



Niche-Market Farming



Project 2021-1-DE02-KA220-VET000024950



Niche Market Farming Course

Project n° 2021-1-DE02-KA220-VET000024950





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traditional food heritage and
niche-market**

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**PDO, PGI TSG and quality
, geographical indication food
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TUTORIAL

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MODULE 1 - Biodiversity, old varieties, traditional food heritage and niche-market

1.0 INTRODUCTION

Niche Market Farming Definition

- **Niche Market Farming (NMF)** is a kind of market agricultural sector based on agrifood products targeted to consumers willing genuine, natural and tasty agricultural and food products.
- This kind of market is therefore personalized and based on direct knowledge and confidence between customer and producer.
- The NMF is evidently in opposition to the market of commodities and global food.
- The **customer** is available to pay more in comparison with other food available on the market because of this special and customized relationship between **farmer** and **consumer**, with evident advantage from both of parts.
- An important element of this relationship based on **reliability** is the **reputation** of the producer.
- **Niche food markets** have significantly grown in recent years also as consequence of **community supported networks from farm to fork**.
- Connected to the niche market farming are also **sustainable cultivation techniques** aimed to **guarantee the product quality**, with a preference for **organic** and **biodynamic farming**, **agricultural biodiversity** based on **old seeds and plants**, and **organization of producers' consortia** aimed to characterize their products in terms of **geographical origin**, **traditional roots** and **environmental and social sustainability**.



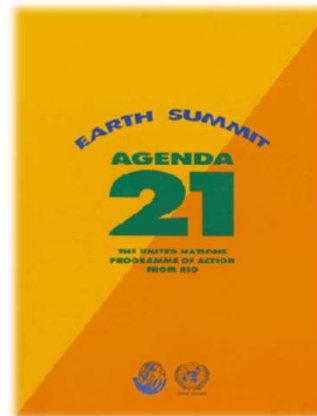


MODULE 1 - Biodiversity, old varieties, traditional food heritage and niche-market

1.0 INTRODUCTION

The Convention on Biological Diversity

- **Agricultural biodiversity** is a broad term that includes all components of biological diversity of relevance to agriculture and food, and all components of biological diversity that constitute the variety and variability of animals, plants and microorganisms, at the genetic, species and ecosystem levels, which are necessary to sustain the key functions of the **agro-ecosystem**, its structure and processes, in accordance with annex 1 of decision III/11 of the Conference of the Parties to the Convention on Biological Diversity.
- In **June 1992** the global **Convention on Biological Diversity** and **Agenda 21** towards sustainability were signed by over 150 countries and the European Union at the Earth Summit. The Earth Summit confirmed that only through integrating conservation and development can social and ecological challenges be met. No nation can do this alone; a global partnership is needed to achieve sustainable development. This Convention is the first global instrument to take a comprehensive approach to the issues of conserving the world's biological diversity and to using its biological resources in a sustainable way.
- The Convention provides a **framework for conserving biodiversity**. Most of its articles set out **policy guidelines** that Parties can follow, rather than establishing precise obligations or setting targets.





MODULE 1 - Biodiversity, old varieties, traditional food heritage and niche-market

1.0 INTRODUCTION

- The **conservation of biological diversity** has taken on a new urgency since the **UNCED** (United Nations Conference on Environment and Development) conference. Due to the high level of public awareness and concern in Europe, there is a realization of the need to complement an essentially defensive approach, based on protection, with new policies designed to create or restore nature and wildlife in Europe connected to the agriculture and food sector and conservation of traditional landscapes.
- The Convention's objectives focus on the **conservation of biological diversity**, the **sustainable use of its components** and the fair and equitable **sharing of the benefits arising from the utilization of genetic resources**.
- The Convention is thus the **first global, comprehensive agreement to address all aspects of biological diversity**: genetic resources, species, and ecosystems. It recognizes for the first time that the conservation of biological diversity is "a common concern of humankind" and an integral part of the development process.





MODULE 1 - Biodiversity, old varieties, traditional food heritage and niche-market

1.0 INTRODUCTION

- The **Convention on Biological Diversity** contains **forty-two articles**, also including the **Cartagena Protocol on Biosafety** to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology, and **interim arrangements**.
- The key articles related to the biological diversity are the following:
 - Article 6: **General measures** for conservation and sustainable use;
 - Article 6a: **Develop national strategies**, plans or programs for the conservation and sustainable use of biological diversity;
 - Article 6b: **Integrate the conservation and sustainable use of biological diversity** into sectoral or cross sectoral plans, programs and policies;
 - Article 8: **In-situ conservation**;
 - Article 11: **Incentive measures**;
 - Article 12: **Research and training**;
 - Article 13: **Public education and awareness**;
 - Article 14: **Impact assessment**;
 - Article 15: **Access to genetic resources**;
 - Article 16: **Access to and transfer of technology**;
 - Article 17: **Exchange of Information**;
 - Article 18: **Technical and scientific cooperation**;
 - Article 19: **Biotechnology**;
 - Article 20: **Financial resources**.



UNITED NATIONS
SUSTAINABLE
DEVELOPMENT
GROUP





MODULE 1 - Biodiversity, old varieties, traditional food heritage and niche-market

1.0 INTRODUCTION

The Convention on Biological Diversity and the European Union

- Since the beginning the European Community participated to the preparation of the Convention, also following the results of the Conference of Stockholm, that created a new interest and awareness on the importance of the environment for the existence of planet and of the humankind.
- Since the adoption of the **Convention on Biological Diversity** at **Rio 1992** and the launch of **Agenda 21** for sustainability the European Community, also in view of its enlargement, adopted resolutions, directives and programs aimed to engage all Member States to respect the guidelines of the Convention.
- One of the consequences was a vision based on a **more sustainable Common Agricultural Policy**, also trying to tackle the progressive loss of agricultural biodiversity.
- According to the **World Economic Forum**, nearly **half of global GDP** (around EUR 40 trillion) **depends on the natural environment and its resources**.
- Along this line, the EU and its Member States are committed to creating a network of well-managed **protected areas** covering at least 30% of the EU's land and sea surface as part of the EU Biodiversity Strategy for 2030 and as a key element of the **European Green Deal**.

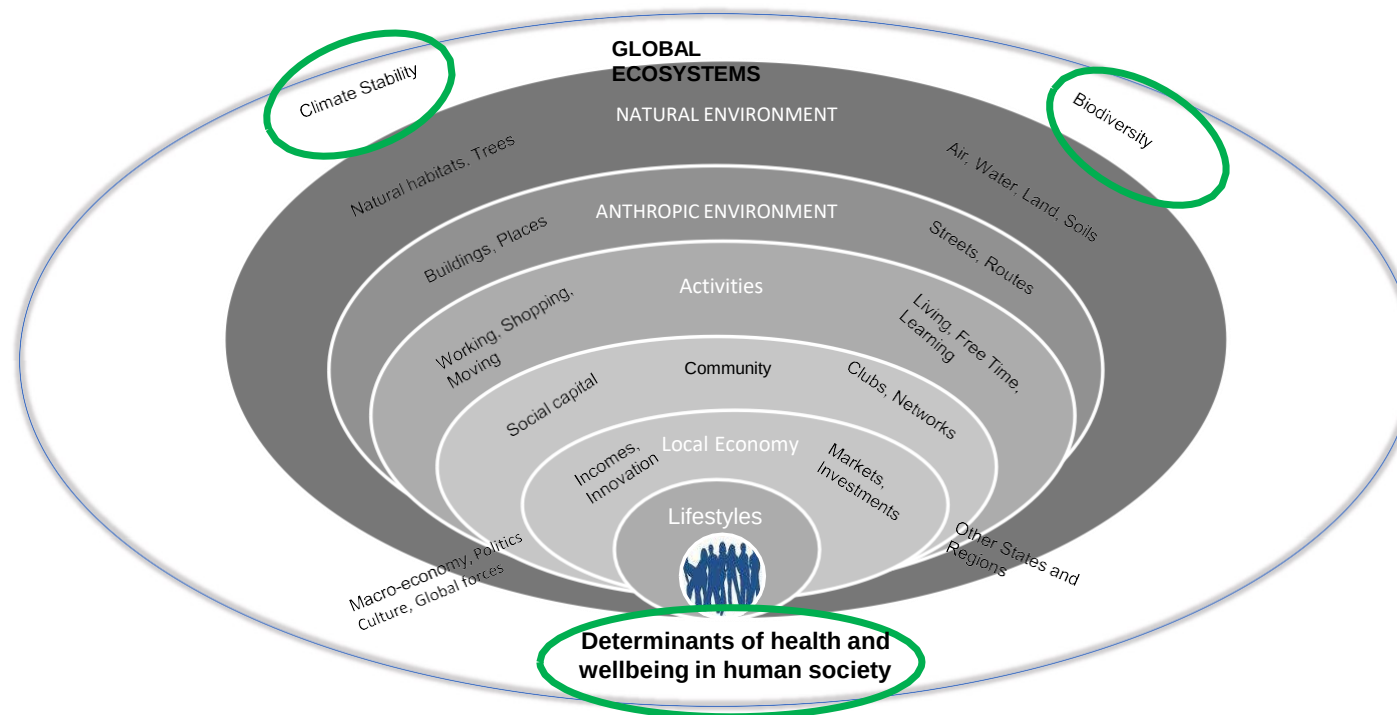




MODULE 1 - Biodiversity, old varieties, traditional food heritage and niche-market

1.0 INTRODUCTION

- **Biodiversity and Global Eco-Systems**
- **People and ecosystems are strictly interconnected**



- **Biodiversity is a universal and a powerful contributor to development, providing natural resources, ecological processes, and human wellbeing**
- **This is the reason why since the years 1990s started a global movement aiming to protect biodiversity.**

The decline of Agricultural Biodiversity

The **UNFAO** estimates that **75%** of **crop biodiversity** was lost in the last century

One breed of livestock went extinct every month in the last 20 years

Loss of **agricultural biodiversity** leaves entire food sources **vulnerable to destruction** by a single parasite

That's happened during **Irish Potato Famine** when **1 million people starved to death** in 1845

To help **seed vaults** and of **genebanks** have been able to increase their supply by 20% in the last 20 years

7,400,000 seed accessions worldwide available but only 25%-30% are **distinct varieties**





MODULE 1 - Biodiversity, old varieties, traditional food heritage and niche-market

1.0 INTRODUCTION

Biodiversity, Climate Change and Eco-systems

- **Biodiversity** drives the vital processes that sustain species survival by providing them with adequate conditions for the eco-systems
- Biodiversity provides the world's community with **ecological, economic and cultural values**
- Biodiversity plays a major role in **meeting human needs** directly while maintaining the ecological processes upon which the planet survival depends
- **Climate change** is altering species distribution through shifting habitats, changing life cycles, endangering natural areas and developing new landscape features
- The **decline of agricultural biodiversity** depends on many factors most of them caused by human actions.
- The **Niche Market Farming** is a tool to **make agriculture more sustainable**, to **recover old varieties saving the biodiversity** and **keeping farmers in less favored areas** and **protecting traditional rural landscapes**.





MODULE 1 PART I – Results from the SoA: GERMANY, ITALY, POLAND, SPAIN

1.1 National guidelines for the conservation and characterization of agricultural biodiversity genetic resources

In line with the **2030 Agenda for Sustainable Development** and the **Paris Agreement on Climate Change**, the EU Biodiversity Strategy aims to bring biodiversity back to Europe on the road to recovery by 2030. The strategy shifts the attention from preventing the degradation of ecosystems and the loss of biodiversity towards the effective restoration to bring nature back into our life. In addition to addressing the main causes of biodiversity loss, it outlines a strengthened governance framework, proposes the **full implementation of European environmental legislation** and promotes strategic **integration with national policies**. Its main objectives are:

- **protect at least 30% of the EU land surface**, integrate **ecological corridors** into a genuine trans-European nature network and effectively manage all protected areas, defining clear conservation objectives and measures and subjecting them to adequate monitoring;
- improve the health of existing and newly established **protected areas** by reducing pressures on habitats and species, ensure that ecosystems are always used sustainably and promote the restoration of nature. The strategy proposes a "**EU Nature Restoration Plan**" which includes 14 commitments, among which to **reduce the risks and the use of chemical pesticides by 50%**, to allocate at least **10% of agricultural areas to characteristic elements landscape**, to **use at least 25% of agricultural land for organic farming** and to increase the spread of **agroecological practices**;
- improve the "**governance of biodiversity**" and ensure the integration of the commitments set out in the strategy into national policies. The overall objective is to introduce a new European framework for biodiversity governance, which helps to map obligations and commitments and to establish a roadmap to guide their implementation, also providing a system of specific indicators to assess the achievement of objectives.





MODULE 1 PART I – Results from the State-of-the-Art – GERMANY



1.1 National guidelines for the conservation and characterization of agricultural biodiversity genetic resources

Nature protection and the preservation of biodiversity falls into the responsibility of the sixteen federal states of Germany. However, the federal level defines the goals and sets a framework in the field of nature protection and agriculture. The Federal Agency for Agriculture and Food (BLE) **developed an agrobiodiversity strategy**. Its goals are

- Improving the conditions for the **long-term conservation** and sustainable innovative utilisation of **genetic resources** for food, agriculture, forestry and fisheries as a precautionary strategy.
- Better linking **biodiversity** conservation and use as part of a rural innovation strategy for sustainable development.
- Strengthen **international cooperation** for cooperative, internationally equitable global management of the biological resource base for food, agriculture, forestry and fisheries.
- e.g., GSPC (Global Strategy for Plant Conservation) Target 9 "Conserve 70% of crop genetic diversity and associated indigenous and local knowledge".

Also, the BLE developed a guideline "Value-creation based on old varieties and old species - success stories and success factors". It shows examples where old species and varieties are successfully bred or cultivated. Some of the examples are based in protected areas such as biosphere reserves or nature parks. The protected area administrations have the task to promote the sustainable development of their region and can be an important partner promoting sustainable food products. Specific information on biodiversity in agriculture is provided by the Federal Agricultural Information Centre on biodiversity in agriculture.

Additionally, the Federal Agency for Nature Protection (BfN) provides a guideline for the production and use of wild plant seeds, e.g. as fodder plant or flower strips. However, the later is an approach for preserving the regional biodiversity in addition to the agricultural production, not through the agricultural production.



MODULE 1 PART I – Results from the State-of-the-Art – GERMANY



1.1 National guidelines for the conservation and characterization of agricultural biodiversity genetic resources

In order to facilitate the use of old varieties, the Ordinance on the Approval of Conservation Varieties and the Marketing of Seed and Planting Material of Conservation Varieties (**Conservation Variety Ordinance**) allows a simplified procedure for authorizing and marketing conservation varieties. The BLE also established a **national technical programme for plant genetic resources**. Its Objectives are:

Sustainable economic use of a greater diversity of agricultural and horticultural crop species and varieties (including ornamental plants) in Germany.

Long-term conservation of wild and cultivated plant genetic resources in a scientifically sound and cost-effective manner.

Better harness the diversity of plant genetic resources through appropriate measures such as characterization, evaluation, documentation, and breeding development.

Contribute to the conservation and restoration of agricultural and horticultural ecosystems, including orchard and grassland ecosystems.

To create more transparency in the distribution of responsibilities and accountabilities of federal, state and local governments, as well as individuals, organizations and institutions active in the field of conservation and utilization of plant genetic resources.

Exploit and promote synergies that can result from increased cooperation at the national, supranational-regional and international levels.



MODULE 1 PART I – Results from the State-of-the-Art – GERMANY



1.2 Regional lists of local agricultural biodiversity

Examples from Federal State of Baden-Württemberg:

The case of traditional orchards:

Orchard meadows have been cultivated since the 15th century in Germany. Traditional orchards are still characteristic for many regions in Baden-Württemberg. Urban development and more productive fruit plantations have led to the loss of orchard meadows in Germany since the 1960s. Two thirds have been cleared since the 1990s alone. Orchard meadows are not only a method of cultivation that is nice to look at. It is also the home for about 5 000 plants and animals. According to the red list of biotopes of Baden-Württemberg, orchard meadows and the biodiversity they host are endangered. The remaining orchards are often characterized by old trees, lack of tree pruning, or the meadows turned already into bushes due to a lack of maintenance.



Image: Ifls/ H. Nitsch

“Preservation through use” (in German “Erhalt durch Nutzung”) is the motto under which the federal state of Baden-Wurttemberg supports the conservation and cultivation of traditional orchard meadows. The federal state developed a strategy for the preservation of orchard meadows. A webpage provides full information about the history of orchard meadows, support structures, marketing possibilities and biodiversity as well as opportunities for volunteering and sharing the work of maintaining an orchard meadow. A detailed guideline shows how to develop and implement a project about maintaining an orchard meadow and marketing its products for a premium price. Likewise, there is a guideline for the organic certification of orchards maintained and preserved by initiatives.

Old varieties of lentils from the Swabian Alb

Alb-Leisa is the name for lentils from the Swabian Alb in the regional dialect. Until the 1950, the Swabian Alb was the center of lentil production in Germany. The lack of profitability led to a decrease in lentil production. For several decades no lentils were produced at the Swabian Alb. One farm started growing French lentils in 1985 due to the loss of Swabian varieties. In 2006 the Swabian varieties were rediscovered in a Genbank of the Wawilow Institute in Russia. A Swabian producer organization started producing seeds. Since 2011, organic Swabian lentils can be bought under the protected brand of Alb-Leisa.



MODULE 1 PART I – Results from the State-of-the-Art – GERMANY



1.2 Regional lists of local agricultural biodiversity

Examples from other Federal States:

Hesse:

The state of Hesse offers agricultural funding for old and regional livestock breeds. The funding is intended to ensure the continued existence of endangered native livestock breeds and thus preserve their genetic potential. In addition to the two native cattle breeds, two sheep breeds and one goat breed are being promoted.



Deutsches Schwarzbuntes Niederungsrind

Image: Ifls/ J. Schramek



Rhönschaf

Image: Ifls/ J. Schramek



Rotes Höhenvieh

Image: Ifls/ J. Schramek



MODULE 1 PART I – Results from the State-of-the-Art – GERMANY



1.2 Regional lists of local agricultural biodiversity

Examples from other Federal States:

Bavaria:

The Bavarian State Research Institute for Agriculture (LfL) gathered more than 700 old varieties of 23 different cultivated plants. Most of them are preserved in the national genbank Gatersleben.

Three varieties of wheat, two varieties of barley and two varieties of spelt are cultivated again in the model region for organic agriculture Günztal.

Saxony:

In order to preserve the valuable cultural assets and their diversity for future generations, the Free State of Saxony promotes the keeping of numerous breeds. A brochure presents the breeding history, use, endangerment and stock of Saxon livestock breeds. It informs breeders and keepers about the requirements for funding and addresses special funding opportunities for individual breeds.



MODULE 1 PART I – Results from the State-of-the-Art – GERMANY



1.3 Conservation sites of agricultural biodiversity “in situ” and “ex situ”

In-situ stands for the preservation of old varieties through their cultivation.

The network for the preservation of seeds is a network of farms cultivating and marketing old varieties to preserve their genetic diversity. They provide information on where to buy old varieties, where to acquire seeds and how to support the preservation of genetic diversity of cultivated plants.

There are also specific farms like the in-situ - Farm Gardens South Baden. Their primary goal is the preservation of the genetic diversity. (C. Störch, 2014, Bauerngartenkultur in Südbaden).

In addition to these private initiatives, e.g., the federal state of Baden-Wurttemberg has established demonstration farms in accordance with the Biodiversity Enhancement Act (BaWü) in the BiodivNetz BW. Their task is to illustrate best practice examples.



MODULE 1 PART I – Results from the State-of-the-Art – GERMANY



1.3 Conservation sites of agricultural biodiversity “in situ” and “ex situ”

Ex-situ stands for preservation, conservation, characterisation, documentation and provision of plumule or seed samples with a focus on intraspecific variability. This happens in genebanks or research facilities like universities. Therefore, there are several institutions with different tasks and objectives relevant in this field:

- Genebank Gatersleben
- Fruit Genebank of the Julius Kühn Institute in Dresden-Pillnitz
- Vine Genebank
- Information on ex-situ conservation and settlement for biodiversity conservation in Switzerland
- European platform and guidelines for seed



MODULE 1 PART I – Results from the State-of-the-Art – GERMANY



1.4 Germplasm banks and research connected organizations

There is a diverse structure and various networks in the field of germplasm banks and research. As outlined above, there is a diverse structure and various networks in the field of germplasm banks and research.

A selection is mentioned here:

- German Fruit Gene Database
- German Vine Gene Database
- Leibnitz Institute IPK
- Gene bank for wild plants for food and agriculture
- Federal Information System on Genetic Resources
- Federal Plant Variety Office
- Ministry of Food and Agriculture
- Genebank information system of the IPK Gatersleben
- Historical variety descriptions - Federal Office for Agriculture and Food
- Genebank material - Federal Office for Agriculture and Food
- List of cultivated plants and wild species
- Mansfeld - Database of agricultural and horticultural crops



MODULE 1 PART I – Results from the State-of-the-Art – GERMANY



1.5 Field conservation maps

Agricultural use in general

At the Thünen Institute, annual maps of agricultural use (at the level of dominant crop types and forms of use) are produced for the total area of Germany's agricultural landscape. Satellites of the Copernicus program provide the basis for an area-wide and accurate inventory for the whole of Germany.

Interactive maps

The Earth Observation Lab at Humboldt-Universität zu Berlin hosts of its webpage data and visualizations. The maps for the years 2017 to 2020 were produced in cooperation with the Humboldt University of Berlin and the Leibniz Centre for Agricultural Landscape Research (ZALF).

The Federal Agency for Nature Conservation offers direct access to data, trends and assessments. In the "Facts and Figures" section, a compilation of map displays, and tabular data is available. The "Geoportal" provides information on geodata and geoservices of the Federal Agency for Nature Conservation as well as the possibility of calling up various topic-specific map applications, e.g., protected areas



MODULE 1 PART I – Results from the State-of-the-Art – GERMANY



1.5 Field conservation maps

High Nature Value Farmland

High Nature Value Farmland (HNV) is a standardized indicator system for the ecological value of productive farmland. The HNV indicator represents the share of agricultural land with high natural value in the total agricultural landscape area. This share can be species-rich grassland, fallow land or orchards and other agricultural areas of high high natural value.

The Federal Agency for Nature Conservation (BfN) has been monitoring the indicator in Germany since 2009. All 1700 sample areas are rated based on three quality categories:

- 1. Land cover criteria** distinct land use patterns like a predominant agricultural use or mosaic of semi-natural and agricultural land. It also covers orchards and olive groves with large, old trees. If data is available, it also shows peripheral elements such as semi-natural hedges, patches or water bodies and other elements relevant to biodiversity.
- 2. Farming system criteria** describe arable and permanent crops and its nitrogen and biocide inputs but also semi-natural vegetation, livestock densities and other aspects of the farming system.
- 3. Species criteria** show the existence of a limited number of species relevant to nature conservation.

After a decrease of HNV-farmland to 12.3 % in 2014, the area of HNV is increasing again in Germany. However, with 13.3 % (2020) the level of 2009 (13.9 %) has not been reached.



MODULE 1 PART I – Results from the State-of-the-Art – GERMANY



1.6 Seed savers' organizations, associations and consortia

- Distribution of old varieties (larger orders possible)
- Association for the Preservation and Recultivation of Crops (Verein zur Erhaltung und Rekultivierung von Nutzpflanzen, no maximum quantity specified)
- Black Turtle: instructions and seeds for growing your own old varieties (packages for raised beds or gardens)
- Gendatabase (Gendatenbänke)
- Biodiversity Day Eberswalde: events, plant market, workshops
- "Variety tastes good" (recipes with old varieties)
- Association of Pomologists with individual state associations for the preservation of old fruit varieties; own database and advice



MODULE 1 PART I – Results from the State-of-the-Art – ITALY



1.1 National guidelines for the conservation and characterization of agricultural biodiversity genetic resources

In Italy an in-depth research has been performed in the last years with main results constituted of **national guidelines on agricultural biodiversity**, published in 2012, following the **International Treaty on Plant Genetic Resources for Food and Agriculture**, adopted in Rome on November 3rd 2001.

- The national guidelines are in Italy based on three main documents edited by the Ministry of Agricultural, Food and Environmental Policies (**MiPAAF**), part of the **National Biodiversity Plan of Agricultural Interest**, dedicated to three kinds of biodiversity interesting farming: **Plant, Animal and Microbial Biodiversity**.
- A summary in English of the publication is entitled **Guidelines for the conservation and characterisation of plant, animal and microbial genetic resources for food and agriculture** is available online

<https://www.reterurale.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/9580>





MODULE 1 PART I – Results from the State-of-the-Art – ITALY



1.1 National guidelines for the conservation and characterization of agricultural biodiversity genetic resources

- The NMF project is focused on **Plant Biodiversity** corresponding to the publication **Guidelines for the Conservation and Characterization of the plant biodiversity interesting for agriculture** (LINEE GUIDA per la conservazione e la caratterizzazione della biodiversità vegetale di interesse per l'agricoltura–Ministero delle Politiche Agricole, Alimentari e Forestali-Dec.2013
https://www.reterurale.it/downloads/LineeGuida_Vegetale_WEB.pdf ISBN 978-88-8145-261-3)
- This work, performed by a pool of researchers at national level has analyzed and listed the **main agricultural biodiversity heritage** and released the guidelines to protect and enlarge the existing plant biodiversity of agricultural interest, in-situ and ex-situ, in connection with the **germplasm banks** on the national territory.
- The **national law December 1st 2015, nr.194** established the principles for an agriculture and food biodiversity national protection and development system, aimed at protection and recovery of genetic resources of local interest, tackling their genetic extinction and erosion, with a national registering system, assigned to **CREA** ([Council for Research in Agriculture and Analysis of Agrarian Economics](#)) and direct responsibility of the **regional authorities**, in charge to publish and update the list of genetic resources.
- The related assigned tasks were depending on decision taken at regional level aimed to identify a body responsible for the activities connected to finding, characterizing, and listing the **plant and food genetic resources of local interest**.



MODULE 1 PART I – Results from the State-of-the-Art – ITALY



1.2 Regional lists of local agricultural biodiversity

From the **National Plan** for the **Rural Development Plans 2014-2020** a specific role in favour of the agricultural biodiversity is included in the **Measure 10, sub-measure 10.2** "Conservation of plant genetic resources in agriculture". Also concerned on operational level were the submeasures **16.2.1**, with the characterization of local olive varieties and **16.1** concerning a scouting of different plant autoctonous genotypes collected from two different natural park areas. Also relevant the use of the **submeasure 16.4** on local food supply chains, **submeasure 4.4.1** on structural interventions at farm level and **Measure 2** on consultancy including agricultural biodiversity.

In **Umbria** the 3A Regional Park is responsible for the characterization and list of all autoctonous agricultural interest genetic resources <https://biodiversita.umbria.parco3a.org/> .

Umbria was the third Italian region to adopt a regional law on genetic resources of agricultural interest, a very important tool to respond to the recommendations posed by international treaties and to include all the activities carried out in the region on this issue in a codified regulatory process.





MODULE 1 PART I – Results from the State-of-the-Art – ITALY



1.2 Regional lists of local agricultural biodiversity

The path started with the L.R. 25/2001 continues with a new regulatory reference: the **Regional Law n. 12 of 9 April 2015 "Consolidated law on agriculture"**. Specifically, with articles 67-71 contained in Chapter IV "Protection of indigenous genetic resources of agricultural interest".

All regulations are available on the web <https://biodiversita.umbria.parco3a.org/normativa-di-riferimento/> , where it is possible to find i) the regional register, ii) ex situ conservation, iii) in situ conservation, iv) the network of conservation and security (art. 69 chapter IV L.R. 12/2015), v) pilot projects, vi) didactic activities, vii) pomology gallery, and viii) publications <https://biodiversita.umbria.parco3a.org/pubblicazioni/>, where its possible to find all ongoing characterization of agricultural interest plant and animal genetic resources in Umbria (in Italian).

The most important local genetic resources listed in Umbria are (go to the link):

<https://biodiversita.umbria.parco3a.org/cat-risorse/risorse-genetiche-vegetali/>

The Regional Register is the official tool provided for by art. 68 of Chapter IV of the Regional Law 12/2015 to survey the autochthonous genetic resources of agricultural interest in the Umbria Region. Local varieties and breeds that meet the requirements of art. 67 of Regional Law 12/2015.

Currently, **77 genetic resources are registered in the Regional Register**, of which 18 herbaceous varieties, 45 tree varieties, 14 animal breeds and 1 microbial strain.





MODULE 1 PART I – Results from the State-of-the-Art – ITALY



1.3 Conservation sites of agricultural biodiversity “in situ” and “ex situ”

- It is well known that the best results in the conservation of plant genetic resources are obtained through a **balanced diversification of the strategies and techniques used**, so that the disadvantages of one can be offset by the advantages of the other.
- It is with this awareness that over the years, i.e with regard to fruit tree species, agronomists and geneticists in Italy have combined the “**ex situ**” collection “**in vitro**”, with an “**in situ**” collection “**in vivo**”, creating some collection fields.
- Based on the **National Program on Biodiversity of Agricultural Interest**, besides **germplasm banks** and **seed banks**, **collection fields** have been created in all regions to reduce the risk of genetic material loss and follow-up the evolution of characterized cultivars in their sites, also having the opportunity to study and compare them easily.
- In fact, the main objective of the collection fields created remains that of **conservation**, which, however, is followed by that of **study**, by **monitoring** the main morphological, phenological and productive characteristics of the specimens in the collection and **domesticating** the observed species and varieties.

Conservation technique	Domesticated species	Wild species	Conservation techniques characteristics
<i>IN SITU</i>	Local varieties in their cultivation areas	Natural areas (protected)	Dynamic
<i>EX SITU</i>			
			Static



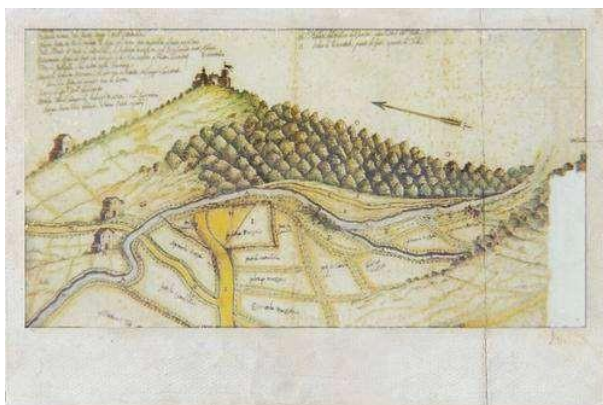
MODULE 1 PART I – Results from the State-of-the-Art – ITALY



1.3 Conservation sites of agricultural biodiversity “in situ” and “ex situ”

Three collection fields have been created in Umbria:

- Casalina di Deruta (PG), on lands property of the **Foundation for Agricultural Education**;
- Pantalla di Todi (PG), on lands property of the **3A-Agricultural Technological Park**;
- Lugnano in Teverina (TR), on lands property of the Agricultural Community (**Comunanza Agraria**).
- The first two collect **local varieties** and **germplasm of fruit tree species** recovered on the regional territory since 2002. The third site collects part of the **world collection of olives** established and managed by the **CNR-ISA FoM**.
- An important private collection is **Archeologia Arborea** <https://archeologiaarborea.com/> , in a hill dominating Lerchi (PG), collecting in situ many **old fruit tree species** not anymore commercialized, as a result of a search managed within more than 40 years by Isabella Dalla Ragione, agronomist, and her father.
- Itineraries of the agricultural biodiversity in Umbria have been created to allow tours dedicated to the fans of this special experience <https://biodiversita.umbria.parco3a.org/itinerari-della-biodiversita/> with maps also available and a network of agritourism owners involved.





MODULE 1 PART I – Results from the State-of-the-Art – ITALY



1.4 Germplasm banks and research connected organizations

There are many germplasm banks in Italy for conservation of agricultural interest genetic resources. At national level there are institutes of the two main research public bodies, **CREA** (Council for Research in Agriculture and Analysis of Agrarian Economics), and **CNR** (National Council of Research), with departments specialized on the conservation of different species, sub-species and varieties, such as **29 different institutes for CREA** all over Italy, and the **Department of Bio-Food Sciences (DiSBA) for CNR** with collections from all regions and collaboration of different institutes. Some of the research institutes have an historical role, such as the **Institute for Cereals "Nazzareno Strampelli"**, where the most important varieties of cereals in Italy were selected, crossed and experimented. Other germplasm banks have been established at the **departments of Agricultural Sciences** of several universities, with relation to the conservation ex-situ of the agricultural interest local genetic resources, also connected to in-situ collections reproducing the seeds at farm.

In Umbria the main germplasm banks are located at **CNR ISAFoM** (Institute for Mediterranean Agricultural and Forestry Systems), with collections in different conservation sites, **CNR IBBR** (Institute of Biosciences and Bioresources), with a specific importance given to conservation of olive tree cultivars. Another important germplasm bank is located at the University of Perugia, Department of Agriculture, Food and Environmental Sciences, Agrarian Genetics Area.





MODULE 1 PART I – Results from the State-of-the-Art – ITALY



1.4 Germplasm banks and research connected organizations

Some of the Italian Germplasm Banks are connected with European ones, such as:

- GENMEDOC "*Création d'un réseau de centres de conservation du matériel génétique de la lore des régions méditerranéennes de l'espace MEDOCC*", for the Western Mediterranean area, (www.genmedoc.org);
- ENSCONET "*European Native Seed CONservation NETwork*", involving 19 European countries, (ensconet.maich.gr);
- OSSSU "*Orchid Seed Store for Sustainable Use*"(www.ossu.org).





MODULE 1 PART I – Results from the State-of-the-Art – ITALY



1.5 Field conservation maps

At national level in Italy the application of the international agreement pushed the efforts to organize and connect the national germplasm banks and the field collection of genetic resources, with the establishment of a national network, **RIBES**, **Italian Network of the Germplasm Banks** for the Conservation ex Situ, under coordination of APAT, Agency for Environment Protection and Technical Services

<https://www.isprambiente.gov.it/contentfiles/00003400/3470-manuali-2006-37.pdf> .

In Italy there are around **20 germplasm banks**, among these the most important are those present in the university botanical gardens of Cagliari (BG-SAR), Catania, Pavia (LSB), Palermo, Pisa and Rome, that of the Autonomous Province of Trento (TSB) and that of the Germoplasm Institute of Bari, managed by the National Research Center (CNR).



NODI RIBES

1. BG delle Alpi sud occidentali
2. Lombardy Seed Bank
3. Trentino Seed Bank
4. BG di Padova
5. BG dei Giardini Hanbury
6. BG di Pisa
7. BG di Livorno
8. BG delle Marche
9. BG di Perugia (dal 2012)
10. BG della Toscana
11. BG di Roma
12. BG della Majella
13. BG della Sardegna
14. BG di Palermo
15. BG di Catania
16. BG di Udine (dal 2016)
17. BG della Valle d'Aosta (dal 2017)



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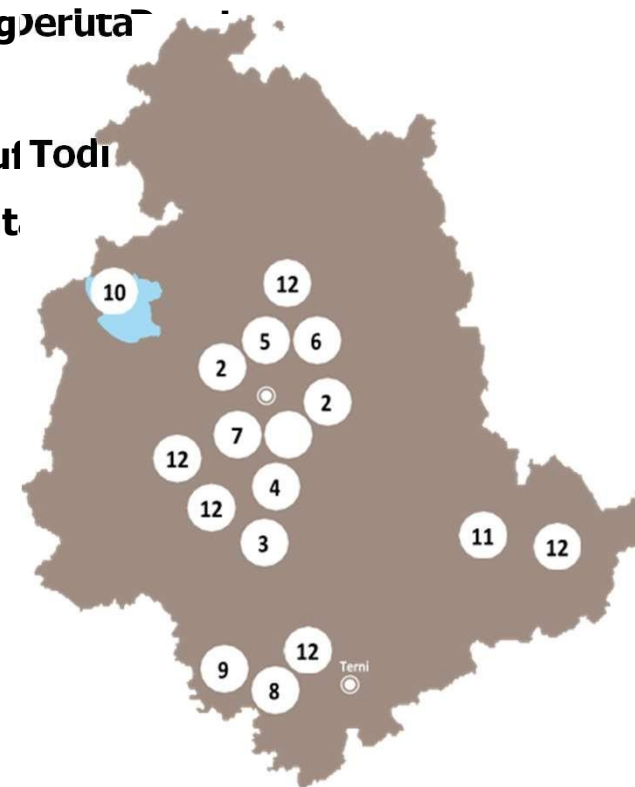


1.5 Field conservation maps

In **Umbria** a compendium including maps of the **list of registered genetic resources of agricultural interest** can be found on the web <https://biodiversita.umbria.parco3a.org/wp-content/uploads/2021/05/Quaderno-9-Atlante-web.pdf>

Collection of field agricultural biodiversity:

1. **Collezione regionale di specie arboree da frutto Fondazione Agperuta**
2. **Collezione di Vite, Olivo e Nocciolo - DSA3, Prepo**
3. **Campo Collezione di Vite, Olivo e Fruttiferi Scuola Agraria "Ciuf Toddi"**
4. **Collezione regionale di specie arboree da frutto - 3A-PTA, Pantano**
5. **Banca del genoma per la razza Chianina - DSA3, Perugia**
6. **Collezione di lieviti e batteri autoctoni - DSA3, Perugia**
7. **Banca dei semi regionale - DSA3, S. Andrea d'Agliano**
8. **Collezione di varietà di Vite dell'Amerino - Amelia**
9. **Collezione mondiale di Olivo - Lugnano in Teverina**
10. **Casa dei Semi del Trasimeno - Castiglione del Lago**
11. **Casa dei Semi della Valnerina - Vallo di Nera**
12. **Frutteti dimostrativi**





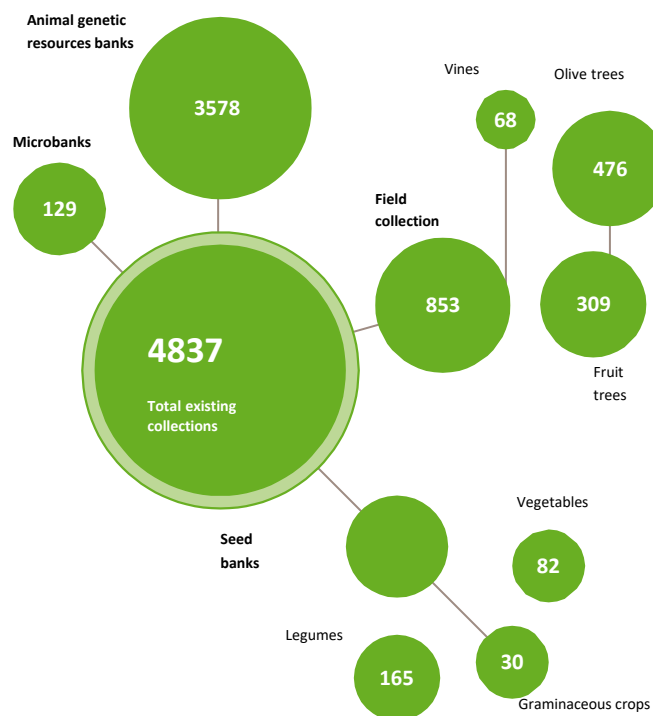
MODULE 1 PART I – Results from the State-of-the-Art – ITALY



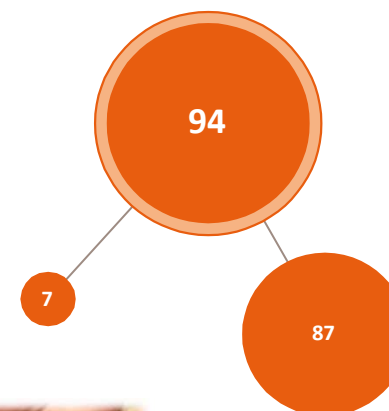
1.5 Field conservation maps

The following scheme shows kinds of field agricultural genetic resources and related networks in **Umbria**:

Typologies and consistence of the genetic resources



Members of the Network





MODULE 1 PART I – Results from the State-of-the-Art – ITALY



1.6 Seed savers' organizations, associations and consortia

A lot of agricultural biodiversity has been lost due to the increasing selection of seeds and plants focused on productivity with subsequent abandonment of less productive species and varieties. There was however a resistance from few farmers and rural communities aiming to protect old varieties as seed savers and reproducers.

Slow Food is one of the most well-known organizations collecting movements and rural communities based on common food traditional heritage and rural knowledges (<https://www.slowfood.com/>). Slow Food was founded in 1989 to prevent the disappearance of local food cultures and traditions, counteract the rise of fast life and combat people's dwindling interest in the food they eat, where it comes from and how our food choices affect the world around us. Since its beginnings, Slow Food has grown into a global movement involving millions of people in over 160 countries, working to ensure that people can have access to good, clean and fair food and can contribute to protect biodiversity all over the world. This approach has contributed to support rural communities defending their traditional heritage, cultivations, food culture and ownership. The Slow Food international headquarters are located in Bra, Italy – the town in Piedmont where the movement was born. It is from there, that the association plans and promotes the development of the network and projects worldwide. The association is coordinated by an International Council and steered by an Executive Committee, that is the highest institutional governing body, with all appointments held for a four-year term. For its international structure Slow Food can be considered the most well-known reference for niche market products and can contribute therefore to their identification and qualification.





MODULE 1 PART I – Results from the State-of-the-Art – ITALY



1.6 Seed savers' organizations, associations and consortia

At the local level, groups known as communities coordinate activities and organize events in cities, towns and communities around the world. There are over 1,500 Slow Food communities worldwide. To realize its projects and ambitions, Slow Food has created the following entities: Slow Food Foundation for Biodiversity, founded in 2003 to support Slow Food projects that defend food biodiversity and traditions. Terra Madre Foundation, established in 2004 to support the growth of a global network of food communities, chefs, academics and youth working for a sustainable food system.

University of Gastronomic Sciences (UNISG), opened in 2004 to educate future food professionals.

FAO, the Food and Agriculture Organization of the United Nations, has more recently, since 2005, launched the initiative GIAHS, Globally Important Agricultural Heritage Systems (<https://www.fao.org/giahs/en/>). Candidate to take part in this network can be agricultural sites representing resilient systems characterized by remarkable agrobiodiversity, traditional knowledge, invaluable cultures and landscapes, sustainably managed by farmers, herders, fisherfolk, and forest people in ways that contribute to their livelihoods and food security. Through the Globally Important Agricultural Heritage Systems Programme, the Food and Agriculture Organization of the United Nations has designated over 60 sites around the world.

Less developed and known in Europe but very popular in the USA it is the organization of seed savers existing since 1975 (www.seedsavers.org)



Food and Agriculture
Organization of the
United Nations



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.1 National guidelines for the conservation and characterization of agricultural biodiversity genetic resources

The most complete expression of global concern for biodiversity is the **Convention on Biological Diversity (CBD)**, the 1992 global 'constitution' for nature protection. The majority of states, including Poland, are signatories to the Convention, as well as the European Union as a separate legal entity; obligations to observe its provisions thus apply to almost all (Poland ratified the Convention on 13 December 1995). The objectives of this convention are: conservation of biological diversity, sustainable use of its components and fair and equitable sharing of benefits arising from the use of genetic resources. Fair benefit sharing presupposes the existence (creation) of access for all countries to genetic resources and relevant technologies (e.g. through their transfer), as well as adequate funding. It was hoped that the Convention would facilitate the comprehensive conservation of biological resources and unify approaches to their conservation, thereby helping to overcome problems and threats. Although it is the culmination of biodiversity conservation activity on a global scale, it is not the only such piece of legislation. Many obligations are enshrined in other, earlier and later agreements. These in turn are followed by more detailed agreements or protocols, some of which need to be regularly updated. Other international conservation conventions ratified by Poland are:

- Convention Concerning the **Protection of the World Cultural and Natural Heritage** adopted in Paris on 16 November 1972 (06.05.1976),
- Convention on **Wetlands of International Importance**, especially as Waterfowl Habitat, done at Ramsar on 2 February 1971, known as the Ramsar Convention (06.01.1977),
- Convention on **International Trade in Endangered Species of Wild Fauna and Flora** - CITES, known as the Washington Convention (03.11.1989),
- Convention on the **Conservation of Migratory Species of Wild Animals** - CMS, Bonn, 23 June 1979, known as the Bonn Convention (13.12.1995).



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.1 National guidelines for the conservation and characterization of agricultural biodiversity genetic resources

The Republic of Poland shall safeguard the independence and inviolability of its territory, ensure human and civil liberties and rights and the security of its citizens, protect the national heritage and ensure environmental protection in accordance with the principle of sustainable development.

The most important **Polish legislation on biodiversity** is three laws: on nature protection, on forests and on water law. The currently effective **Nature Conservation Act** of 16 April 2004 regulates the issues of covering Poland's valuable natural resources with protection and protection management and sanctions.

The **Forest Act** of 28 September 1991 contains references to the protection of the natural values of forest areas and is therefore an important complement to the Nature Conservation Act, showing the interdependence of sustainable forest management as the basic principle of forest management and the preservation of biodiversity. Many references to the protection of natural values of inland waters are included in the **Water Law Act** of 18 July 1991. This is largely due to EU regulations, above all the provisions of the **Water Framework Directive**. They are important not only in managing the protection of natural values of waters, but also in the process of their protection.



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.1 National guidelines for the conservation and characterization of agricultural biodiversity genetic resources

The **protection of biodiversity** must be implemented throughout the country, including in areas used for human production. This requires the adoption of innovative solutions that will take into account both economic and environmental interests. This particularly applies to **agriculturally used areas**, which constitute the main element of the **Polish landscape**. Agricultural areas are characterised by a rich mosaic of habitats resulting from traditional forms of farming, which means that about 30% of agricultural land has high natural values and functions as refuges for endangered species of flora and fauna. Such a situation forces fundamental changes in the agricultural sector, especially that Polish agriculture is currently preparing for the modernisation of agricultural production and rural areas. In the social perception, activities for the benefit of the environment are of lesser importance in view of the importance of structural problems. This leads to an increase in the threat to natural values.

Poland has so far lacked a clear policy aimed at sustainable rural development, combining protection of biodiversity in agricultural ecosystems and ensuring an adequate standard of living for farmers. This can only be achieved through the implementation of multi-annual agri-environmental programs leading to the promotion of **good agricultural practice** and enhancing the **ecological culture of rural communities**.



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.2 Regional lists of local agricultural biodiversity

Examples from Poland:

In 2011, the Wielkopolska Agricultural Advisory Centre in Poznań attempted to assess biodiversity on farms. For this purpose, on behalf of the Voivodship Fund for Environmental Protection and Water Management in Poznań, according to the assumptions of the project "Assessment of the condition of the environment and biodiversity in Particularly Sensitive Areas in the Wielkopolskie Voivodship", it conducted a survey of 50 farms located fully or partly in OSN. Randomly selected farms were surveyed.

The survey covered the following issues:

- agricultural biodiversity components,
- occurrence of elements that potentially enhance biodiversity,
- measures favouring the maintenance and enhancement of biodiversity,
- actions negatively affecting biodiversity conservation,
- other activities affecting biodiversity,
- elements of the farm environment that affect biodiversity.



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.2 Regional lists of local agricultural biodiversity

Examples from Poland:

Agricultural genetic resources

Between 1 and 10 different plant species were grown on the analysed farms. Based on the survey, it was found that the largest number of surveyed farms (22%) cultivated 4 plant species and a slightly smaller number (20%) cultivated 5 plant species (both on the basis of the current and previous year's sowing structure).

In the previous year, a comparable number of farms (20%) also cultivated 6 plant species.

Most of the crops were included in the following groups: **cereals, industrial crops, root crops, legumes and other fodder crops, and vegetables**. Cereals were the most commonly reported crop species.

The largest number of different plant species belonging to cereals were grown on a single farm (5 species). Most often only 1 plant species was grown from the same plant group, less often 2 species. Cereals were the exception. Most farms grow 3 or 4 species of cereal crops (28 and 34% of farms respectively on the basis of last year's sowing structure and 28 and 38% on the basis of the current sowing structure).

The analysed questionnaires show that next year the situation will be similar except for the cultivation of different cereal species. Most farms will grow 2 or 3 cereal species (28 and 30% of the surveyed farms, respectively).



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.2 Regional lists of local agricultural biodiversity

Examples from Poland:

Wheat is the most commonly grown cereal. This is followed by **triticale** and **barley**. Cereals provide refuges for wildlife and can also act as their food base. Cereal residues, which contain little nitrogen and a lot of lignin, decompose slowly and favour the development of fungi in the soil [Jończyk 2005]. Of the plants belonging to other groups, **maize** for green fodder and silage and **sugar beet** are the most commonly grown. **Potato** is also frequently found in structures. These plants have a destructive effect on the soil by leaving little crop residue, increasing humus decomposition and exacerbating erosion [Jończyk 2005].

The differences in sowing structures over time are small. Important for the preservation of biodiversity is the cultivation of **leguminous plants**. Their unique feature in the plant world is their ability to fix atmospheric nitrogen through symbiosis with bacteria of the genus *Rhizobium*.

In addition, these plants are of honey-growing importance. Of the group of legumes, lucerne is the most commonly grown on the surveyed farms (12% of farms).

On the other hand, among the group of industrial crops, **rapeseed** and **mustard** are grown most often. Both plants are melliferous plants, so their presence is important for the life of pollinating insects.



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.2 Regional lists of local agricultural biodiversity

Examples from Poland:

Agricultural crop genetic resources on the farms analysed usually included four species. The most common species were various **cereal crops**. Honey crops, which are important for biodiversity, were also present in the sowing structure. Agricultural animal genetic resources consisted mainly of cattle and pig species. The surveyed farms were mostly engaged in both types of animal production at the same time.

Another component of biodiversity consisted of organisms occurring in agroecosystems. The occurrence of one to four tree species on the farms was most often mentioned. On farms where the occurrence of shrubs was given, one to two species were usually present. Both trees and shrubs act as habitats and a food base for animals. Species of particular value included willow, wild rose, lilac and elderberry. Among the wildlife, three or five species of mammals and six different species of birds were mentioned most frequently, as well as one species each of amphibians, reptiles and mollusks. Rare species and species protected by national and foreign acts were also present among them.



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.2 Regional lists of local agricultural biodiversity

Landscapes and ecosystems of vast primeval forests (among others: **Augustowska Forest, Białowieska Forest, Kampinoska Forest, Tucholskie Forest, Dolnośląskie Forest**), in which, in addition to the richness of various types of forests, mid-forest marshes, lakes, rivers, dunes and also clearings - a relic of the former farming - have been preserved. The richness and diversity of microorganisms, fungi, plants and animals is characteristic for them. Despite the fact that natural forests: oak forests, beech forests, oak-hornbeam forests, alder forests, alder meadows, fir forests, pine forests and spruce forests cover the area of about 4% of Poland and have been preserved mainly in national parks and nature reserves, they represent dozens of basic typological units, internally diversified, which are home to half of the species of native flora and fauna and most species of fungi, among which there are species that are not found in other European forests.

The most valuable complexes include the **Swietokrzyski fir forest, riverside floodplain forests**, and unique on a European scale is a **part of the Białowieś Forest** in the areas of the National Park, in which relatively many features of natural and even primeval systems have been preserved.

The landscapes and ecosystems of free-flowing long rivers and their valleys (e.g. Biebrza, Bug, Narew, Vistula, Drawa); characterised by sandbanks, oxbow lakes and riparian **forests**, they occur wherever rivers have not been regulated for navigation or dammed. Compared to the whole continent, our ecosystems of unregulated river valleys are a particularly valuable natural habitat for rare and vanishing species of plants, invertebrates, fish, birds and are important corridors for bird migration and migration of some mammals.



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.2 Regional lists of local agricultural biodiversity

The floodplain forests of the river valleys are a refuge for about 67% of European bird species and the jewel among our rivers is the Narew River (especially within the boundaries of the Narew National Park) with its floodplains - the only remaining such lowland river (classified as anastomosing) in the whole of Europe.

Landscapes and ecosystems of extensive wetlands, including peatlands, whose history dates back to the end of the Ice Age. They occupy less than 4% of the country's area, and are characterised by different genesis, type of water management, nature of vegetation and properties of peat. Their vegetation includes **strictly protected species**.

Landscapes and ecosystems of sandy or cliff-lined stretches of the Baltic coast (e.g. shifting sands in the Lebsko Spit, cliffs in Wolin, Niechorze), enriched with bays, spits, lakes, peninsulas and estuaries of watercourses, strongly transformed in most Baltic countries. The flat parts of the coast are dominated by sandy beaches, dunes covered with poor vegetation (coastal psammophytes) and, at some distance from the shore, by crowberry **forests**.

Harmonious landscapes in **rural areas**. The mosaic of small strips of fields, meadows and pastures intersected by baulks, mid-field woodlots or clumps of trees and villages with traditional buildings, occasionally with preserved thatched roofs, cranes or windmills, create a unique landscape with the remnants of non-forest ecosystems in the form of ponds, wetlands, escarpments with xerothermic grasslands. This traditional type of farming, absent in most European countries, has enabled the survival of many rare communities of **segregated plants** and species representing the flora and fauna of bordering habitats. Poland, thanks to this type of farming, is still a refuge, often the main one, for many bird species, e.g. the **white stork**. However, this type of landscape in Poland is becoming increasingly rare.



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.3 Conservation sites of agricultural biodiversity “in situ” and “ex situ”

In the reborn Poland, as early as 1919, general regulations on the protection of rare animals and plants were introduced through a **decree of the Ministry of Religious Denominations and Enlightenment**. The first systematic regulation of species protection was the first Act on Nature Conservation of 1934.

The current canon of species protection in Poland has been greatly influenced by international agreements and EU law. The basic legal act on species protection in Poland nowadays is of course the **Act of 16 April 2004 on Nature Conservation**. According to its provisions (**Article 46(1)**), species protection in Poland covers not only the protection of specimens of specific species of plants, animals and fungi, but also the protection of their habitats and sanctuaries, i.e. the most important places for their existence and survival.

A distinction is made between *in situ* protection and *ex situ* species protection. In the first case, it is about protection in places where species occur naturally, and in the second case, outside such places. Ex situ protection is the protection in zoos, botanical gardens or gene banks of specimens of plants, animals and fungi of species threatened with extinction in their natural habitat (**Article 47(1)**). One of the main objectives of ex situ conservation is to work towards the reintroduction of specimens of endangered species into the natural environment as part of conservation programmes for these species. However, in situ conservation plays a fundamental role and is therefore affected by most of the regulations relating to species protection.

Species are protected by regulations of the Minister of the Environment.

These are:

Ordinance of the Minister of Environment of 5 January 2012 on the protection of plant species

Ordinance of the Minister of Environment of 12 October 2011 on the protection of animal species

Regulation of the Minister of the Environment of 9 July 2004 on the species of wild mushrooms covered by protection



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.3 Conservation sites of agricultural biodiversity “in situ” and “ex situ”

Examples of successful restorations in Poland:

- **Lapland willow** (*Salix lapponum*) and **blueberry willow** (*S. myrtilloides*) - thanks to the work of a team consisting of specialists of various scientific disciplines, employees of the University of Life Sciences in Lublin, in the years 2018-2020 the populations of endangered willow species in the **Polesie National Park** were enriched by over 6 thousand individuals

Active protection of relict willows was carried out in several stages. **Tissue cultures** were created, in which a mother stock of plants intended for introduction into the natural environment was produced from material originating from wild specimens (in the **Tissue Cultures Laboratory of the Faculty of Horticulture and Landscape Architecture**). The next stage consisted in acclimatisation of plants, initially under controlled laboratory conditions, then at the field acclimatisation station (at the Field Teaching and Research Station of the Department of Hydrobiology and Ecosystem Protection, Faculty of Environmental Biology), where plants grew under conditions similar to those in their natural environment. Then, appropriately prepared seedlings were transferred to selected locations in Polesie National Park.

- **Polish water crowfoot** (*Cochlearia polonica*) - plant species of the cabbage family - an example of **ex-situ conservation**

Polish lark used to grow only in the region of the Błędów Desert and Olkusz in spring areas and in the upper reaches of the Biała stream. Due to mining activities (carried out by the Maczki-Bór Sand Mine in the Pomorzany extraction field), these areas were drained, as a result of which the natural stands disappeared. However, the plant was timely moved to substitute sites in the region. The strongest population grows on the headwaters of the Centuria stream (right-bank tributary of the Biała Przemsza river) near the village of Hutki-Kanki, less numerous on the headwaters of Wiercica near Złoty Potok and Rajecznica near Ołudza. There have been several attempts at introduction, also outside the Silesian-Cracow Upland, but most of them failed and the plants survived only a few years in their new locations.



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.4 Germplasm banks and research connected organizations

There is a diverse structure and various networks in the field of germplasm banks and research.

Research on ecotypes of cultivated plants was initiated in 1907. K. Miczyński 1915. L. Kaznowski in PINGW in Puławy collected and researched national varieties of cultivated plants. Works of Prof. Kaznowski are continued in the Institute of Plant Breeding and Acclimatisation in Radzików since its foundation.

A selection is mentioned here:

- **National Center of Plant Gene Resources**, established in **IHAR in Radzików**
- **EGISET** electronic database
- **Polish Gene Bank**
- **Pathogen Gene Bank**, Institute of Plant Protection in Poznań,
- Collections of **legume symbiotic bacteria**, Ministry of Agriculture and Rural Development



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.5 Field conservation maps

Seed banks in Poland

• *Seed Bank at the Botanical Garden of the Polish Academy of Sciences in Powsin*

The cryogenic Seed Bank at the PAS Botanic Garden in Powsin, established in 1992, stores primarily seeds of rare, endangered and legally protected species of native flora. Currently, the bank stores seeds from 256 plant species represented by approximately 850 samples. It is the first such bank in Europe to collect collections under cryogenic conditions, which preserve the properties of seeds for up to several thousand years thanks to a maximum slowdown in the processes associated with seed ageing. The resources of the Seed Bank are being gradually enriched.

• *Silesian Seed Bank*

It is located in the Silesian Botanical Garden. This regional seed bank has been in operation since 2011. Its main purpose is to store seeds of rare and vanishing species important for the Upper Silesia region. Additionally, the bank **collects** seeds of species characteristic for certain types of habitats. They are often not threatened with extinction, but play a very important role in the proper functioning of the communities they are part of.

• *Bank in Pokrzydowo*

It contains seeds of old varieties of vegetables, fruit trees and ornamental flowers. Old plant varieties are adapted to local conditions and are sometimes more resistant to diseases and harsh climatic conditions. In addition, they have a unique taste and biological value.



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.5 Field conservation maps

- ***Seed bank in Warsaw***

The bank is run by Roman Muranyi and Malgorzata Zwierzynska, who do all the conservation work, necessary research and have raised the funds for the bank themselves. They have developed a technique for safely freezing and thawing seeds. By 2001, the seeds of about 100 species of Polish protected and endangered plants had been tested. As a "side effect" of the research, thousands of seedlings of rare species were obtained. These seedlings were not destroyed, but planted in the Botanical Garden and in the natural environment. In this way, three species of Polish plants were saved from extinction.

- ***University of Gdansk seed bank***

Biologists from the UG have created a seed bank of endangered plants found in Gdansk Pomerania, which will allow species to recover if they become completely extinct.

- ***Seed bank in Skierniewice***

The Regional Centre for Horticultural Diversity in Skierniewice is the place where a base is being created to restore crops. The bank will contain a seed reserve of horticultural and fruit plants as well as those threatened with extinction. The project is based on a 40-year old programme for the protection of gene resources in Poland. Over this time, a huge seed base has been accumulated. Currently, the bank contains over 10 000 different genotypes of nearly 70 species of vegetable plants and wild plants related to vegetable plants. A few species of ornamental plants can also be found there.



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.6 Seed savers' organizations, associations and consortia

The Farm-to-Fork strategy is a new comprehensive approach showing how Europeans value sustainable food management. It is an opportunity to improve lifestyles by providing wholesome and high quality food with health-promoting qualities. The greening of the **Common Agricultural Policy aims to** significantly reduce the use of chemical pesticides and their associated risks and to reduce the use of fertilisers and antibiotics.

The farm-to-table strategy also includes:

- ensuring sustainable food production,
- ensuring food security,
- stimulating sustainable practices in food processing, wholesale and retail, catering and mass catering,
- promoting sustainable food consumption and facilitating the transition to a healthy and balanced diet,
- reduce food loss and waste along the food chain,
- combating food adulteration in the food supply chain.

The farm-to-table strategy should contribute to achieving a circular economy. It will aim, among other things, to reduce the negative environmental impact of the food processing and retail sectors through action on food production systems, transport, storage, packaging and food waste. A sustainable food system must provide people with a sufficient and varied supply of safe, wholesome and affordable sustainable food at all times, even in times of crisis.

FOOD 2030 Strategy

- nutrition in a balanced and correct diet,
- food systems that support a healthy planet,
- closed loop and resource efficiency,
- increasing innovation and investment to strengthen communities.



MODULE 1 PART I – Results from the State-of-the-Art – POLAND



1.6 Seed savers' organizations, associations and consortia

- The development of quality food through the development of environmentally friendly crop production **methods**, protecting the environment, quality production (including reducing the use of pesticides, fungicides, herbicides and antibiotics) is a key objective of the **European Green Deal** (GREEN DEAL) . It ensures that a balance is achieved in the food chain and is mainly based on sustainable crop production.
- In order to feed the 7.6 billion inhabitants of the earth, it was necessary to increase agricultural productivity. Thus **monocultures based on GMO techniques** were introduced, intensive production methods with high use of chemical fertilisers and protection agents, causing impoverishment of the land and thus of the quality of the crops. An American study comparing 43 species of fruit and vegetables grown in 1950 and 1999 confirms a reduction in vitamin levels (vitamin C by 15%), protein by 6%, riboflavin by 38%, minerals (P, Fe, Ca) from 9 to 16%.
- Each of us needs more than seventy nutrients every day to maintain good health, and these may be lacking from highly processed foods. The problem is recognised in the FOOD2030 and Farm-to-Fork strategies for a change in dietary patterns towards a more balanced and healthy diet. This would bring huge economic, environmental and climate benefits.
- Farmers play a key role in preserving biodiversity. They are among the first to suffer the consequences of biodiversity loss, but they are also among the first to benefit from its restoration. Biodiversity enables them to provide us with safe, sustainable, nutritious and affordable food and provides them with the income they need to thrive and prosper. At the same time, some farming practices are a key factor in the decline of biodiversity. That is why it is so important to work with farmers to support and encourage the transition to fully sustainable practices. The decline in genetic diversity should be reversed by facilitating the use of traditional crop varieties and breeds. This would bring health benefits through a more varied and nutritious diet. Consideration should be given to revising the marketing rules for traditional crop varieties to contribute to their conservation and sustainable use, and measures should also be taken to facilitate the registration of seed varieties, including for organic farming, and provide easier market access for traditional and locally adapted varieties.



MODULE 1 PART I – Results from the State-of-the-Art – SPAIN



1.1 National guidelines for the conservation and characterization of agricultural biodiversity genetic resources

On 31 March 2004, Spain ratified the **International Treaty on Plant Genetic Resources for Food and Agriculture** (hereinafter, the International Treaty), acquiring an international commitment related to the conservation, sustainable use and exchange of these resources. The International Treaty was adopted by the FAO Conference on 3 November 2001 in Rome, Italy, and entered into force on 29 June 2004. Specifically, the objectives of the International Treaty are "the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of benefits arising from their utilisation in harmony with the Convention on Biological Diversity for Sustainable Agriculture and Food Security". The achievement of commitments acquired in the framework of the Treaty contribute to the fulfillment of other initiatives to which Spain is a party, such as the Sustainable Development Goals (SDGs) of the 2030 Agenda, the Aichi Biodiversity targets or the targets of the Global Strategy for Plant Conservation of the Convention on Biological Diversity.

Furthermore, in June 2014, Spain ratified the **Nagoya Protocol** on access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation to the **Convention on Biological Diversity** (hereinafter the Nagoya Protocol), which entered into force on 12 October 2014. The Nagoya Protocol provides that, in accordance with national legislation, access to genetic resources for utilisation shall be subject to obtaining prior informed consent and the establishment of mutually agreed terms. The Nagoya Protocol further requires users accessing genetic resources for utilisation from countries where access has been regulated to obtain a permit or authorisation attesting that access to such resources has taken place in accordance with the national legislation of the provider country.



MODULE 1 PART I – Results from the State-of-the-Art – SPAIN



1.1 National guidelines for the conservation and characterization of agricultural biodiversity genetic resources

In addition, **Regulation (EU) No 511/2014** of the European Parliament and of the Council of 16 April 2014 on user compliance measures under the Nagoya Protocol provides, that all users of genetic resources and traditional knowledge associated with genetic resources should exercise due diligence to ensure that they have been accessed in accordance with applicable legal or regulatory requirements, and ensure that fair and equitable benefit-sharing is established, where appropriate.

Spanish policy on the conservation of plant genetic resources is embodied in **Law 30/2006**, of 26 July, on seeds and nursery plants and plant genetic resources, which deals in Title IV with the management and protection of plant genetic resources. It regulates, for the first time with the status of law, the management and protection of plant genetic resources, with the aim of conserving and promoting their sustainable use, broadening the genetic base of crops, strengthening research and fostering the creation of close links between genetic improvement and agricultural development. In addition, as established by this law, within the scope of the Ministry of Agriculture, Fisheries and Food (MAPA) competences is also the establishment of measures aimed at the protection and conservation of traditional knowledge related to plant genetic resources. Title IV of this Law has been developed with regard to access and conservation of plant genetic resources, taking into account the current international and national framework, specifically in a program for the **Conservation and Sustainable Use of Plant Genetic Resources for Agriculture and Food**, developed by regulation through **Royal Decree 199/2017**, of 3 March, approving, and Order APA/63/2019, of 23 January, approving the first **Action Plan of the National Program for the Conservation and Sustainable Use of Plant Genetic Resources for Agriculture and Food** (2018-2022).



MODULE 1 PART I – Results from the State-of-the-Art – SPAIN



1.1 National guidelines for the conservation and characterization of agricultural biodiversity genetic resources

In this context, and taking all of the above into account, **Royal Decree 429/2020**, of 3 March, has been published, approving the Regulation on access to plant genetic resources for agriculture and food and to those cultivated for use for other purposes, and amending various royal decrees on plant products. The aim of this royal decree is to complete the development of Title IV of Law 30/2006, of 26 July. In this way, it regulates access to Spanish plant genetic resources, taking into account the access mechanisms established by the International Treaty and the Nagoya Protocol. **The Royal Decree also aims to promote plant breeding with the participation of farmers** and to broaden the genetic base available to them, as well as **to conserve and protect traditional knowledge of interest for phyto-genetic resources** for agriculture and food in Spain.



MODULE 1 PART I – Results from the State-of-the-Art – SPAIN



1.2 Regional lists of local agricultural biodiversity

In Spain, the National Program for the Conservation and Use of Plant Genetic Resources, established through a Ministerial Order on 23 April 1993 as well as the Action Plans approved to date, include among their priority areas the development of an Inventory of the ex situ collections of the National Network.

Since 1994, the National Plant Genetic Resource Center (CRF), as part of its work as documentation hub of the plant genetic resources conserved in the National Network, develops, publishes and keeps updated the National Inventory of the collections participating in the Program. On its website, you can search through the passport data of all materials conserved in the public Network of collections.

In some regions public institutions makes available for farmers part of this genetic material through the sale like the IMIDRA in Madrid , or loan of seeds like the Centre for Forestry Research and Experimentation (CIEF) in Valencia

In addition to the listing of plant material from official bodies, local and regional Communities Seed Banks (CSB) organized in a National seed network, have created their own lists and exchange networks. For example, the Andalusian network, one of the more active their own database available online.



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1.3 Conservation sites of agricultural biodiversity “in situ” and “ex situ”

A. In situ and on-farm conservation sites

In Spain, public in situ conservation is carried out in protected natural areas. However, in all these areas, conservation focuses on wild flora and fauna, and none of them specifically contemplates the conservation of wild species related to cultivated species. There are some exceptions, like an initiative launched by CRF-INIA which, using ecogeographical criteria and with the help of CAPFITOGEN tools, have improved the size and quality of their *Lupinus* collection and carried out the collection of wild relatives associated with major cereal and leguminous crops; the César Gómez Campo germplasm bank of the Polytechnic University of Madrid which has collected wild relatives in the Sierra del Rincón Biosphere Reserve,

Not to mention the work of seed companies and commercial nurseries, with regard to on-farm conservation, activity to date has been limited to private groups, mainly organized in a seed network. This network operates around Community Seed Banks (CSB), based on networks of seed custodians and farmers' networks. This network operates at local level with 30 groups. In the case of public institutions, each one has their testing fields, where they identify and reproduce, but only IMIDRA in Madrid in its field in Arganda del Rey, local varieties are multiplied among others, and sold to farmers.



Graphic 1. Geographic distribution of public institutions members of the National Network of the Program for the Conservation and Use of Plant Genetic Resources¹

¹https://webx.inia.es/web_inventario_nacional/Instituciones_eng.asp



MODULE 1 PART I – Results from the State-of-the-Art – SPAIN



1.3 Conservation sites of agricultural biodiversity “in situ” and “ex situ”

B. Ex situ conservation sites

The **National Plant Genetic Resource Center (CRF)** is the coordinator of the National Network.

In addition, the **Andalusian Institute for Research and Training in Agriculture, Fisheries, Food and Organic Production (IFAPA)** in Cordoba hosts the World Olive Variety Collection, which is part of the World Olive Variety Germplasm Bank.

Also, in Valencia, linked to the **University of Alicante**, the ABH Germplasm Bank is being created on the basis of the Working Collections, already available at the ibero-american centre for biodiversity (CIBIO), from the different lines of botanical research. The creation of a Base Collection (long-term conservation) and an Active Collection (medium-term conservation) is planned, following the international conservation standards of the FAO, IBPGR, IPGRI, etc. The aim is to be a world reference in the genera Bituminaria, and Medicago (Sect. Dendrotelis) both of the Leguminosae family.

Finally, the **Miquel Agustí Foundation (FMA-UPC seed Bank)** preserves a very important collection of plant genetic resources of vegetable species, with a total of 2,428 entries of 29 vegetable species. These materials represent an important part of the cultivated biodiversity of the most common vegetable species. Half of the varieties that are preserved are traditional Catalan varieties donated by farmers from all over Catalonia. The aim of the bank is to guarantee the conservation of this phylogenetic heritage of Catalan horticulture and to promote the return of the materials to the cultivation fields all over the territory.



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1.4 Germplasm banks and research connected organizations

Complementary to the previous network, there is also the [Network of Wild Plant Germplasm Banks and Native Phyto-resources \(REDBAG\)](#), which is made up of the Spanish members of the botanic gardens network that have a germplasm bank (BAG), as well as those banks that depend on institutions other than botanic gardens and that are equally active in the management of wild species.

The institutions member of this network are:

[Royal Botanical Garden of Madrid,](#)

[Juan Carlos I Royal Botanical Garden.](#)

[Atlantic Botanical Garden](#)

[Marimurtra Botanical Garden.](#)

[Botanical Garden of Barcelona](#)

[Botanical Garden of the University of Valencia](#)

[Botanical Garden of Soller](#)

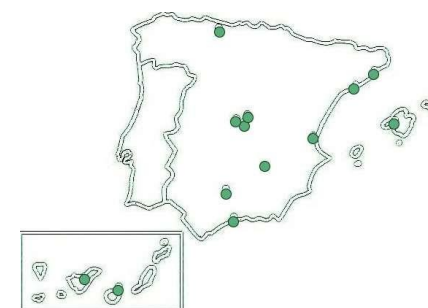
[La Concepción Botanical-Historical Garden of Málaga](#)

[Botanical Garden of Castilla-La Mancha](#)

[Andalusian Plant Germplasm Bank \(BGVA\)](#)

[César Gómez Campo germplasm bank of the Polytechnic University of Madrid](#)

As a resume, an inventory of institutions involved in the ex situ conservation of plant biodiversity in Spain it is described in this [link](#).



Graphic 2.
Geographic distribution of public institutions members of the Spanish Network of Wild Plant Germplasm Banks and Native Phyto-resources (REDBAG).



MODULE 1 PART I – Results from the State-of-the-Art – SPAIN



1.5 Field conservation maps

In Spain public *in situ* conservation is carried out in protected natural areas but focused on wild flora and fauna. For agriculture species the process that has normally been followed is, firstly, the **collection and characterisation of the local material** that gathered some highly appreciated characteristics, followed optionally by improvement processes, generally by public institutions, and from there to the multiplication phase, normally by private actors.

The germplasm banks of the public centers can conserve plant material *invivo*(pots) or *in vitro*, material that can be multiplied regularly so as not to lose viability on their own experimental farms. Only (as already seen, in some cases like IMIDRA) public institutions sell material to the market.

This process has given rise to many food designations of origin, such as all those for wine, horticultural products such as **Calanda peaches** and **Jerte cherries**, or processed products such as Galician bread, using local varieties already cultivated. Thanks to the efforts of the producers themselves and public centres, new local varieties are gradually being incorporated , depending on the interest shown.

The maintenance and multiplication of local phylogenetic resources that already have a commercial use, and are associated with denominations of origin, are normally carried out in commercial nurseries when some kind of certification is required. On other occasions, the recovered and multiplied seeds are made available to interested farmers with a commitment to return a similar quantity or send information to be incorporated into the database to be used; or they are exchanged among the members and/or partners of the seed networks. Sometimes, what is distributed is the seedlings for several networked cooperatives, which provide financial support.



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1.5 Field conservation maps

The **European Farmer's Pride** project, developed between 2017 and 2020, aimed to build a **European network for *in situ* conservation and sustainable use of plant genetic resources**. For this purpose, an interactive map below shows the localities of in situ plant genetic resources custodians who have expressed an interest in joining the network (see graphic 3). It also shows the institutes and organizations which support the establishment of the network.

Royal Decree 124/2017 seeks to promote public-private collaboration through a new figure, the seed producer, dedicated exclusively to the **production and commercialisation of seeds** of conservation varieties and varieties developed for cultivation under specific conditions. In this way, the conservation and sustainable use of plant genetic resources is encouraged, with special emphasis on varieties adapted to local conditions. Royal Decree 429/2020 establishes the process to obtain access authorization to Plant Genetic Resources for Food and Agriculture, until now only accessible to plant breeders in national and foreign programs, or for conservation work. With a few exceptions, this material is not for sale for commercial purposes (to be used in farms for their cultivation). Only **IMIDRA (Comunidad de Madrid)** sales local tomato plants produced in their facilities, but all of them have description of the varieties, and in some cases with information on consumer tasting scores.



Graphic 3. Organizations in Spain members of the Farmers pride project
(<http://www.farmerspride.eu/>)



MODULE 1 PART I – Results from the State-of-the-Art – SPAIN



1.6 Seed savers' organizations, associations and consortia

In Spain, in order to be able to market seeds or nursery plants, professionals must first be registered. A public record can be consulted on the website of the Ministry, where producers are classified according to the groups of species in which they are authorised to produce. The technical regulations for many of these groups provide for the classification of producers into three possible categories: breeder, reproducer or multiplier and set out the requirements for each.

In parallel, there are also the exchange networks and Communities Seed Banks organised in the Red de Semillas network (www.redsemillas.info). This organization of a technical, social and political nature, aims to bring together the various local projects in Spain and provide instruments for carrying out activities in the field of the preservation and utilisation of agricultural biodiversity, helping to coordinate activities amongst the different members and promoting their participation in national and international projects. The main assets of the Network are the people and the organisations that belong to it. They include farmers and farming organisations, agricultural experts, supporters of responsible consumption and fair trade, local action groups, germplasm banks, university staff and students, ecologist movements, research centres, etc. Work is done via the local networks on the preservation of genetic diversity in their areas through the recovery, conservation, improvement and use of the local agricultural varieties that have been passed down by farmers over the years.



MODULE 1 PART II – Gallery of Niche Market Farming - GERMANY



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

Slow-Food Network Germany

Slow Food: global network with millions of people from more than 160 countries

Slow Food Germany was founded in 1992 as the first national association outside Italy

- aims at creating a food world based on fair relationships that promotes biodiversity, climate and health.
- the goal of the political commitment is a socially and ecologically responsible food system that protects people and animals, the environment and the climate.
- active with the dissemination of nutrition knowledge, dedicated educational work, events, advocacy and campaigns at local, national as well as European level.
- the homepage offers a Germany-wide overview of participating restaurants, supporters, events, etc.
- “Ark of Taste (Arche des Geschmacks)”: project to save forgotten varieties and species



MODULE 1 PART II – Gallery of Niche Market Farming - GERMANY



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

Regionalwert AGs (Regional Added Value Stock Corporation):

The Regionalwert AGs are regional support networks organised as stock corporations. They issue stocks to shareholders, mostly the regional population and sometimes also companies, associations or foundations.

- aim is to support the development of short chains in the region. It does so through providing financial means. The money coming from issuing stocks is used to provide affordable loans or to acquire ownership fractions (e.g., silent participations) of food producers, processors or food retailers of one region.
- beyond the required reporting of a stock corporation regarding economic aspects of its investment, the shareholders usually expect a detailed reporting about the ecological benefits of the supported companies.
- in Germany there are currently 9 Regionalwert AGs established. Together, they have a capital stock of over 15 mio Euros provided by more than 5 000 shareholders. The 9 networks work with more than 200 partnering corporations along the value-chain. Three more are currently in the course of formation.
- the homepage offers a Germany-wide overview of the Regionalwert AGs.



MODULE 1 PART II – Gallery of Niche Market Farming - GERMANY



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

Food councils: regional, fair and ecological food supply

Food councils promote regional food production and fair prices for farmers.

- Currently, there are 45 food councils working for a more sustainable and democratic food system.
- the homepage offers a Germany-wide overview of the previous food councils.
- the project pursues three main goals: it supports networking and exchange among the food councils and initiatives, it serves as a figurehead and mouthpiece for the still very young food council movement, and it drives the development of an umbrella organization for the network with its own structures and legal form.
- the network office advises start-up initiatives, organizes exchange formats, represents the network externally, arranges contacts for concrete questions or project ideas, and coordinates preparations for the founding of a network association.



MODULE 1 PART II – Gallery of Niche Market Farming - GERMANY



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

The Association of Regional Food Initiatives

The Association of Regional Food Initiatives considers itself a network of expertise.

- it represents a large variety of initiatives that support sustainable and regional food production and the establishment of short chains.
- it provides its members with knowledge and skills as well as services from consulting to the development of an app to promote the different local activities, stores and products.
- an overview in the form of a map and a list of members can be found on the website of the German regional food initiatives.



MODULE 1 PART II – Gallery of Niche Market Farming - GERMANY



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

Model regions for organic agriculture

Model regions for organic agriculture are initiatives on the regional level to promote organic agriculture and short chains. These initiatives are supported by the federal states to establish networks of organic producers and food processors. Additionally, these networks organize awareness-raising activities and strengthen the marketing structure for regionally produced food (short chains). Currently there are 9 model regions in Baden-Württemberg, 27 model regions in Bavaria, and eight in Hesse.

- Baden-Württemberg
- Bavaria
- Hesse

Nature parks, biosphere reserves and in some cases national parks can play a vital role in preserving old varieties.

With their task of bringing regional development and the preservation of landscape as well as biodiversity together, the promotion of old varieties/species and short chains are often part of their field of activities. They initiate projects for the development of specific products, promote these products (e.g. in the tourism sector) and define quality standards e.g. through their own labels or brands. Additionally, the protected area administrations can play a valuable role in acquiring funding for projects or providing knowledge and developing networks.



MODULE 1 PART II – Gallery of Niche Market Farming - ITALY

2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization



With reference to **Umbria**, the most important initiatives for the conservation and development of genetic resources started in the years 1980s.

One of the first initiatives was in 1981 the establishment of the **Consortium for the Protection of Montefalco Wines**, collecting all wine producers of the area, since the **genetic resource vine "Sagrantino"** was at risk of erosion due to replanting of vines due to poor productivity with a prevalent replanting of non-native varieties or substitution with other crops. **Sagrantino DOCG** with 660 ha, is considered currently one of the most prized red wines in Italy, one of the most well-known Italian wines in the world.

Another example can be given by the genetic resource **Farro di Monteleone**, that was studied as local populations of an emmer ecotype, **Triticum dicoccum**, traditionally cultivated in the small village Monteleone di Spoleto and surroundings. After the studies led by the University of Perugia and the establishment of the Consortium the **PDO** was released by the European commission after the favourable opinion by Italian the Ministry of Agriculture, Food and Forestry Policies. **Old cereals** are more and more popular, reproduced, planted and harvested to make niche market flours for special bread (*Triticum aestivum*) or pasta (*Triticum durum*).





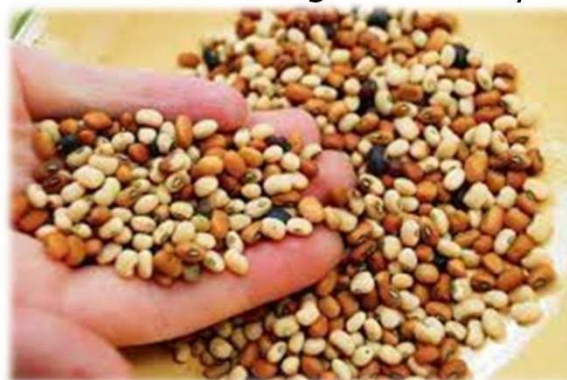
MODULE 1 PART II – Gallery of Niche Market Farming - ITALY



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

An example of ongoing procedure of geographical indication is that related to *Fagiolina del Trasimeno* **Vigna unguiculata L. Walp.**, a kind of bean traditionally cultivated on the shores of the lake Trasimeno and surrounding hills. This genetic resource, with origins in Northern Africa and arrived during the first phase of Roman Empire, was **endangered in the years 1960s** for its manual harvesting due to different times of maturing and harvesting (end July – beginning October), as cultivated just by four old farmers and therefore with high risk of erosion. In the years 1990's the University of Perugia, the Province of Perugia and the Mountain Community of Trasimeno and Middle Tiber Valley started with genetic studies on remaining populations and **characterization of the cultivar** that demonstrated a very high level of biodiversity in terms of colours, skin characteristics and taste. **Slow Food** recognized this biodiversity a Slow Food Presidium in 2006, as one of the most important at world level.

After those studies, acknowledgements and awards the *Fagiolina del Trasimeno* became rapidly very popular on the market of niche food products and it's today produced by around 40 farmers, most of them taking part in a producers' Consortium, used in traditional recipes by chefs of the most renowned restaurants of Lake Trasimeno and commercialized particularly in the central and northern regions of Italy with a price range between 16 and 24€ per kilo.





MODULE 1 PART II – Gallery of Niche Market Farming - ITALY

2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization



It is also very important the agricultural biodiversity represented in Umbria by the **olive tree varieties**, some of them **listed in the register of the regional genetic resources**, and constituting **different production areas**, namely five, as **sub-zones** of the **Protected Designation of Origin Extra-Virgin Olive Oil Umbria (PDO EVOO Umbria)**, one of the most appreciated in Italy and in the world, **PDO since 1997**. The germplasm banks and collection of cultivars in experimental fields of various research centres of the **University of Perugia**, Department of the Agricultural, Food and Environmental Sciences (**UNIPG-DSA3**) National Research Council (**CNR**) and the Council for the Research in Agriculture and Agrarian Economic analysis (**CREA**), are collaborating in initiatives taken at local and regional, as well as national, level to deepen studies on olive tree genetic resources and their further on farm development.

The five sub-zones, **Colli di Assisi-Spoleto, Colli Martani, Colli Amerini, Colli del Trasimeno e Colli Orvietani**, certified as PDO Umbria, are based on geographical areas and specific cultivars listed making different the bromatological and sensory characteristics of the Extra-virgin Olive Oil, also in relation to the health claims recognized to some EVOO compounds by the European Food Security Agency (EFSA). The area between Assisi and Spoleto, for its traditional landscapes characterized by slope dry stone walls has been recognized as one of FAO **Globally Important Agricultural Heritage Systems** (GIAHS).





MODULE 1 PART II – Gallery of Niche Market Farming - ITALY

2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization



Truffles, even if currently not included in the regional register of genetic resources, can be considered another excellence of the biodiversity of agricultural interest in Umbria, and can be therefore added as a **potential case study** to the initiatives of the rural communities towards a sustainable rural development included in the farm-to-fork strategies.

Truffle (Tuber), included in the **list of UNESCO Humanity Intangible Heritage**, it is an important genetic resource, regulated down by regional law April 9th 2015, nr.12, within a territory including in Umbria eight municipalities (Cascia, Citeria, Città di Castello, Gubbio, Norcia, Pietralunga, Scheggino, and Valtopina), organizing important regional and national exhibitions, with different varieties in Umbria, all the best commercial available in Umbria, among them **Tuber magnatum Pico**, the Prized White Truffle, **Tuber melanosporum Vitt.** (Norcia Prized Black Truffle), **Tuber aestivum Vitt.**, also known as “scorzzone”, **Tuber aestivum Vitt. forma Uncinatum (Chatin)**, genetically same as the previous one but available in autumn/winter period.

Truffles, having in Italy a deep-rooted gastronomic tradition, have been included in a National Plan of the Truffle Supply Chain 2017-2020 and recognized as genetic resource of agricultural interest, with decades of experience on protection of wild truffle areas, controlled development of truffle mycorrhized plants and habitat environmental research focused on sustainable exploitation.





MODULE 1 PART II – Gallery of Niche Market Farming - POLAND



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

Sustainable food initiative in Poland

What challenges does the sustainable food market face? And what is its potential? Answers to these questions can be found in a report prepared by Accenture based on a survey of 1,031 respondents from Poland, from different age groups and interviews with companies. The publication also includes an analysis of potential opportunities from the changing market environment.

As consumers become more aware of the role of food in their lives and, at the same time, wish to protect the climate and the environment and maintain acceptable food prices, a new business opportunity has been born. These are products of sustainable agriculture, on which Poles are already able to spend as much as PLN 64.6 billion annually in the medium term. This is an opportunity to build a market on a massive scale, which is a niche today.

Consumers realize that such products will cost more than conventionally produced ones and are prepared to pay more for them, although less than for organic food. For companies and farmers, this is an opportunity to make better margins when selling and producing food, but also to be part of the global trend towards climate protection and resource-conscious management. The development of this market will be further supported by EU policies and allocated subsidies for the development of sustainable farming practices on farms, the 'green' approach of financial institutions or the implementation of digital solutions. These changes imply a transformation of the entire ecosystem, although, importantly, some companies are already moving strongly in this direction.



MODULE 1 PART II – Gallery of Niche Market Farming - POLAND



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

NUTRITECH I competition of the programme entitled Government programme NUTRITECH - nutrition in the light of the challenges of improving societal well-being and climate change.

The main objective of the programme is to increase the availability of products and solutions for proper nutrition with a view to 2030 by implementing the results of research and development, taking into account the principles of sustainable development.

The specific objectives of the programme are:

- Implement the solutions developed (health-promoting products, nutrition plans, processes, technologies and accompanying services) to reduce the risk of chronic non-communicable diseases (including diet-related diseases).
- Implementation of developed solutions (personalised diet, health-promoting products, supporting tool, services) targeting people affected by chronic non-communicable diseases.
- Implement through technological solutions the principles of sustainability in the production and distribution processes of health-promoting foods.

As a result of the implementation of the NUTRITECH programme, Polish research units and enterprises will be supported in developing the capacity to create and use solutions based on the results of scientific research in order to give a developmental impulse to the economy and for the benefit of society in the following thematic areas:

- T1. NUTRIGENOMICS AND BIOMEDICINE AS A TOOL TO SUPPORT THE CURRENT FIGHT AGAINST COMMUNICABLE DISEASES (INCLUDING DIETARY DISEASES).
- T2. FOOD IN THE TREATMENT AND PREVENTION OF DISEASE.
- T3. TECHNOLOGICAL AND ECONOMIC ASPECTS OF PROPER NUTRITION.



MODULE 1 PART II – Gallery of Niche Market Farming - POLAND



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

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MODULE 1 PART II – Gallery of Niche Market Farming - POLAND



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

Polish Association of Sustainable Agriculture "ASAP"

The Polish Association of Sustainable Agriculture "ASAP" is a non-commercial initiative of a group of companies and individuals representing various branches of the food chain. The Association undertakes a range of activities to promote, educate and cooperate in the area of sustainable agriculture in Poland. Their members are representatives of industries from the entire food responsibility chain. They were prompted to become involved primarily by an awareness of our responsibility for good food quality and a desire to strengthen the potential of Polish agriculture.

Over the course of several years, their membership has expanded to include representatives of further branches of the food chain. Currently, "ASAP" is made up of producers of seed, seed potatoes, barley malt, fertilisers and plant protection products, producers of biopreparations for agriculture, distributors of fodder and producers of specialist phytogenic preparations, processors of fruit and vegetables, as well as representatives of the financial, meat, catering and brewing industries.



MODULE 1 PART II – Gallery of Niche Market Farming - SPAIN



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

Spain participates in other initiatives related to plant genetic resources for food and agriculture like:

1. The **European Cooperative Program for Plant Genetic Resources (ECPGR)** is a collaborative program between most European countries aimed at contributing to the rational and effective conservation of PGRFA, facilitating access to them and promoting their use. Spain has belonged to ECPGR since its foundation and has attended all the regular and extraordinary sessions of its Steering Committee, as well as those organised by the working groups on wheat, barley, grain legumes, vines, potatoes and other solanaceae, cucurbits, etc.
2. The **Climate Change and Energy Transition Law (law 7/2021)** dedicates its article 20 to the "consideration of climate change in food security". To this end, a National Climate Change Adaptation Plan for 2030 is established, which includes "specific strategic objectives, associated indicators and adaptation measures aimed at mitigating food security risks associated with climate change, including the emergence of emerging food risks". Specifically, one of its priority lines of action for the agriculture, livestock, fisheries, aquaculture and food sector is the "promotion of agricultural, livestock and aquaculture practices that promote greater resilience to the impacts of climate change", for which the conservation and use of agricultural biodiversity, including PGRFA, play a fundamental role.



MODULE 1 PART II – Gallery of Niche Market Farming - SPAIN



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

3. Spain's **Strategic Plan for the post-2020 Common Agricultural Policy** (2021 - 2027)

The European Commission's Common Agricultural Policy (CAP) reform proposal of June 2018, while retaining the essential elements of the current CAP, establishes a new approach, under which it is the Member States who must establish the details of the interventions or measures by drawing up a Strategic Plan. The new Plan includes, among other objectives

- Promote diversification of production and the inclusion of crops and breeds with greater potential to adapt to climate change due to their lower vulnerability in future climate change scenarios.
- Maintaining agricultural, livestock and forestry diversity, as well as ensuring the sustainable use of these genetic resources.
- Promote sustainable agricultural production systems, such as organic farming.
- Improve knowledge of agricultural, livestock and forestry practices for the conservation of biodiversity as well as information and advice.



MODULE 1 PART II – Gallery of Niche Market Farming - SPAIN



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

4. Achieving commitments under the **Convention on Biological Diversity**

Within the framework of the Convention on Biological Diversity, there are strategies that include among their objectives the conservation of crop genetic diversity:

- **Aichi Biodiversity Targets** (2011-2020), in its Target 13: "By 2020, the genetic diversity of crop wild relatives is maintained and strategies are developed and implemented to minimise genetic erosion and to safeguard their genetic diversity".
- **Global Strategy for Plant Conservation**, Target 9: "70% of crop genetic diversity, including crop wild relatives, is conserved".
- The post-2020 Global Biodiversity Framework, currently under development, recognises the importance of biodiversity and the benefits it provides. The Framework builds on the Strategic Plan for Biodiversity 2011-2020 and sets out a plan to implement actions to achieve a transformation in society's relationship with biodiversity. It has five targets for 2050, one of which is to **maintain genetic diversity**.



MODULE 1 PART II – Gallery of Niche Market Farming - SPAIN



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

5. Sustainable **Development Goals of Agenda 2030**

Among the SDGs, Goal 2, End hunger, achieve food security and improved nutrition, promote sustainable agriculture, has a specific target dealing with the genetic diversity of seeds, cultivated plants and their associated wild species. In the national framework, and specifically with regard to the situation of native varieties at risk of genetic erosion, Spain has been working on policies and programs to support the conservation and sustainable use of plant genetic resources. To measure the achievement of these measures in relation to PGRFA, two indicators are used, on which the Ministry of Agriculture, Fisheries and Food reports periodically to the National Institute of Statistics:

- **Plant genetic resources conserved in germplasm banks in the medium or long term and the proportion of landraces considered to be at risk of extinction, not at risk or with an unknown level of risk.**
 - **Proportion of conservation varieties (land races or indigenous varieties) threatened by genetic erosion.** To measure this indicator, the conservation varieties registered in the Register of Commercial Varieties are calculated with respect to the total number of varieties registered in the Register.
 - More details can be accessed via the following link:
<https://www.ine.es/dynt3/ODS/es/objetivo.htm?id=48>
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MODULE 1 PART II – Gallery of Niche Market Farming - SPAIN



2.1 Initiatives promoting the farm-to-fork strategy focused on agricultural biodiversity conservation, production and commercialization

6. Different private initiatives are continually emerging, albeit with some public support, to enhance the value of the richness of the local agricultural heritage, recovering local varieties and putting them on the market, for example:

On the island of Ibiza, farmers helped by the Leader program's local action group and the island's authorities through the Can Marines agricultural experimentation center are recovering for commercial use the Ibizan red potato, the Penjar tomato and the Ibizan cabbage. In the case of the former, after a selection process, the seeds have been in the hands of the farmers since this year. This potato, although less productive, has better organoleptic qualities than other more cultivated varieties, although it is only marketed under the seal of a locally produced product, not under any PDO.

In the Guadalhorce Valley region, a group of producers grouped together in an association are trying to promote the *Huevo de Toro* tomato and consolidate its position on the market. It is a local variety from this region of Malaga, only used in family gardens till now, and was already been characterised by the IFAPA, a public body dependent on the Andalusian Regional Government. Although it had very good organoleptic conditions, its thin skin and low productivity had displaced it from the market and was in danger of being lost.

Another example would be the attempts to recover local potato varieties in the area around the Sierra Nevada national park in Granada. Several varieties such as *ojo de perdiz* and mainly *copo de nieve*, preserved and multiplied by local farmers and the ecological cooperative "la Tasquivera" have started to be marketed through the Asociación el Encinar, the Asociación Ecovalle and later through the Cooperativa Valle y Vega and the Ecomercado de Granada in short marketing channels. These efforts are now being supported by the Park itself, which distributes seed to the farmers.



MODULE 1 PART II – Gallery of Niche Market Farming



2.2 Initiatives promoting the biodiversity strategy at EU level

The **EU Biodiversity Strategy for 2030** was adopted on May 3rd, 2020, and followed by the Communication from the Commission. It is designed to halt the loss of biodiversity and the degradation of ecosystems, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss. This ambitious headline target is supported by a set of six targets which are described in the Strategy and a budget of 20 billion € within 2030. This strategy also follows the 2006 **EU Biodiversity Action Plan** which aimed at “halting the loss of Biodiversity by 2010 and beyond” in line with the global commitments made in Nagoya in 2010 at the Convention on Biological Diversity. Because of the decisions taken, the EU adopted its Biodiversity Strategy in 2011. The strategy contained a set of targets and actions to halt the loss of biodiversity and ecosystem services by 2020.

https://ec.europa.eu/environment/nature/biodiversity/strategy/index_en.htm

The European Commission has also fostered activities aimed to involve the stakeholders as actors of the changes needed to achieve the fixed objectives. Farmers and experts have been involved to get their feedback and proposals.

https://green-business.ec.europa.eu/businessbiodiversity_en

The European Court of Auditors is currently carrying out an audit to assess whether the EU’s agriculture policy has contributed to maintaining and enhancing biodiversity by 2020.

https://www.eca.europa.eu/lists/ecadocuments/ap19_09/ap_biodiversity_en.pdf





MODULE 1 PART II – Gallery of Niche Market Farming



2.2 Initiatives promoting the biodiversity strategy at EU level

The main European Commission Directorates-General involved as responsible for the biodiversity strategy are:

- the Directorate-General for Agriculture and Rural Development (**DG AGRI**)

and

- the Directorate-General for Environment (**DG ENV**).

Another Directorate-General, the Joint Research Centre (**JRC**), carries out research on biodiversity in farming, along with one of the EU's decentralised agencies, the European Environmental Agency (**EEA**). Finally, **Eurostat** (the Commission's Directorate for statistics) collects, compiles and publishes important data relating to agricultural biodiversity.

EU support for farmland biodiversity derives mainly from the 2014–2020 CAP, funded by the **European Agricultural Guarantee Fund** (EAGF) and the **European Agricultural Fund for Rural Development** (EAFRD). The schemes most relevant to farmland biodiversity are:

- **Cross-compliance**, a mechanism that links direct payments to compliance by farmers with basic standards concerning the environment, food safety, animal and plant health and animal welfare;
- **Greening** (funded from the EAGF), direct payment rewarding farmers for fulfilling requirements, largely reflecting normal farming practices, beneficial for soil quality, carbon sequestration and biodiversity

and

- **Rural Development** (funded by the EAFRD) which is implemented by the Member States and the regions of the EU.

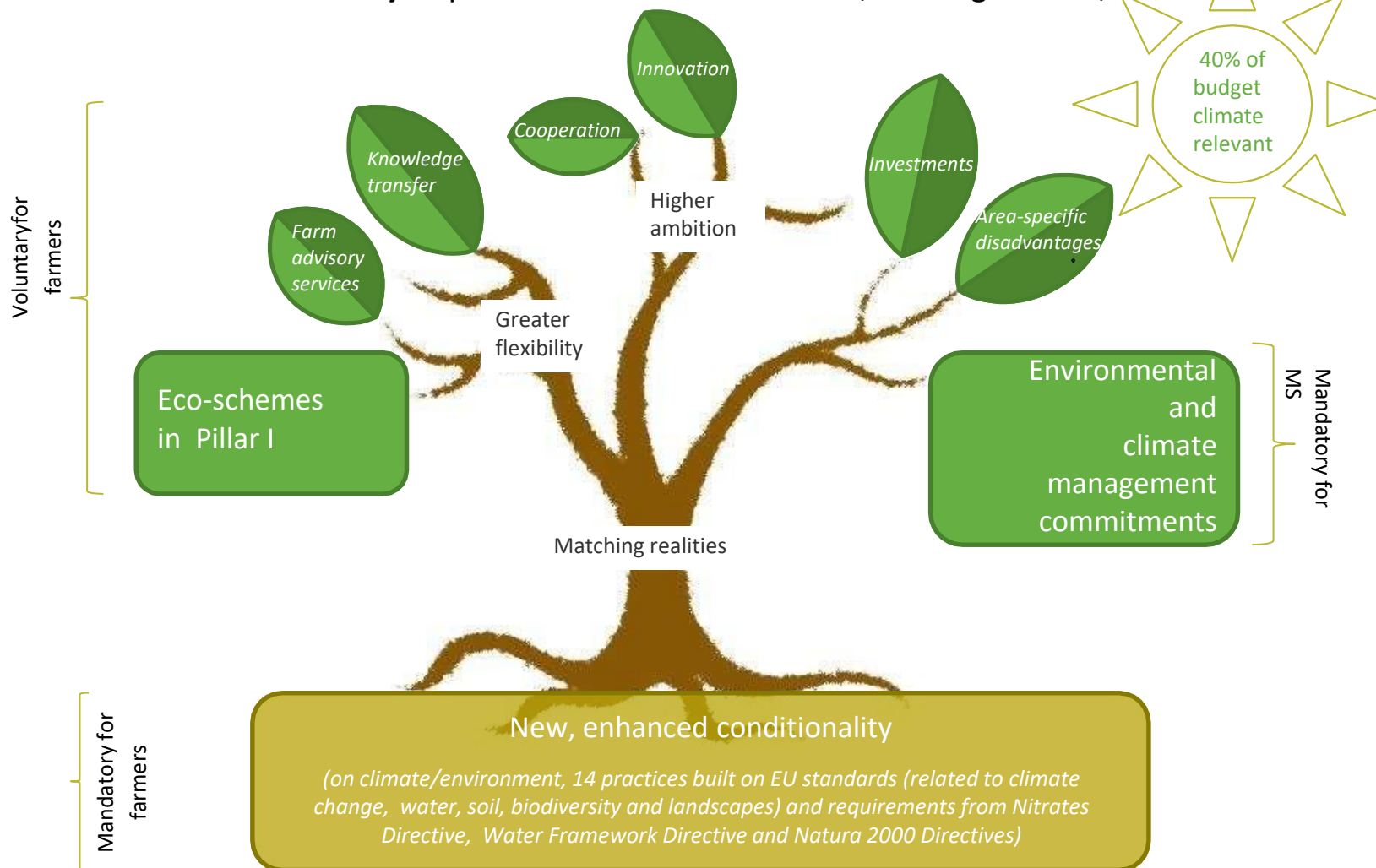


MODULE 1 PART II – Gallery of Niche Market Farming



2.2 Initiatives promoting the biodiversity strategy at EU level

The revision of the **conditionality** as passed in the RDP 2021-2027, starting in 2023, can be summarized as follows:



MODULE 1 PART II – Gallery of Niche Market Farming



2.2 Initiatives promoting the biodiversity strategy at EU level





MODULE 1 PART II – Gallery of Niche Market Farming



2.2 Initiatives promoting the biodiversity strategy at EU level

All together this picture of the new CAP, with specific reference to the application of the Farm-to-Fork Strategy and the Green Deal objectives highlights the importance for the EU and the commitment to halt the biodiversity loss through and Action Plan including specific measures aimed to protect and recover traditional agricultural landscapes and biodiversity.

GREEN DEAL OBJECTIVES

FARM TO FORK STRATEGY



- Europe will strive becoming the world's first climate neutral continent
 - More ambitious climate target for 2030
 - Sustainable Europe Investment Plan (1 trillion €/10y)
 - European Climate Pact (including local communities, society, industry and schools)
 - Biodiversity Strategy for 2030
 - New Circular Economy Action Plan
- Covering the whole value chain
 - Ensuring a decent living for farmers
 - Providing Europeans with nutritious, affordable and safe food
 - Preserving rural areas and investing in their future
 - Enhancing circular economy and use of renewable energy sources
 - Action Plans at European, National and Regional level



MODULE 1 PART II – Gallery of Niche Market Farming

2.3 Farmers' contributions to tackle biodiversity loss

Biodiversity of all agriculture species of crops are strongly interdependent. Origin

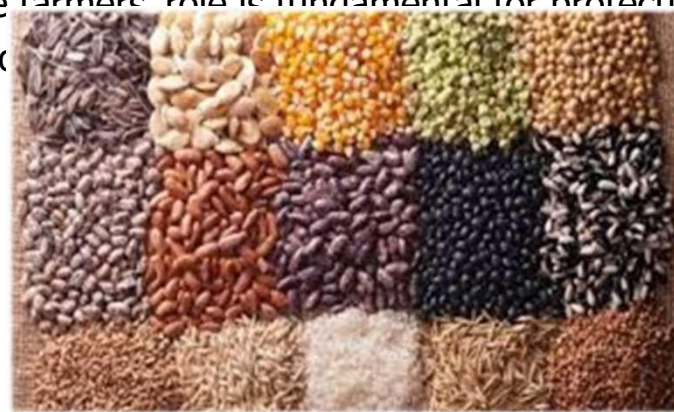
domesticated livestock are the result of many thousands years of human intervention.

Agriculture can contribute to conservation and sustainable use of biodiversity, and both promotes and is enhanced by biodiversity.

Agricultural biodiversity includes all components of **biological diversity** of relevance to food and agriculture, and all components of **biological diversity** that constitute the agricultural ecosystems: the **variety and variability** of animals, plants and micro-organisms, at the genetic, species and ecosystem levels, which are necessary to sustain key functions of the agroecosystem:

- ensuring food production security;
- maintaining ecosystems;
- allowing adaptation to changing conditions including climate change
- sustaining rural peoples' livelihoods.

Because of this historical, cultural and practical evidence farmers' role is fundamental for protecting traditional crops and land use to food





MODULE 1 PART II – Gallery of Niche Market Farming

2.3 Farmers' contributions to tackle biodiversity loss

The farmers' engagement had been already highlighted in the CAP 2014-2020 in terms of responsibility towards the environment, under the words greening and conditionality attributed to the environmental rules, but the current CAP 2021-2027 strengthens even further this role, including the following objectives to be achieved:

- **Legally binding targets** to be proposed in 2021
 - No deterioration of any protected ^{Plant} habitats and species by 2030: positive trend for at least **30%**
 - Agroecology: Organic farming **≥25%**
 - Biodiverse landscape features **≥10%**
 - 50% reduction of use and risk of pesticides
 - Reduction of pollution from fertilisers by **50%** and by **≥ 20%** their use
 - **3 billion additional trees** respecting ecological principles
 - Reverse decline in **pollinators**
 - Remediate **contaminated soil** sites
 - Restore **≥ 25,000 km** free flowing rivers
 - New Urban Greening Platform
 - Halve the number of **'red list' species** threatened by Invasive Alien Species
- A strategic task related to biodiversity protection is particularly dedicated to recover areas of very high biodiversity value & important for mitigation and adaptation to climate change, including all primary and old growth forest

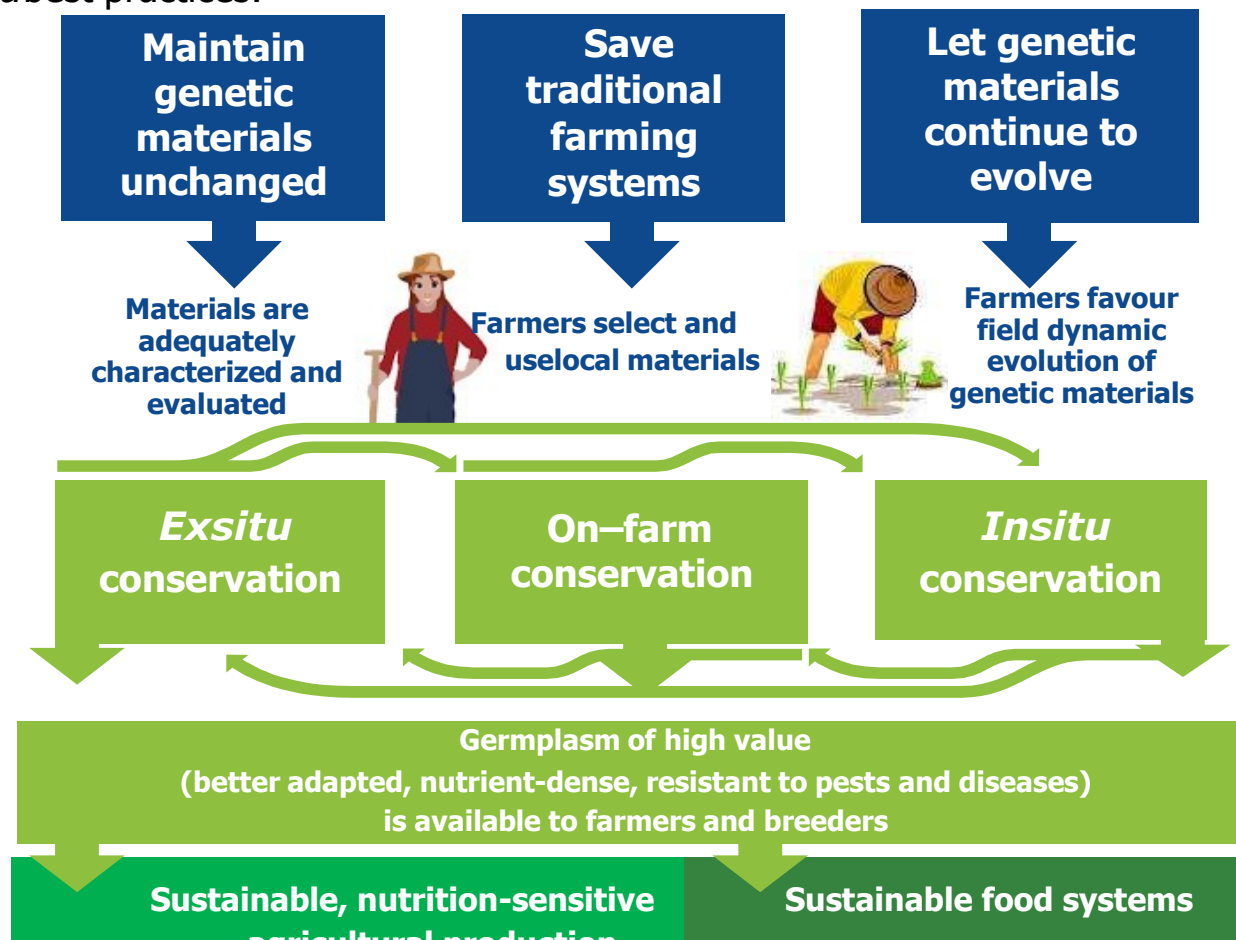




MODULE 1 PART II – Gallery of Niche Market Farming

2.3 Farmers' contributions to tackle biodiversity loss

The farmers' key contribution in collaboration with research centres and gene banks to tackle biodiversity loss can be summarized in the following diagram showing the importance of integrating on farm conservation with *insitu* and *exsitu* best practices:

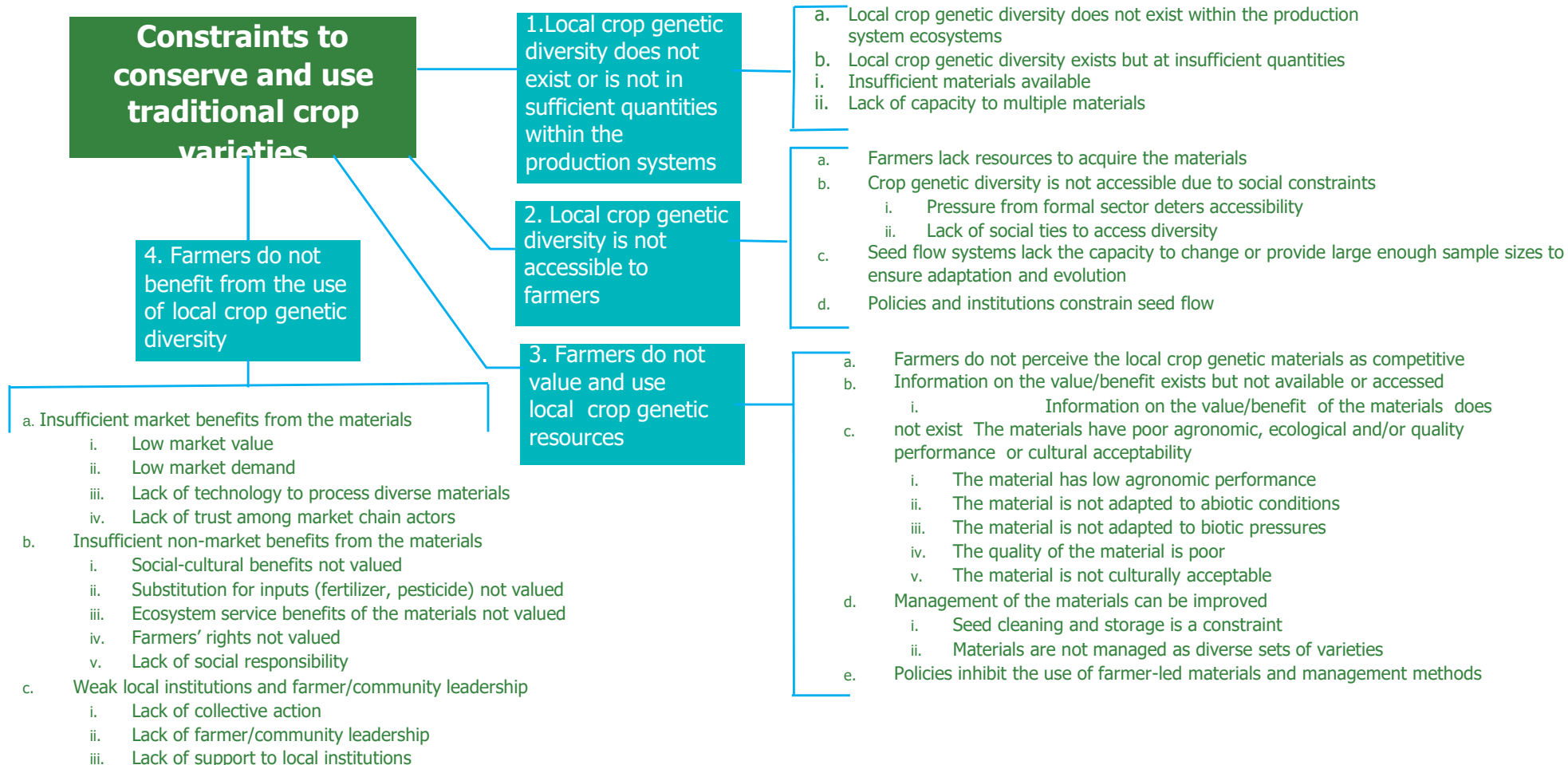




MODULE 1 PART II – Gallery of Niche Market Farming

2.4 Agricultural Knowledge Innovation Systems and Agricultural Biodiversity

To understand farmers' constraints to conserve and use traditional crop varieties is fundamental to adopt an agrobiodiversity strategy. Potential difficulties are listed here below starting from 4 main kinds emerged:





MODULE 1 PART II – Gallery of Niche Market Farming

2.4 Agricultural Knowledge Innovation Systems and Agricultural Biodiversity

The collection of constraints listed and elaborated as needs analysis, can be considered a practical and effective methodology to better set problems and find solutions facing the limits that farmers, researchers, advisory services and responsible authorities should overcome to recover and maintain the local agricultural genetic resources.

The list of constraints have been detailed within a research by various authors titled «Conserving agricultural agrobiodiversity for use in sustainable food systems» on <https://www.bioversityinternational.org/> and it's a useful starting point to analyze the problems to be faced in specific areas.

From four main constraints a lot of connected situations are listed examining potential factors limiting the use and development of local genetic resources by farmers.

This approach can facilitate practical solutions that can be found to enhance the opportunities to let farmers use local genetic resources and therefore recover, spread and maintain the agrobiodiversity.

The experience has demonstrated that where the the local agrobiodiversity is considered a cultural, social and economic asset also the corresponding farmers' organization, in form of network or consortium, contributes to recover, maintain cultivate and valorize the local genetic resources.

In this case the advisory services, the research centres, the germplasm banks, and the policy makers support the role of the seed savers and farmers involved in the production of agrobiodiversity based local crops.

The Agricultural Knowledge Innovation Systems can play a fundamental role connecting the tradition to innovation, local crops with digital technologies that can help make more attractive and competitive the rural areas for the new generations.

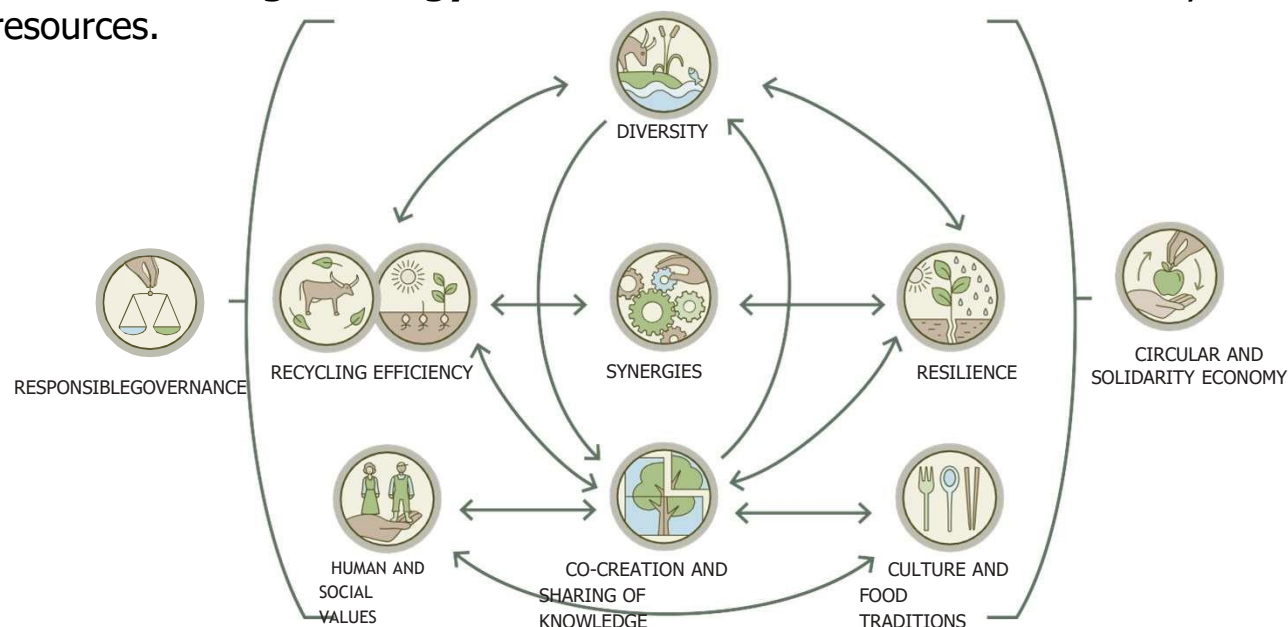




MODULE 1 PART II – Gallery of Niche Market Farming

2.4 Agricultural Knowledge Innovation Systems and Agricultural Biodiversity

The efforts to enhance the potential of agricultural biodiversity have involved the main important international and national organizations contributing to create a feasible and effective model of good practices. The scheme, reproduced here below, recently elaborated by the Food and Agriculture Organization of the United Nations in a publication highlights the **importance of the various factors contributing to develop agrobiodiversity as a part of an holistic agroecology vision** for a more sustainable food security based on traditional genetic and cultural resources.



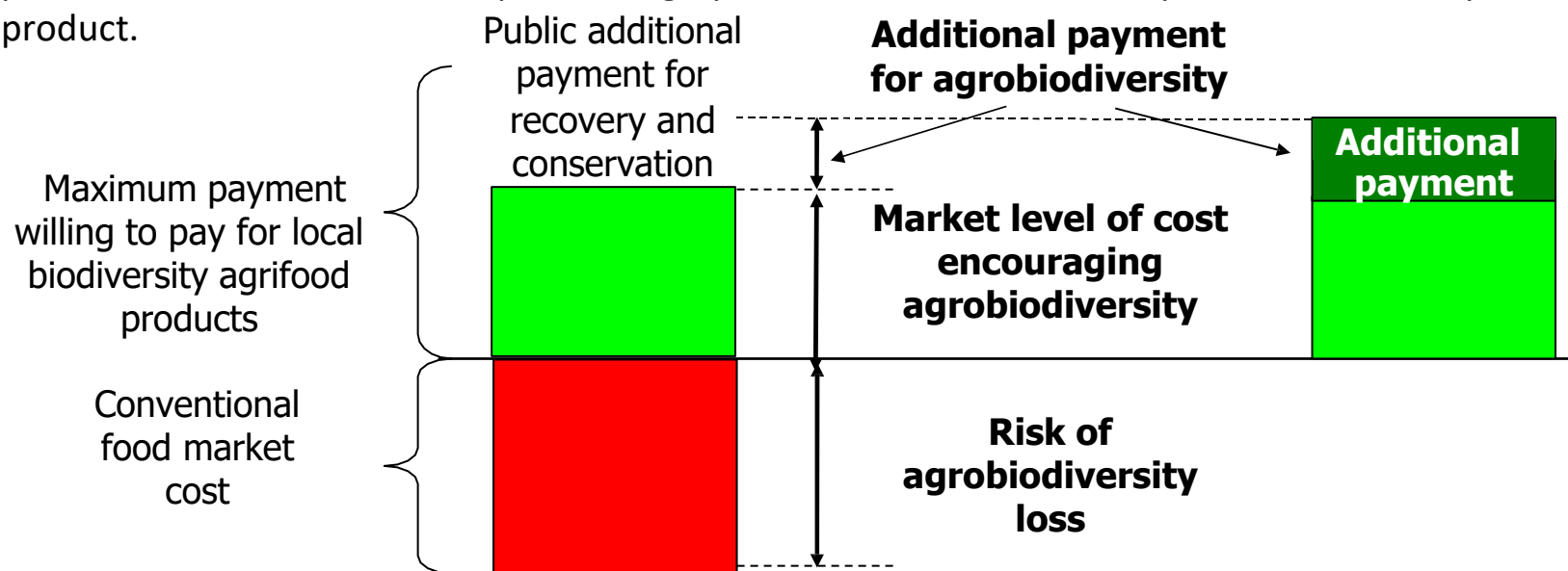
Source: FAO Harnessing the potential of the 10 elements of agroecology to facilitate agrifood systems transformation – From visual narratives to integrated policy design, Rome, 2023 <https://doi.org/10.4060/cc4049en>



MODULE 1 PART II – Gallery of Niche Market Farming

2.5 Protecting, recovering and developing traditional food systems

Some studies (World Bank, FAO, etc.) have been focused on the price that consumers are available to pay as contribution to the conservation of agrifood local biodiversity and related rural landscapes compared to conventional food. A general availability has been registered from consumers to prefer local agrobiodiversity products up to a certain amount. This option can be considered positive, but it should be accompanied by payments supporting recovery and conservation of agrobiodiversity. The corresponding measure, that was 10.2 of the past RDP 2014-2020 “Support to environment and climate change” as support for conservation and sustainable use and development of genetic resources in agriculture”, continues in the RD Programme 2021-2027 under the specific objective 6 “Contribution to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes”. The graphic here below shows the potential cost analysis of a niche farming product.





MODULE 1 PART II – Gallery of Niche Market Farming

2.5 Protecting, recovering and developing traditional food systems

Where the **economic benefits of producing local crops conserving biodiversity are not sufficient** and farmers start to abandon certain species, breeds or varieties that may be prioritized from a public good conservation perspective, **incentive schemes** can be created to compensate farmers for conserving agricultural biodiversity on their farms. The importance of positive incentives for the conservation of biodiversity has been explicitly recognized by the **Convention on Biological Diversity**.

Value chain development is an incentive mechanism that has gained increasing attention in recent years as a tool for developing the potential of agriculture niche market channels by promoting the cultivation of specific neglected and underutilized crop species and varieties or breed local livestock breeds and promoting awareness and interest of consumers for the on-farm conservation of locally adapted genetic resources through mechanisms such as **eco-labelling, organic** or **geographical indication certification**.

Such support can generate enhanced benefits for farmers through access to **local species and varieties characterized and reproduced by gene banks and research centres**, due to **interest of dealers and consumers**, constitution of **farmers' networks and consortia focused on specific local varieties or breeds** and **community supported farming groups**.

The **organic farming process** can give an added value to agricultural biodiversity as it is a well-known certification stated in Europe since 1991 with the first regulation (EC Reg. 2092/91) for plants and since 1999 (EC Reg.1804/99) for animals, subsequently substituted by **EC Reg. 834/2007**.



MODULE 1 PART II – Gallery of Niche Market Farming

2.5 Protecting, recovering and developing traditional food systems

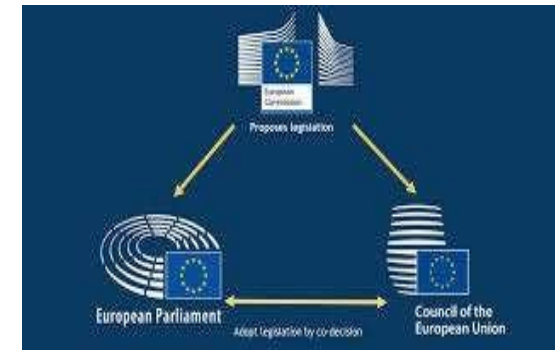
Agricultural biodiversity can get a certified guarantee by the **Regulation (EU) No 1151/2012** that has detailed all aspects related to characteristics and labelling of the Geographical Indications of quality agriculture and food products in the European Union and substituting the regulation EC 510/2006 that had previously replaced the regulation 2081/1992.

The **intellectual property protection** had been developed since the **Directive 2005/29/EC** of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council, and Regulation (EC) No 2006/2004 of the European Parliament and of the Council (**'Unfair Commercial Practices Directive'**)

The Directive has been amended by the **Directive (EU) 2019/2161** of 27 November 2019 on better enforcement and modernization of Union consumer protection rules, part of the **'New Deal for Consumers'** combined with the **New Consumer Agenda**.

This last step is important to limit fake or imitated traditional food products and protect therefore the traditional agrifood system.

There are various organizations contributing to support the European institutions to increase the protection level such as European Union Intellectual Property Office, Safe Food Advocacy Europe and European consumers organizations.



MODULE 1 PART II – Gallery of Niche Market Farming

2.5 Protecting, recovering and developing traditional food systems

An important initiative to support agrofood biodiversity and traditional food systems have been launched by **FAO** under the certification **Globally Important Agricultural Heritage Systems (GIAHS)**. The concept of Globally Important Agricultural Heritage Systems (GIAHS) is distinct from, and more complex than, a conventional heritage site or protected area/landscape, such as those pertaining to Natura 2000 sites. A GIAHS is a living, evolving system of human communities in an intricate relationship with their territory, cultural or agricultural landscape or biophysical and wider social environment. The maintenance of the traditional cultivations, agrobiodiversity and food systems are interconnected with humans and their livelihood activities and adapted to the potentials and constraints of the environment and shaped the landscape and the biological environment ensuring high levels of resilience to cope with the changes, such as climatic variability and change, i.e. natural hazards, new technologies and changing social and political situations, to ensure food and livelihood security and alleviate risk . This has led to an accumulation of experience over generations, an increasing range and depth of their knowledge systems. Dynamic conservation strategies and processes allow maintaining biodiversity and essential ecosystem services thanks to continuous innovation, transfer between generations and exchange with other communities and ecosystems. Also this worldwide initiative can be therefore considered a support to agrobiodiversity as an evolving and dynamic traditional food system.



Food and Agriculture
Organization of the
United Nations



GIAHS

Globally Important Agricultural
Heritage Systems





MODULE 1

Conclusions and lessons learnt

- The concept of **niche market farming** has been developed starting from the State-of-the-Art on conservation and maintenance of the genetic resources in the participating countries Germany, Italy, Poland and Spain, highlighting similarities and differences in the organization of ***in situ***, ***exsitu*** and **on farm conservation**, with a specific view on germplasm banks, agrobiodiversity collection fields, regional agrobiodiversity maps and seed savers and farmers' communities supporting recovery, maintenance and resilience of the agrobiodiversity in specific areas.
- The importance of a collaboration between **gene banks** and **research centres** from one side, and **farmers/farmers associations** on the other side, within a **national and regional framework of laws and rules supporting the agrobiodiversity**, has been highlighted as vital factors to ensure the resilience of local genetic resources.
- Some **specific local varieties** have been shortly described as examples that can be more in-depth analyzed as concrete case studies.
- Evidence of **local agricultural genetic resources** have been treated on a national and regional basis from the four participating countries and enlarged to a European and international view in a nutshell based on **organic farming, PDO-PGI-TSG certification** as potential evolving trends for niche market farming and traditional food systems security.
- The importance of the agrobiodiversity within the framework of natural biodiversity difence, as in the case of **Natura 2000** protected sites, has been implemented with examples of **EU CAP measures** aimed to recover and maintain endangered plant species and breeds, or initiatives such as **FAO GIAHS** to support traditional food systems and rural community food security based on agrifood biodiversity.





GLOSSARY



- **Agenda 21**, is a non-binding action plan of the United Nations with regard to sustainable development, result of the Earth Summit (UN Conference on Environment and Development) held in Rio de Janeiro in 1992.
- **Biodiversity**, is a measure of the genetic variability of species (species diversity), and ecosystems (ecosystem diversity). Some of all species have an agricultural interest for their contribution to food security.
- **Climate Change**, is a commonly used expression referring to the problems and risks for the planet deriving from greenhouse gas (GHG) emissions , such as global warming, desertification and occurrence of catastrophic climatic effects.
- **Convention on Biological Diversity**, known informally as the **Biodiversity Convention**, is a multilateral treaty to develop national strategies for the conservation and sustainable use of biological diversity.
- **European Green Deal**, approved in 2020, is a set of policy initiatives by the European Commission with the aim of making the European Union (EU) climate neutral in 2050, also with intermediate objectives such as the GHG reductions target for 2030 to at least 50% and towards 55% compared with 1990 levels.
- **Farm-to-Fork**, is a strategy aiming to reduce the environmental and climate impact of primary production while ensuring fair economic incomes for farmers, also including circular and green economy as a positive factor.
- **Globally Important Agricultural Heritage Systems** (GIAHS), is a program launched by the Food and Agriculture Organization (FAO) of the United Nations to recognize and award remarkable land use systems and landscapes including biodiversity, resilient ecosystems, and valuable cultural heritages.
- **Paris Agreement on Climate Change**, is an agreement within the United Nations Framework Convention on Climate Change based on an international treaty adopted in 2015 and signed in 2016 by 197 countries, covering climate change mitigation and adaptation by dealing with problems caused by climate change, and committing countries to spend money and adopt measures aimed to reduce the effects of GHG emissions.



GLOSSARY



Plant genetic resources: Genetic diversity and variance of plants that are important for agriculture, food and the environment. These include old crop varieties, wild plants and other plant species that contain important genetic information that can be used for future adaptations to climate change, diseases and pests, and for the development of new crop varieties.

Old crop varieties and old livestock breeds: Formerly widespread varieties of crops and livestock that have often been replaced by new, high-performing varieties in modern agriculture. They are characterised by special properties such as robustness, adaptability and taste/culinary qualities and can preserve valuable genes for agriculture.

Germplasm: Refers to the first stage of plant development in which a fertilised plant cell is produced that contains all the genetic information from the mother and father plant. This cell then divides further and forms an embryo from which the plant eventually grows. Germplasm is thus the cell of origin for a new plant and therefore contains all the genetic information for its development and characteristics.

Field conservation maps: Maps showing the distribution and location of important plant genetic resources in a given geographical region, often at field level. They can help identify areas of high genetic diversity, prioritise conservation measures and support sustainable use of these resources. The maps are produced by collecting and analysing data on the diversity and distribution of wild plants and old varieties and can be used by breeders, conservationists and decision-makers to support the conservation and sustainable use of plant genetic resources.



GLOSSARY



Model regions for organic farming: Initiatives at regional level to promote organic farming and short chains. In the regions there is a high density of organic farms and a pronounced awareness of environmental and climate protection. They often serve as role models for sustainable agriculture. These initiatives are supported by the federal states to build networks.

Protected areas for agricultural biodiversity "in situ" and "ex situ": In situ protected areas are places where agricultural biodiversity is conserved and protected directly in its natural environment. This includes, for example, traditional farming areas, wild plant habitats and protected areas for livestock breeds. Ex situ protected areas are places outside their natural habitat where agricultural biodiversity is conserved and protected, e.g. in gene banks, botanical gardens or breeding farms. Both types of protected areas are important for the protection and conservation of agricultural biodiversity, especially in the face of threats from climate change, diseases or pests, and help to ensure the conservation of valuable genetic resources for future generations.

Biodiversity Promotion Act (BDFG) : Law in Germany that aims to promote biodiversity (biological diversity). It regulates measures for the conservation and development of species and habitats and for the protection of threatened plant and animal species. Among other things, the law stipulates that e.g. federal authorities or municipalities must take biodiversity into account in their decisions and projects and thus serves as an important instrument for the protection of biodiversity and contributes to the implementation of national and international goals for the conservation of biodiversity.

Conservation Variety Ordinance: The Conservation Variety Ordinance (part of the BDFG) lays down rules for the cultivation and conservation of varieties of certain crops in order to preserve and promote their genetic diversity. The Ordinance defines conservation varieties as old, regional or particularly valuable varieties that are of particular importance for agriculture and biodiversity. Among other things, the ordinance stipulates that conservation varieties are to be preserved and promoted on public green spaces and farms, and that information on the varieties is to be compiled centrally.



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Part I - Questions



1. What do we mean by niche market farming? (* - Tick on the right answer)

- a) Agriculture just reserved to Agenda 2000 sites.
- b) Sector restricted to luxury food products.
- c) Local farmers' market.
- d) Market related to genuine quality food within a short producer/consumer supply chain.
- e) Luxury packaging for food commodities.

2. What is the Convention on Biological Diversity? (*)

- a) It is an agreement on European nature conservation related to Natura 2000.
- b) It is an international framework for biodiversity conservation after 1992 Earth Summit Agenda 21.
- c) It is a selected list of environmental indicators corresponding to sustainable economic activities.
- d) It is a list of prescriptions that all world countries are engaged to respect.
- e) It is a consultancy forecast report on the environmental future conditions .



3. Why niche market farming can be more sustainable than conventional? (*)

- a) Because the commodities are on the contrary available all over the world for low prices and are not remunerative for farmers.
- b) Because the directives adopted by the European Union oblige the farmers to maintain the local genetic resources.
- c) Because it contributes to recover old varieties saving the biodiversity, keeping farmers in less favored areas and protecting traditional rural landscapes.
- d) Because niche market farming is the only chance to decrease CO2 and other GHG emissions within the limits foreseen by the Green Deal.
- e) Because there are no other opportunities given within the new CAP.

4. Is there a link between the Paris Agreement on Climate Change and the European CAP goal on biodiversity? (*)

- a) The CAP goal on biodiversity is connected to the international engagement to limit emissions and recover limit the loss of biodiversity .
- b) There is no connection between the two acts as the European Union is completely independent in its decisions.
- c) There is a connection due to the obligations on biodiversity recovery that are mandatory for the European Union.
- d) There are engagements due to the Paris Agreement limiting the agricultural biodiversity as it can not be included within the World Trade Organization agreements.
- e) There are just provisional measures to tackle the loss of biodiversity that can not be avoided anyway.

**5. What characterizes the local agricultural biodiversity in many regions in Baden-Württemberg?**

- a) Fields with old vegetables
- b) Slopes with old grape varieties
- c) Orchard meadows
- d) Areas with old field crops
- e) Wide variety of old livestock breeds

6. What is not an objective of the national technical program for plant genetic resources, prepared by the German Federal Agency for Agriculture and Food?

- a) Conserve the diversity of wild and cultivated plant genetic resources in situ and ex situ in the long term in a scientifically sound and cost-effective manner.
- b) Strengthen international cooperation for cooperative, internationally equitable global management of the biological resource base for food, agriculture, forestry and fisheries.
- c) contribute to the conservation and restoration of agricultural and horticultural ecosystems, including orchard and grassland ecosystems.
- d) Exploit and promote synergies that can result from increased cooperation at the national, supranational-regional and international levels.
- e) To make the diversity of plant genetic resources more usable through appropriate measures, including characterisation, evaluation, documentation and breeding-related development.



Part I - Questions

S



7. How many documents constitute the National Biodiversity Plan of Agricultural Interest in Italy? (*)

- a) There is one general document dedicated to all kinds of agricultural biodiversity without any distinction.
- b) There are two documents, one including plant and animal agricultural biodiversity and another one dedicated to microbial biodiversity.
- c) There is no specific document focused on existing agricultural plant and animal biodiversity but just general guidelines.
- d) There is no national document on agricultural biodiversity but just regional lists and descriptions.
- e) There are three main documents corresponding to Plant, Animal and Microbial Biodiversity.

8. What is the purpose of the Italian national law 2015/194 and what are the principles stated therein? (*)

- a) It is focused on the description of all kinds of agricultural biodiversity of national interest without specific reference to guidelines and principles.
- b) It established the principles for an agriculture and food biodiversity national protection and development system, aimed at protection and recovery of genetic resources.
- c) It is limited to adopt general international and European guidelines and principles on how to cope with loss of agricultural genetic resources.
- d) It introduces the concepts of agricultural biodiversity and germplasm banks to ensure the correct management of the agricultural genetic resources.
- e) It is focused on management of the Natura 2000 sites to ensure the maintenance and develop of the natural biodiversity in protected areas.



M

Part I - Questions

S



9. **What was the most commonly reported crop species in the Wielkopolska region?**

- a) Vegetables
- b) Legumes
- c) Cereals
- d) Root crops
- e) Industrial crops

10. **Which crops are especially important for biodiversity?**

- a) Industrial crops
- b) Feed crops
- c) Root crops
- d) Honey crops
- e) Cereals

**11. What is the main repository of information on plant genetic resources in Spain?**

- a) National repository of farming genetic resources
- b) Slow food España data center on agricultural biodiversity
- c) The Centre for Forestry Research and Experimentation (CIEF) in Valencia
- d) **The National Plant Genetic Resource Center**
- e) In Spain, information on plant genetic resources is not organised in a centralised way.

12. Where is in situ conservation mainly carried out in Spain?

- a) On private farms
- b) In seed banks
- c) Through the initiative of private companies
- d) In situ conservation is not carried out in Spain
- e) **In protected natural areas**



Part II - Questions

US



13. What is the purpose of establishing model regions for organic agriculture?

- a) To promote the use of synthetic fertilizers and pesticides
- b) To establish large-scale industrial agriculture
- c) To establish networks of organic producers and food processors
- d) To import products from other countries
- e) To ignore the role of short chains in regional development

14. What are Regionalwert AGs and what is their aim?

- a) Regionalwert AGs are global support networks aimed at promoting large-scale agriculture.
- b) Regionalwert AGs are regional support networks that issue stocks to shareholders to provide affordable loans and acquire ownership fractions of food producers, processors, or retailers in one region
- c) Regionalwert AGs are initiatives that promote the use of synthetic fertilizers and pesticides.
- d) Regionalwert AGs are initiatives that import food from other countries.
- e) Regionalwert AGs are initiatives that ignore the role of short chains in regional development.



Part II - Questions

S



15. **How the agrobiodiversity constituted of olive genetic resources in Umbria has been labelled? (*)**

- a) The extra-virgin olive oil Umbria has no specific quality label but only a reference to Umbria as product origin.
- b) There is a quality label referred to extra virgin olive oil Umbria PGI as specific geographical indication.
- c) The extra-virgin olive oil is labelled as "PDO Umbria", including indication of five different regional areas.
- d) There are municipality denominations of the extra virgin olive oil from the different areas of origin.
- e) There is a quality label referred to extra virgin olive oil from Umbria only for organic agriculture.

16. **Are currently the different species of truffles identified as agrobiodiversity in Umbria? (*)**

- a) Yes, the main commercial species are listed in the in the register of the regional genetic resources of agricultural interest in Umbria.
- b) No, they are not currently listed in the register of the regional genetic resources of agricultural interest in Umbria.
- c) No, they can not be registered as they have not been recognized by the European Union as agricultural species.
- d) Yes, all species characterized and recorded have been included in the register of the regional genetic resources of agricultural interest.
- e) No, but there is an ongoing process to include them in the register of the regional genetic resources of agricultural interest in Umbria.



Part II - Questions

AS



17. **What is NOT one of the objectives of the NUTRITECH I competition?**

- a) Increasing availability of products and solutions for proper nutrition
- b) Reducing risk of chronic non-communicable diseases
- c) Targeting people affected by chronic non-communicable diseases
- d) Implement principles of sustainability in the production
- e) Providing training about precision farming

18. **The goal of the ASAP Association is to educate in the following area:**

- a) Sustainable agriculture
- b) Beekeeping
- c) Landscape design
- d) Cultural heritage
- e) Forestry



Part II - Questions

15



19. How does the "Climate Change and Energy Transition Law (law 7/2021)" include references to the conservation of agricultural biodiversity?

- a) Establishing improvement protocols for sustainable agricultural management
- b) Law 7/2021 makes no reference to agricultural biodiversity
- c) Fostering sustainable energy management of seed bank facilities
- d) Providing for climate change mitigation measures that specifically protect biodiversity conservation sites
- e) Through the promotion of agricultural, livestock and aquaculture practices that promote greater resilience to the impacts of climate change

20. Which of the following private initiatives related to plant genetic resources for food and agriculture is not carried out in Spain?

- a) Penjar tomato from Ibiza
- b) Ibizian cabbage
- c) Huevo de Toro tomato from Guadalhorce Valley
- d) Copo de nieve potato from Sierra Nevada
- e) Red chickpea from La Rioja

