conditions (e.g. landscape management in marginal areas that depend on grazing; breeds that cope better than high-performance breeds with conditions of organic agriculture or extensive cultivation). Moreover animal and plant genetic resources are part of our cultural heritage.

Threats to genetic resources for agriculture and food production have been substantial over the last 100 years (FAO 2007¹; FAO 2010²). 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.

The conservation and sustainable use of genetic resources for food and agriculture (GRFA) is a widely supported international objective as they provide the biological basis for agricultural production and world food security. Over the past 30 years, there have been a number of major developments in the form of international agreements (e.g. the **Convention on Biological Diversity (CBD)**³, the **Agenda 21** in 1992 which is not a legal instrument but which has a high political importance and it includes conservation and sustainable use of animal and plant genetic resources, the **Global Plans of Actions from the FAO**, the **Nagoya Protocol** and the **International Treaty on Plant Genetic Resources for Food and Agriculture** addressing conservation and use of GRFA of which we mention the main ones.

The EU has been addressing conservation and use of genetic resources for agriculture in a series of legislations and activities. The framework conditions set-up for sustainable agriculture through the Common Agriculture Policy of the EU (CAP) have been significantly improved in recent years. With the CAP's so-called "*health check*" in November 2008, the EU Council of Agriculture Ministers adopted a resolution to give stronger support to agriculture in mastering the new challenges, including climate change as well as biodiversity issues, and to further develop the resolutions adopted in the agricultural reform in 2003. The agri environmental measures are an essential instrument in helping to attain these CAP goals. The legislative foundation for funding the agricultural activities is **Regulation (EC) No. 1305/2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD Regulation)**. Furthermore the seed marketing directives regulating the placing to the market of plant varieties are controlled at both national and European level. Legislation has been adapted in 2008 as issues were faced when growers were interested in old heritage varieties. Changes to EU legislation have been introduced by the so called **Conservation Varieties Directives**, which are implementing various measures for the marketing of conservation and 'amateur' varieties and preservation mixtures. The Commission Implementing Decision of 18 March 2014 on the organisation of a temporary experiment providing for certain derogations for the marketing of populations

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. 512 p.

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. 399 p.

³ CBD (2011) Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity. Secretariat of the Convention on Biological Diversity, United Nations Environmental Programme, Quebec, Canada. 25 p.

of the plant species wheat, barley, oats and maize pursuant to Council Directive 66/402/EEC is particularly important for some traditional landraces. Very important for the livestock sector is the EU zoo-technical legislation which provides a legal structural framework (e. g. herd-books, breeding associations) for the management of animal genetic resources of equine, bovine, ovine, caprine and porcine livestock species.

Alongside this, there are various EU Action Plans with relevance for the conservation of agricultural biodiversity (e.g. GENRES projects, the European multi-annual **Research Framework Programmes**⁴, the Framework Programme or successor legislation (**Horizon 2020**), **LIFE+** is the EU's only dedicated fund for the environment and the **European Innovation Partnership** (EIP) which is a new approach to Research and innovation in the EU.

However, one can observe that when significant efforts have been devoted for the conservation of genetic resources in e.g. genebanks, but less efforts have served the valorisation of genetic resources when it relates to rare breeds and varieties.

Challenges in the promotion and marketing of rare crops and breeds in agriculture have been reported by several authors. Padulosi et al. has summarised these important factors, other than lack of research funding, and grouped them in 10 categories of constraints⁵ as most relevant for the promotion of rare crops and breeds:

- Low competitiveness;
- Lack of knowledge on uses;
- Lack of research on GR assessment and use;
- Policy and legislation;
- Loss of traditional knowledge;
- Lack of market/poor commercialisation;
- Low income;
- Lack of propagation techniques;
- Scarcity of knowledge on cultural practices
- Lack of attractive traits.

Some of these constraints are not really linked to economic factors (lack of funding for research and development, low economic value of the production) but lies in the strategic and operational mobilisation of existing resources and capacities to address the real problems limiting the full utilisation of the GRFA. In order to capture the

⁴ Decision No 1982/2006/EC of the European Parliament and of the Council concerning the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007–2013)

⁵ FAO also listed the major threats for AnGR. see <http://www.fao.org/3/a-a1404e.pdf>

potential market value of products developed from rare crops and breeds, there is a need to better integrate efforts of all stakeholders all along the supply chain at the different stages of the production chain. In particular, the involvement of local actors that are trying to develop alternative products (e.g. organic products) and supply chains (e.g. short supply chains) are of key relevance. The importance of partnerships: co-building approaches has also to be highlighted.

Several research activities have promoted the need to develop to find and strengthen outlets for economical valorisation to continue the development of underutilized breeds with less (or even without any) genetic selection.

For instance the VARAPE project (rare breeds' valorisation with short supply chains), coordinated by Institut de l'Élevage from 2012 to 2014, confirmed and reinforced the knowledge about opportunities or difficulties related to rare breed value-creation. It highlighted that breeders groups can take advantage of their breeds characteristics by transforming their threats in attracting features. But some points are hard to overcome: small number of breeders and animals, dual-purpose of ancient breeds or lack of technico-economical knowledge.

The best way to maintain rare breeds is to develop initiatives that make these breeds economically self-sustaining^{6,7}. This is most immediate when it comes to marketable products (i.e. that have a market value). Many examples of such initiatives have been reported, showing a diversity of successful and unsuccessful cases of development of market chains for typical or quality products⁸. The physical environment in which regional⁹ breeds are raised influences the final quality of the food product at the end of the product chain and may therefore strengthens the market position of these products. Within the wider concept of "ecosystem services", regional breeds, and their associated agro-systems, can be valued for the services they provide (provisioning, regulating, supporting and cultural)^{10,11}. Main emphasis has been on the identification and valuation of "provisioning" services where observable markets actually exist to reveal

⁶ Gandini and Oldenbroek, 2007. Utilisation and conservation of farm animal genetic resources. Wageningen Academic Publishers

⁷ Hiemstra, S.J., Haas De, Y., Mäki-Tanila and Gandini, G., 2010. Wageningen Academic Publishers. ISBN: 978-90-8686-144-6.

⁸ Lambert-Derkimba et al., 2013. How the development of products valorizing local breeds changes breeding goals: examples from French cattle breeds. *Animal Genetic Resources* 53, 135–140.

⁹ In the context of this workshop report the term „regional“ describes a geographical origin of GRFA in a small scale region within a country. However it can also be a certain area across two or more countries, in which the respective GRFA has been originated.

¹⁰ <http://www.teebweb.org/resources/ecosystem-services/>

See also D.W. Pearce and D. Moran (1994) *The Economic Value of Biodiversity*, Earthscan

¹¹ Bateman, I.J.; Harwood, A.R.; Mace, G.M.; Watson, R.T.; Abson, D.J.; Andrews, B.; Binner, A.; Crowe, A.; Day, B.H.; Dugdale, S.; Fezzi, C.; Foden, J.; Hadley, D.; Haines-Young, R.; Hulme, M.; Kontoleon, A.; Lovett, A.A.; Munday, P.; Pascual, U.; Paterson, J.; Perino, G.; Sen, A.; Siriwardena, G.; van Soest, D. & Termansen, M. (2013) Bringing ecosystem services into economic decision making: Land use in the UK. *Science*, **341**, 45-50.

values¹². Hence, the status (and fortunes) of some traditional breeds (have) has been improved by enhancing their market value, by the use of “*appellation systems*” that allow niche development for specific product attributes.

Less attention has been focussed on the “*regulating and supporting services*”, which are more indirect forms of value, deriving from the role (service) provided by a given regional breed and its agro-ecosystem. Hence livestock grazing habits may have particular impacts favourable to the green infrastructure (http://ec.europa.eu/environment/nature/ecosystems/index_en.htm) soil quality, biodiversity, bushes encroachment and grass coverage control. *Cultural services*^{13,14} are a fourth category of “*ecosystem services*” provided by regional breeds and associated agro-ecosystems. Regional breeds are often conserved as elements of cultural mosaics (bio culturism), coupled to local cultural and intangible heritage¹⁵: rural landscapes¹⁶, traditions, artisan crafts, folklore and belief. In some regions the presence of regional-typically breeds in the landscape and their use in traditional production systems are also economically important for the tourism sector. However, convincing and consistent market development in support of local breed related cultural values is often absent. Heritage values could be marketed more effectively, either through product supply chains, indirectly through the tourism sector and supported by payments for agri-environmental services.

Valorisation of underutilised genetic resources is then not only a question of economics. It should be estimated by considering criteria that range further the single economic ones. Environmental and social criteria should also be considered when evaluating the “*added value*” of products elaborated from such types of GRs. It is observed that such criteria and corresponding indicators have not been fully developed at this stage.

Some initiatives studied about success factors and limits of a collective project to develop short supply chains. The VARAPE project (see above) was based on 13 breed surveys (production and marketing inventory, local committee and exchange meetings...) as well as the analysis of 16 breed approaches with a significant products marketing experience. The analysis led to create the “Varape” - for “*Valorization of the Rare Breeds*” - guide, by identifying what questions the breeders groups have to ask themselves, and what are the conditions of success of different quality labels (brand,

12 Tienhaara, A., Pouta, E. & Ahtiainen, H. 2013. Consumers as conservers - could consumers' interest in a specialty product help to preserve endangered Finncattle? *Agroecology and Sustainable Food Systems*, 37: 1017-1039.

13 Chan, K.M.A.; Satterfield, T. & Goldstein, J. (2012) Rethinking ecosystem services to better address and navigate cultural values. *Ecol. Econ.* **74**, 8–18.

14 Hernández-Morcillo, M.; Plieninger, T. & C. Bieling (2013) An empirical review of cultural ecosystem service indicators. *Ecol. Indicators*, **29**, 434-444

15 UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2003)

16 Gandini G.C. and Villa E., 2003. Analysis of the cultural value of local livestock breeds: a methodology. *J. of Animal Breeding and Genetics* 120: 1-11.

PDO, joint marketing...). This tool is intended to breeders groups that plan to create a collective network for adding value to a rare breed's products. Thanks to the guide, that can provide support and guidance to their project for setting realistic aims and Action Plan. The guide also proposes a variety of resources (about official quality labels, short distribution channels, description of difficulties faced by the groups and good ideas to overcome them...) as food for thought.

All in all, the workshop aimed at discussing all these issues of valorisation of GRs by first presenting success case stories in the fields of AnGRs and PGRs; and then reflecting on the leverages and issues these actors are/have been facing.

Box 1: Literature and additional key documents addressing valorisation of genetic resources in the agro-food supply chain

- Chishakwe NE** 2008. An Overview of the International Regulatory Frameworks that Influence the Conservation and Use of Underutilized Plant Species. GFU, Rome, Italy. 31 pp.
- Chishakwe NE** 2008. The Role of Policy in the Conservation and Extended Use of Underutilized Plant Species: a Cross-National Policy Analysis. GFU, Rome, Italy. 31 pp.
- Dawson IK, Guarino L, Jaenicke H.** 2007. Underutilised Plant Species: Impacts of Promotion on Biodiversity. Position Paper No. 2. ICUC, Colombo, Sri Lanka. 23 pp.
- Dawson IK, Jaenicke H.** 2006. Underutilised Plant Species: The Role of Biotechnology. Position Paper No. 1. ICUC, Colombo, Sri Lanka. 27 pp.
- EAAP Animal Genetic Resources Working Group (WG-AnGR) and the European Regional Focal Point (ERFP)** organized a session "Strategies to add value to local breeds" at EAAP-2010, Crete http://www.eaap.org/Previous_Annual_Meetings/2010Crete/Sessions/Session_14.html and then published cases in an AGRI – special issue <http://www.fao.org/docs/eims/upload/314794/I3445Tri.pdf>
- Gandini and Oldenbroek, 2007.** Utilisation and conservation of farm animal genetic resources. Wageningen Academic Publishers
- Gandini G.C. and Villa E.,** 2003. Analysis of the cultural value of local livestock breeds: a methodology. J. of Animal Breeding and Genetics 120: 1-11.
- GFU.** 2004. Approaches and Decision Steps for the Promotion and Development of Underutilized Plant Species. GFU, Rome, Italy.
- Guijt I, Hinchcliffe F.** 1998. Participatory valuation of wild resources: an overview of the hidden harvest methodology. IIED, London.
- Hermann M.** 2009. The impact of the European Novel Food Regulation on trade and food innovation based on traditional plant foods from developing countries. Food Policy 34:499-507.
- Hiemstra, S.J., Haas De, Y., Mäki-Tanila and Gandini, G., 2010.** Wageningen Academic Publishers. ISBN: 978-90-8686-144-6.
- IPGRI.** 2006. Back by popular demand: the benefits of traditional vegetables. IPGRI, Rome, Italy.
- IPGRI.** 2002. Neglected and underutilized plant species: strategic action plan of the International Plant Genetic Resources Institute. IPGRI, Rome, Italy.
- Jaenicke H, Höschle-Zeledon I,** editors. 2006. Strategic Framework for Underutilized Plant Species Research and Development. ICUC, Colombo, Sri Lanka, GFU and IPGRI, Rome, Italy.
- Lambert-Derkimba et al., 2013.** How the development of products valorizing local breeds changes breeding goals: examples from French cattle breeds. Animal Genetic Resources 53, 135–140.
- Larson J.** 2007. Relevance of geographical indications and designations of origin for the sustainable use of genetic resources. GFU, Rome, Italy. 95 pp.
- Nelson RJ, Naylor RL, Jahn MM.** 2004. The role of genomics research in improvement of "orphan" crops. Crop Science 44:1901-1904.

Padulosi S, Bergamini N, Lawrence T, editors. 2011. On-farm conservation of neglected and underutilized species: status, trends and novel approaches to cope with climate change. Proceedings of an International Conference; 14-16 June 2011, Friedrichsdorf, Frankfurt. Bioversity International, Rome, Italy.

Slow Food Presidia in Europe: A Model of Sustainability. An assessment of the sociocultural, agri-environmental and economic results, 2000-2012.

TEEB, The Economics of Ecosystems and Biodiversity, www.teebweb.org

Thies E. 2000. Promising and underutilized species, crops and breeds. GTZ, Eschborn, Germany.

Withers L. 2005. Strategic approaches for funding work on underutilized species. GFU, Rome, Italy. 18pp.

3 Agenda of the Workshop

The agenda presented below was developed to facilitate discussions after presentations by dedicated speakers that had the objective to set-up the scene.

On the first day a plenary session was organised where four speakers introduced their experience in the valorisation of genetic resources in different plant and animal supply chains. A mix of experiences presenting valorisation examples in short supply chains or conventional ones, for rare crops and breeds or conventional crops was combined to allow covering, as wide as possible, the variability of supply chains that exist in the agro-food sector(s).

On the second day the plenary session, also included three speakers who presented the opportunity of using several key tools for the promotion and valorisation of genetic resources.

At the end of the half-day session, time was devoting to exchange view points and additional experience between the workshop participants. These final sessions brought together the important gaps and actions needed for improving and enhancing GR valorisation schemes.

Monday 11th January 2016

13.00	<i>Registration</i>	
13.30 – 13.40	Reminder of the objectives of the study Objectives of the workshop	Daniel Traon (Arcadia International)
13.40 – 13.50	Welcome of participants by European Commission	Sirpa Karjalainen (EC-DG AGRI)
13.50 – 14.00	Introduction Day 1	Daniel Traon (Arcadia International)
14.00 – 14.30	Marketing efforts of ProSpecieRara for rare Genetic Resources for Food and Agriculture	Bela Bartha (ProSpecieRara)
14.30 – 15.00	Experiences of the „Bäuerliche Erzeugergemeinschaft Schwäbisch Hall“ with the utilisation of rare pig breeds	Christoph Zimmer (BESH)

15.00 – 15.30	<i>Coffee break</i>	
15.30 – 16.00	Experiences of the "Biohof Rapf" with rare genetic resources and with "Arche Noah" projects in Austria	Klaus Rapf (Biohof Rapf and Arche Noah)
16.00 – 16.30	The contribution of the private breeding sector to sustainable use and conservation of genetic resources.	Christiane Duchêne (European Seed Association)
16.30 – 17.30	Discussion: what can be learned from these examples? (wrap-up of Day 1)	All participants

Tuesday 12th January 2016

8.30 – 8.45	Introduction Day 2	Daniel Traon (Arcadia International)
8.45 – 9.15	Connection of neglected and/or underutilised Genetic Resources for Food and Agriculture with organic farming	Sebastian Winkel (BLE-IBV)
9.15 – 9.45	Neglected and/or underutilised Genetic Resources for Food and Agriculture for the value chain from the scientific point of view	Christina Bantle (Universität Kassel Fachgebiet Agrar- und Lebensmittelmarketing)
9.45 – 10.15	<i>Coffee Break</i>	
10.15 – 10.45	Protected Designation of Origin and Protected Geographical Indication for the sustainable use of Genetic Resources for Food and Agriculture	Peggy Dieryckx Visschers (EC- DG AGRI)
10.45 – 11.45	Discussion: what can be learned from these presentations? (wrap-up of Day 2)	All participants
11.45–12.00	Conclusions	

4 Summary of the presentations (*setting the scene*)

The programme was built around seven presentations with time for supportive and follow up discussions on the valorisation of genetic resources. The seven presentations are included in the Annex to this report. The summary of each of these presentations reads as follows:

Marketing efforts of ProSpecieRara for rare Genetic Resources for Food and Agriculture - Bela Bartha (ProSpecieRara)

ProSpecieRara is a non-profit and non-governmental organisation that conserves and actively promotes biodiversity in agriculture since 1982. In close cooperation with farmers, private and public institutions and many volunteers ProSpecieRara guarantees the survival and sustainable use of endangered cultivated plants and rare breeds.

The organisation set up the development of the collections which mainly consists of landraces and formerly commercialized crops that have never been protected or lost their protection and are freely available. At the moment only varieties that are open pollinated or can be propagated vegetative have access to the ProSpecieRara gene bank. Within the last twenty years ProSpecieRara had to face the fact that the public collections and their gene pool didn't really develop very much because of the loss of state supported breeding programmes whereas the gene pool belonging to private seed companies has been used and developed for private breeding work. Many new varieties have been created but due to intellectual property protection laws never found a way back to public property. The exchange rate between the public and the private gene pool is very low. The varieties that have been developed fit only for international and highly intensified agriculture systems and don't fit to a local specialized and nonprofessional market. Within this gap ProSpecieRara wants to evolve new fields of activities. For example in supporting breeding work for rare crops within the existing public gene pool to provide better varieties for private gardeners and little scale direct marketing activities.

During the last 12 years ProSpecieRara evaluated it's collection to find out, which varieties could be interesting for commercialization. The result of this examination was that about 150 varieties – so called flagship varieties - could be reintroduced into a marketing system. Some of the varieties could find the way into the supermarket again as fresh vegetables others are commercial available as seeds and seedlings in big garden centres. The other 750 varieties didn't make it back into the marketing system and are kept within the conservation network.

For ProSpecieRara one of the main steps to get some of their varieties back into a marketing chain was the development of a brand with label qualities. This label was essential to promote diversity of cultivated plants and to improve the visibility of the ProSpecieRara conservation work that stands behind a flagship variety. The label ProSpecieRara stands for:

1. Reliable conservation work within defined quality standards. A labelled product has to fulfil the following criteria: - Provenience of seed is defined - The variety name has to be approved - Breeds are registered in a herdbook - The breeder is a member of a breeder association;
2. Saving and promoting genetic diversity in agricultural systems;
3. Supporting a sustainable conservation work on farm and in garden

Since 1999 one of the biggest supermarket chains in Switzerland – Coop is promoting its “diversity”-fresh-food-products, seed and seedlings under the trademark ProSpecieRara. At the moment about 100 different mostly vegetable-varieties out of 30 different vegetables are available to consumers. Today the trademark is known to about 30% of the Swiss consumers. Most of the products are grown in an organic agriculture system.

Experiences of the „Bäuerliche Erzeugergemeinschaft Schwäbisch Hall“ with the utilisation of rare pig breeds - Christoph Zimmer (BESH)

The Schwäbisch-Hällisches Landschwein pig breed emerged around 1820 as a result of crossing Chinese saddleback pigs with local breeds. Its characteristics like its high fertility and exceptionally good mothering ability made the Schwäbisch-Hällisches

Landschwein pig popular among the Hohenlohe farmers. The introduction of fast-growing lean pigs, which were suitable for intensive farming, along with the industrial standards that were specially established for them displaced the Schwäbisch-Hällisches Landschwein pigs during the 1960s at a breath-taking pace. By 1969 pedigree breeding had been halted, and by the beginning of the 1980s the breed was considered to be nearly extinct.

In 1986 an independent breeders' organisation was set up with 17 members at first. This laid down the formal framework for systematic breeding work. The organisation has now grown to over 120 members. In 2006 the pedigree breeding stocks comprised 280 female and 26 male nucleus animals for breeding and about 3500 animals for fattening. As such, the stocks are still judged to be "*moderately endangered*", but still form a solid basis for building up the breed further and ensure that there is an ongoing steady supply of fattening animals for the SchwäbischHällisches Landschwein Quality Pork marketing programme. The breeding farms are simultaneously either fattening farms or suppliers of young pigs for pure fattening farms.

The marketing programme forms the economic basis for the conservation and sustainable use of the breed. The cooperative invested about EUR 6.4 million to renovate the originally communally-run slaughterhouse and bring it up to standard. These activities have been supported by several funds, *i. a.* project funding of the Federal Ministry of Food and Agriculture and the Federal Office for Agriculture and Food. This infrastructure facility guarantees the producers direct access to the market and ensures that all the production and processing requirements are fulfilled. Currently about 4000 pigs, 250 cattle, 150 sheep and about 1000 suckling pigs are slaughtered every week in the producers' slaughterhouse. The animals are supplied by the 950 BESH member farms, which now produce not only pork meat but also beef (under the brand name of Boeuf de Hohenlohe), lamb and goose.

From the very beginning BESH has considered a professional marketing strategy to be of great importance. Newspaper, magazine, radio and television reports about the cooperative and the Schwäbisch-Hällisches Landschwein pig help to make the activities of the cooperative better known, as well as helping to promote transparency and trust between the producers, buyers and end customers. 70 % of the meat produced goes to specialist butchers shops, 30 % goes straight to the restaurant trade and to delicatessen shops. The butchers commit themselves to supplying BESH meat exclusively; this goes for beef and other types of meat as well as for pork. The 280 specialist butchers and 150 restaurants receive direct deliveries every day from more than 20 BESH refrigerated vehicles.

The targeted use and marketing of the special characteristics of the Schwäbisch-Hällisches Landschwein pig has enabled this old breed to be preserved as a cultural asset and the carrier of valuable genetic traits. At the same time it has also been possible to create a niche market with added value for the producers. In a rural, structurally weak region, BESH has created a business enterprise with an annual turnover (2014 figures) of EUR 119 million and a workforce of 400 in processing and sales. Through the marketing provided by the cooperative, the nearly one thousand production and breeding facilities have access to a quality sales channel that safeguards their survival and offers them opportunities for the future.

Experiences of the "Biohof Rapf" with rare genetic resources and with "Arche Noah" projects in Austria - Klaus Rapf (Biohof Rapf and Arche Noah)

K. Rapf is a farmer since 2004 with a background in Information Technology. The farm was created in 2004 and the first harvest took place in 2005. Products were sold directly to consumers in the Naschmarkt in Vienna. Since then, the farm continues to grow. In 2006-07 rare tomato varieties were grown. In 2008, the farm started wine production (more than 30 ha of wine in 2015) and specialised in offering rare vegetable. At the same time to increase sales, more efforts were devoted in developing the network.

In 2005, a biologist joined the farm with the motivation to grow more than 100 tomato varieties and about 25 pumpkin varieties. This additional staff supported the production of seedlings and provided advice with production of vegetables.

In 2006-07, poly-tunnels were installed and staff was 4 workers and 4-6 seasonal workers during summer. Since then, the farm is diversifying in agricultural crops too (maize, wheat, etc...).

Dedicated field trials and experiments are conducted to select the best varieties for the farm. The selection of the varieties to be grown is done by the farm.

Most of products are sold via direct marketing at farmers markets in Vienna or during fairs and events (e.g. organic festivals, Arche Noah events, slow food, and garden fairs in Germany). The farm initiated contacts and potential commercial relations with regional markets. Clear criteria have been set-up to become a reseller of the farm products. The requirements to become a reseller (current reseller are: i.e. Meinhof in the center of Vienna and specialised organic shops, wholesale traders in the organic chain for selected products only,) are the interest of their target groups in high quality vegetables and fruit, additionally customers must accept to pay rather high prices for high quality and customer counselling is part of their philosophy. Products are sold to upper class restaurants which value fruit and vegetable diversity and traditional varieties. However the volumes sold to restaurants are marginal and therefore not economic.

The farm is also part of the Arche Noah network which has the philosophy work on the best conservation for sustainable use. The seed network is composed of hundreds of members who act as "seed savers". It is open for farmers and gardeners. It uses the mark "Arche Noah Vielfalter" as a marketing tool. Under the network, there is a continuous development of old varieties via cooperation with organic farmers and based on participatory plant breeding approaches (together with partners from universities, research centers and organic advisory services) and comparative trials. This multi-actor approach is based on the demand from farmers and wholesalers. LEADER funds support the development of such activities. The PPB activities are part of the research program DIVERSIFOOD. Seed multiplication is performed in cooperation with Reinsaat with the objective to improve access to quality seed. Seeds

of 54 rare varieties are available on the market. Organic farmers are used as multipliers.

The contribution of the private breeding sector to sustainable use and conservation of genetic resources - Christiane Duchêne (European Seed Association)

Plant genetic resources are a key pre requisite for the set-up and development of a breeding programme. The total number of plant species, which are cultivated as agricultural or horticultural crops, can be estimated to be close to 7 000 botanical species at global level. However it is often reported that the cultivated biodiversity is decreasing and that less and less crop species are grown in the EU. Scientists of gene banks are indicating that about 7 million accessions have been collected and are currently stored in the EU gene banks. This germplasm mainly concerns a limited number of species and 50% of the accessions are advanced cultivars or breeders' lines. The total percentage of landraces or old cultivars, and about 15 % are wild relatives of crop species, weedy plants or wild plants.

Having mentioned these elements, it has to be mentioned here that the seed industry and its R&D activities: plant breeding are users of genetic resources (the “germplasm”) from which they have bred varieties/cultivars of interest requested by the consumers and retailers (breeding goals = expectations of users).

The private breeding sector also contribute to enriching the GR pools as any variety can be used as GR by any third party for R&D purposes (provision of the plant breeders rights). Additionally it participates to several conservation initiatives (financial support and in-kind support).

The seed sector sees a need to re-inforce capacities to the phenotypic and genotypic characterisations of accessions. These efforts could ideally be done via a public/private partnership approach such as Breedwheat in France.

Connection of neglected and/or underutilised Genetic Resources for Food and Agriculture with organic farming - Sebastian Winkel (BLE-IBV)

A lot of initiatives for the utilisation of rare Genetic Resources for Food and Agriculture (GRFA) are certified organic. At the same time organic consumers are showing a high affinity for the topics biodiversity and rare GRFA. But many organic farms do not use rare GRFA yet.

In Article 8 (1) of the Regulation (EC) No. 889/2008 is stated: “*In the choice of breeds or strains, account shall be taken of the capacity of animals to adapt to local conditions, their vitality and their resistance to disease. [...] Preference is to be given to indigenous breeds and strains.*” Since some rare breeds have advantages in the field of vitality their use in organic farms seems to be promising. Even if the term “*indigenous breeds*” is not defined in any EU legislation, the member states do often have a comprehensible definition for this term. Since the animal production in the EU is dominated by only a

few high-performing breeds, the preferred use of indigenous, mostly rare breeds in organic farming systems is a huge chance for the *in situ* conservation of rare breeds.

The credibility of organic farming in question of higher production standards compared to non-organic farming systems is a key for the willingness of the consumers to pay a higher price for organic products (credence products). Since higher prices are needed to compensate higher production costs in organic farming systems, this willingness to pay more is consequently a key for the future of the organic farming sector.

Based on the current efforts for the communication of the needs and advantages to use rare breeds in Germany, a lot of regional breeds are currently extending with higher growth rates than the domestic organic production. The increasing demand for regional products is supporting this trend. Thus it seems to be promising for organic livestock keepers to use the increasing demand for regional breeds for their own business and marketing strategy. Rare breeds have the potential to push the value chain development in the organic farming sector. An example for the connection of rare GRFA and organic farming in the plant sector is the utilization of emmer wheat (*Triticum dicoccum*) which is one of the oldest wheat species. But due to its low productivity it had have nearly no economical relevance in Europe in the 20th century. *I. a.* with R&D projects funded by the Federal Scheme for Organic Farming and Other Forms of Sustainable Agriculture the utilization of Emmer wheat could be facilitated. Today emmer wheat is very popular in some organic products.

Neglected and/or underutilised Genetic Resources for Food and Agriculture for the value chain from the scientific point of view - Christina Bantle (Universität Kassel Fachgebiet Agrar-und Lebensmittelmarketing)

Christina Bantle presented results of the research project "Conserving diversity through utilisation", funded by the Federal scheme for organic farming and other forms of sustainable agriculture. The overall aim of the project was to conserve GRFA through utilisation by strengthening consumer demand for rare GRFA products. The project consisted of a literature review, qualitative interviews with consumers and a survey with more than 700 restaurants guests. These three elements focused on the communication of rare GRFA as an added value. Furthermore, expert interviews with restaurants managers and producers of rare GRFA were conducted in order to get an insight into existing product specific GRFA value chains.

Survey results showed that consumers either have a primarily altruistic value orientation towards rare GRFA (e. g. linked with greater importance given to regional dimension, conservation of traditional landscape, animal welfare and organic production) or a hedonistic one (e.g. greater importance given to health and good taste). However, the stated willingness to pay a premium price for GRFA products was not mainly related to these basic values. Instead, there was a close link to consumers' existing awareness regarding the conservation and sustainable use of GRFA. Generally, consumers' associations with GRFA were very positive indicating potential for an economically successful development of rare GRFA related value chains.

It is a key conclusion of the project that consumer communication plays a central role in order to bring across genetic diversity as an added value. The communication should be designed according to consumers' different value orientations, GRFA awareness and knowledge levels. A promising new target group are mainly hedonistic oriented

consumers which are not yet aware of GRFA specific product qualities. Product innovation based on rare GRFA should focus on high value products. Regarding some types of GRFA, upscaling might be necessary to facilitate a reliable distribution and supply. In order to improve GRFA visibility, labelling could be one mean for indirect value chains where personal communication is difficult or not possible. Besides consumer communication, intensified communication and exchange a value among the other value chain members is necessary, both vertically and horizontally. To support these efforts, the establishment of "competence centres for GRFA" are recommended.

Protected Designation of Origin and Protected Geographical Indication for the sustainable use of Genetic Resources for Food and Agriculture - Peggy Dieryckx Visschers (EC- DG AGRI)

The European quality system for protection of food names consists of three elements: First, the Protected Designation of Origin (PDO) relates to foodstuffs and agricultural products whose names are protected under this particular designation must be produced, processed and prepared within a particular geographical environment and must have qualities or characteristics exclusive to that area with its inherent natural and human factors. Secondly, the Protected Geographic Indication (PGI) relates to products bearing the name of a particular geographical area which are produced or processed or prepared within that area, and which have a reputation, features or certain qualities attributable to that area, can be registered under the PGI designation. Finally the Traditional Speciality Guaranteed (TSG or Certificate of Specific Character) relates to the traditional character of a foodstuff or agricultural product by either its composition or by means of its production, rather than to its origin. Only PDOs and PGIs are considered as Geographical Indications (GIs). A GI is a specific product that is produced in a defined geographical area and for which there is a causal link between the production area and the product itself.

In October 2015, there was 3342 GIs recognised by the EU of which 1249 in food, 1752 in wine, 336 in spirits and 5 in aromatised wine.

The GIs provide several benefits to farmers. First the registration provides protection – “one stop shop” for EU wide protection. Secondly it provides a “ticket” for EU promotion & rural development support and a stronger position in the food chain. Finally the registration adds value to products and a better price: 2.3 higher price than standard product (on average)(value premium).

Consumers also benefit from registration as GIs as it provides guarantees on the origin of the product, quality of the products, and authenticity of the products. Controls on production site and on the market secures that these guarantees are provided; Additionally GIs prevent the standardisation of food and offers a wider choice to consumers. Finally, GIs also provides benefits to the society as GIs can encourage the conservation of genetic resources, landscape/ecosystems which have a positive impact on habitats/tourism, as well as a local savoir-faire and tradition. All in all, GIs contribute to social cohesion and rural development.

5 Summary of the discussions on the presentations during the two plenary sessions and conclusions

The discussions that took place after the presentations led to the following main conclusions:

1) Need for the development and dissemination of knowledge in the form of (practical) good practices and success stories.

- Valorisation of rare crops or rare breeds often leads to significant business opportunities. The presentation clearly demonstrated the opportunities. However, as expressed by a majority of participants, user guides and methodologies on how to approach these dedicated marketing developments are often missing. Marketing schemes are too often developed for large projects involving a large number of actors. When it relates to small projects set-up by a limited number of actors, the marketing approach is not that obvious. Therefore the workshop participants asked for the drafting of a User Guide at EU level that could easily be adapted (and translated) nationally and locally by experts. One can argue on the difficulties to draft a User Guide that could include the large variability of situations local actors are facing. However such type of guide would have the benefit to initiate the sharing of practices on which local stakeholders could build their marketing and development plan on.
- Similarly, success stories on valorisation of genetic and value chain developments should be compiled and distributed via the existing EU networks. These success stories should promote good and best practices (what to do/what not to do; where to start? How?).
- These User Guides and description of success stories could usefully be distributed to national and local advisory services (e.g. technical institutes, Chambers of agriculture, Chambers of commerce, private advisors to producers).

2) Valorisation projects should preferably be initiated and developed in added value food supply chains.

- The different speakers clearly indicated that valorisation of genetic resources and development of dedicated supply chains benefits from dedicated working alliances among stakeholders in “*filières*”. The operational links in the “*filières*” between seed supply system, processing and distribution stakeholders should be strengthened. For example developing valorisation marketing plans for dedicated supply chain such as direct marketing and the organic food supply chain creates value for producers. Valorisation projects through regular and conventional supply chain may be at risk as no significant added value can be created. For example, in their business model and in order to maintain their quality standards without any interference, BESH refused to collaborate with supermarkets. However, this is also facilitated by the fact that the area is not so attractive to big chains. Biohof Rapf has initiated contact with retailers but has

specified dedicated criteria for collaboration that preserve the uniqueness of its products.

- The regional scope of valorisation project is also being seen as strength in the marketing of GR. This regionalisation approach gives the impression of local products produced by local producers. There a number of motivations for eating local. These motivations include healthier food, environmental benefits, economic or community benefits and regional identification. The combination of local farming techniques and short travel distances makes the food consumed more likely to be organic and fresh, which is an added benefit.
- The use of local trade-marks and quality signs (e.g. 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. They also participate to the development and recognition of dedicated brands.

3) How to secure critical-mass for rare breeds and crops.

- Valorisation projects could be at risk, especially during their inception phases, when only a few animals or seeds are available to initiate the supply chain. In these cases, it is important to consider a first stage of up-scaling which is to guarantee that the number of available animals and seeds is significant enough for the supply chain under development and for the marketing objectives (volumes of production and sales).

4) Funding of valorisation projects is often an issue

- Initiating valorisation projects and developing of new supply chains are often limited by the fact that resources to fund the project are also limited. A large number of valorisation projects may exist but their development do not take-off because no resources are available to initiate the first steps. Agri-environmental measures of the Rural Development Plans often consist of funding such type of initiatives by providing premium to producers. Funding should preferably go the group of actors that intends to develop a project of valorisation. Also these premium are limited to a period of 2-3 years. This is not enough to secure mid-term development of the projects. Additionally, The EU farm promotional programs could be a very important tool for genetic resources. But today it does not really fit. They have certain exceptions for PGI/PDO products – but in general they are focused on export, multi-national cooperation and on big marketing campaigns. It would be a great contribution, if the EU would establish a “light version” for small initiatives with genetic resources.
- Arche Noah indicated that 70% of the initial development phase was covered by innovation project funds. This funding contributed significantly to the success of the initiative(s).

5) Administrative burden limits the development of valorisation projects.

- A significant number of remarks have been made during the discussions as regard administrative burden which is linked to the getting of subsidies and other type of funding. For example, BESH was Partner and in the EU FP6 project Q-PorkChains. It was a R&D Project with 64 Partners. BESH contribution was to lead two pilot chains. BESH activities were EU funded at the level of 60%. The project was completed by end of 2012 but the latest payment was done in 2015 when all administrative work for all partners has been completed. For BESH these types of issues can ruin small organisation as they may run out of money.

6) Sustainable use of genetic resources needs a friendly legal framework and proportional legal requirements for small producers

- Multiple remarks have been made during the discussions as regard suitability of the current EU legal framework for the sustainable use of genetic resources. Most of these remarks were critics against the seed marketing directives that, according to several participants, have negative effects in the context of valorisation of rare crops. This framework is too limiting for small and local producers. More freedom to operate is required to allow an easier exchange of germplasm between and across seed savers. Participants also highlighted that significant improvements were included in the proposal for the revision of the seed marketing directives and have not understood why these improvements have not been considered during the first reading at Parliament level.

7) The use of rare GRFA in organic production system has potential for economic growth of the organic farming sector.

- Organic farmers could be encouraged to use indigenous breeds to increase their credibility and attract additional consumers with a positive attitude towards rare and regional GRFA. The increasing interest in regional breeds could serve as positive impulse for organic value chains. But taking into account the manifold restrictions in organic farming the use of indigenous breeds should not be mandatory. Organic farms must keep a sufficient level of flexibility.

8) The utilisation of rare GRFA should be facilitated by specific competence centres.

- There are two major aspects which have to be addressed to foster rare GRFA value chain development and thus enable GRFA producers to gain an adequate income: communication/visibility and logistics.
- To improve communication and value chain development for rare GRFA the establishment of GRFA 'competence centres' is suggested. There is a well-working structure for communication between GRFA stakeholders on

European level (ECPGR / ERFP). Similarly, some countries have functioning networks under the umbrella of the National Programmes of GRFA that can be used for GRFA communication on a (sub-) national level. They should include stakeholders from all groups involved. Such diverse groups reflect different stakeholders' interests and can use their combined competences to full capacity. For a EU-wide exchange between national GRFA competence centres, ECPGR and ERFP can serve as the relevant platform. These coordination platforms should also be involved in EU policy setting regarding the conservation and sustainable use of GRFA.

All in all, the conclusions made have highlighted numerous opportunities and needs for valorisation projects of GRs in both the animal and plant sector. It became that there are still a lot of options for improvements to encourage value chain developments based on genetic resources.

ANNEX 1: List of participants

Country	Organisation	Name
Finland	ERFP, NC for AnGR	Mervi Honkatukia
Germany	University of Eberswalde	Christina Bantle
Germany	Bäuerliche Erzeugergemeinschaft Schwäbisch Hall	Christoph Zimmer
Netherlands	De Oerakker	Obe Bootsma
Portugal	ECPGR On-farm Conservation and Management Working Group of EU member states	Pedro Mendes Moreira
Austria	DIVERSIFOOD partner Arche Noah from Austria	Klaus Rapf
Portugal	ECPGR On-farm Conservation and Management Working Group of EU member states	Benvindo Martins Maças
CH	Swiss Foundation for the cultural and genetic diversity of plants and animals	Béla Bartha
Germany	ECPGR On-farm Conservation and Management Working Group of EU member states	Ullrich Schulze
Slovenia	ERFP Secretariat	Danijela Bojkovski
Poland	ECPGR On-farm Conservation and Management Working Group of EU member states	Marcin Zaczynski
Sweden	ECPGR On-farm Conservation and Management Working Group of EU member states	Jens Weibull
Portugal	ECPGR On-farm Conservation and Management Working Group of EU member states	Ana Barata
Austria	ECPGR On-farm Conservation and Management Working Group of EU member states	Paul Freudenthaler
Belgium	ERFP, NC for AnGR	Katrien Nijs
Austria	ERFP Steering Committee	Beate Berger
	ECPGR Secretariat	Lorenzo Maggioni
Denmark	Farmer	Holger Jensen
Slovakia	ECPGR On-farm Conservation and Management Working Group of EU member states	Daniela Benedikova
Slovenia	ERFP, NC for AnGR	Drago Kompan
Sweden	ERFP Steering Committee	Eva-Marie Stalhammar
Hungary	ERFP, NC for AnGR	Szobolevszki Tamás
Belgium	ESA	Christiane Duchene
Luxembourg	ERFP Steering Committee	Jeanne Bormann
Romania	Faculty of Animal Science University of Agronomic Sciences and Veterinary Medicine	Livia Vidu
Greece	Archithea	Achilleas Tsaprailis
Netherlands	ERFP Steering Committee (chair)	Sipke Joost Hiemstra
United Kingdom	Dept of Crop Genetics John Innes Centre	Sarah DeVos
Romania	ECPGR On-farm Conservation and Management Working	Silvia Ambarus

Country	Organisation	Name
	Group of EU member states	
Poland	Social Ecological Institute	Elzbieta Priwiezienczew
Poland	ERFP, NC for AnGR	Elzbieta Martyniuk
Finland	ECPGR On-farm Conservation and Management Working Group of EU member states	Maarit Heinonen
France	ERFP, NC for AnGR	Didier Bouchel
Finland	Farmer	Timo Rantakaulio
Germany	IFOAM	Antje Kölling
Belgium	Copa-Cogeca	Julia Stark
Denmark	ECPGR On-farm Conservation and Management Working Group of EU member states	Gert Poulsen
Germany	ECPGR On-farm Conservation and Management Working Group of EU member states	Rudolf Vögel
Sweden	ECPGR On-farm Conservation and Management Working Group of EU member states	Annette Hägnfelt

ANNEX 2: Presentations

See attached files