# COMMON CURRICULUM

## AgroBioCom – Rural Competence Network: Traditional Crop Varieties and Livestock Breeds









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# Preface

This curriculum aims to equip vocational school students with a comprehensive understanding of the importance, management, and promotion of traditional landraces and livestock breeds as keystones of rural innovation and regional identity. It blends theoretical knowledge with hands-on examples from across Europe. By exploring real-world European case studies, students will learn to appreciate the interconnectedness of ecological, economic, and cultural values, and are prepared to contribute to sustainable rural development and agrobiodiversity conservation in future careers. The program is composed of six modules that build on each other but also can be used individually.

**Module 1: Introduction to Agrobiodiversity and Genetic Resources**

**Module 2: Communication and Market Access**

**Module 3: Availability and Cultivation**

**Module 4: Food Products and Regional Value Chains**

**Module 5: Cultural Heritage and Local Identity**

**Module 6: Eco System Services of Traditional Landraces**

The common curriculum is one of the key outcomes of the project “AgroBioCom - Rural Competence Network: Traditional Crop Varieties and Livestock Breeds”, which is co-funded by the EU under the Erasmus+ programme. It is based on three reports, curricula, and a collection of best practices developed during three workshops held in the project regions of Slovenia, Portugal, and Germany, with a guest contribution from Croatia. Many thanks to our project partners for the inspiring exchange of ideas, the impressive study visits, and the wonderful cooperation:

- Slovenia, Julian Alps Biosphere Reserve and Tourism Bohinj: Klemen Langus and Jana Vilman
- Portugal, Bio Região São Pedro do Sul: Ângela Abreu and Cristina da Costa
- Germany, Upper Lusatian Heath and Pond Landscape Biosphere Reserve: Sebastian Heynen and Eva Lehmann
- Croatia, LEADER Region “Bura”: Josip Śare

Thank you all for your valuable contributions, shared knowledge, and commitment to strengthening rural competences for valuation and preservation of traditional crop varieties and livestock breeds.

**Arno Todt, nova-Institute (project co-ordination)**
**October 2026**

# Module 1: Introduction to Agrobiodiversity and Genetic Resources

## 1.1 The Topic

Traditional crop varieties and livestock breeds are crucial components of biological and genetic diversity in European rural regions. Genetic resources represent a key form of natural capital essential for stability and adaptability in agriculture and rural development. The challenge of sustainably producing more food with fewer inputs can only be addressed by ensuring easy access to the broadest possible diversity of plant genetic resources, which serve as sources of new traits.

Moreover, traditional landraces often provide valuable cultural services, such as the maintenance of local traditions, biocultural heritage, and regional identity, as well as regulating services like landscape and biodiversity management. Some of these landraces exhibit unique characteristics in terms of flavours, appearance, production traits or ingredients. New forms of rural entrepreneurship that leverage local breeds and varieties, such as in tourism and green care, are emerging and expanding in rural areas. Traditional landraces can serve as important sources of income and help revitalize rural communities.

Unfortunately, the cultivation of landraces has dramatically declined across Europe in recent decades. Various global trends contribute to the erosion of genetic resources and the loss of genetic diversity, driven by a range of social, economic, and environmental factors. In particular, the introduction of high-yielding varieties and breeds has resulted in a significant reduction of traditional landraces and their diversity.

**Valorisation and sustainable use as a promising strategy for conservation**

The on-farm conservation and sustainable use of traditional landraces represent a promising strategy for safeguarding genetic resources . The on-farm conservation of landraces is connected to a variety of factors. Beyond their bioclimatic adaptations, landraces are often maintained due to their cultural significance to farmers and local communities, as well as their unique characteristics, such as distinct flavours, ingredients, and uses in traditional dishes.

Many consumers perceive products made from landraces as being of higher quality than those produced using high-yielding varieties and are willing to pay a premium for such items. For instance, products derived from “heritage breeds” and branded as regional specialties often command higher prices due to their unique taste and cultural identity. Many regions and biosphere reserves are already using typical breeds and varieties in tourism marketing. These efforts support regional marketing channels for diversity products, strengthening regional food processing and value chains, including those tied to tourism and gastronomy. With the rising preference for local food and short food supply chains, it is essential to improve the enabling environment for the use of diverse genetic resources.

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This includes forming strategic alliances with tourism, and gastronomy. The sustainable use of traditional landraces also plays a valuable role in revitalizing regional traditions and cultural heritage. This can strengthen rural identity and support branding efforts in the competitive landscape of European tourist destinations.

In conclusion, the sustainable use of traditional landraces presents a synergistic opportunity with immense potential to create value for farmers, as well as rural entrepreneurs, and tourism. This approach contributes to the diversification of rural economies and the preservation of genetic resources, ensuring benefits for both people and the environment.

## 1.2 Traditional Landraces and Agrobiodiversity

### 1.2.1 Introduction to Traditional Landraces

- Definition and characteristics of traditional landraces (e.g., genetic diversity, local adaptation, cultural significance).
- Examples of traditional crop varieties and livestock breeds in Europe and their unique traits (e.g., flavours, production traits, cultural heritage).

### 1.2.2 Importance of Agrobiodiversity

- The role of traditional landraces in maintaining genetic diversity and ecosystem resilience.
- Contribution to agricultural stability and adaptability in the face of climate change and global challenges.
- Ecosystem services provided by traditional landraces (e.g., landscape management, biodiversity conservation).

### 1.2.3 Threats to Traditional Landraces

- Decline of traditional landraces due to global trends, intensive farming practices, and the introduction of high-yielding varieties.
- Social, economic, and environmental factors contributing to the loss of genetic diversity.

### 1.2.4 Conservation Approaches

- Biological unit conserved: Plants with conservation focuses on seeds, pollen, vegetative tissues, and whole plants; animals with conservation targets breeds, populations, individual animals, semen, and embryos.
- In situ conservation: Farmer-driven maintenance of diversity on-farm. For plants are the ongoing adaptation and co-evolution with the environment, supports farmer-led selection; for animals are the preservation of full phenotype, social behaviours, and adaptation to local systems, supporting traditional practices.
- Ex situ conservation: Under controlled environment for plants in seed banks and cryopreservation, for animal semen/embryo banks and cryopreservation. For plants are the low space and cost that allows long-term viability under controlled storage, for animals are the effective store of genetic material but expensive and no preservation of behaviour or performance traits.

### 1.2.5 Linking Landraces to Rural Development

- The potential of traditional landraces to revitalize rural economies through short supply chains, food tourism, and gastronomy.
- Strengthening regional branding and identity through the use of traditional landraces in tourism marketing.
- The role of community-based initiatives in promoting local breeds and varieties.

## 1.3 Learning Activities

### 1.3.1 Discussion and Collaborative Projects

- Lectures and Presentations: Provide theoretical knowledge on traditional landraces, agrobiodiversity, and valorisation strategies.
- Case Studies: Analyse real-world examples of successful valorisation projects (e.g., regional food products, tourism initiatives).
- Group Discussions: Encourage students to explore the cultural and economic significance of traditional landraces in their own regions.
- Field Visits: Visit local farms or rural communities that cultivate traditional landraces to observe their practices and challenges.

### 1.3.2 Practical Activities

- Identify and document traditional landraces in the local region, including their unique traits and cultural significance.
- Develop a short presentation on the potential uses of a specific traditional landrace in rural tourism or gastronomy.
- Conduct a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) for the conservation and valorisation of a selected landrace.

## 1.4 Expected Outcomes

By the end of this module, students will be able to:

- Define traditional landraces and explain their importance in maintaining agrobiodiversity.
- Understand the threats to traditional landraces and the consequences of their decline.
- Recognize the cultural, ecological, and economic value of traditional landraces.
- Identify the role of sustainable valorisation in preserving genetic resources and promoting rural development.

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# Module 2: Communication and Market Access

## 2.1 The Topic

To attract the attention of consumers and visitors, there is a need for enhanced communication regarding the added value of traditional products derived from heirloom or landrace varieties. Consumers require information about this added value, as well as the background of the specific products. They should be made aware that by purchasing items based on traditional regional species, varieties, or breeds, they are actively contributing to the preservation of genetic diversity. Only high-quality products with such added value, particularly those that highlight cultural heritage and offer ecological benefits, can justify a higher price point to consumers.

Effective branding and compelling storytelling create a distinctive identity that highlights specific attributes—such as taste, nutritional value, and cultural significance—thereby strengthening brand awareness and customer loyalty. Storytelling connects consumers with cultural narratives and historical contexts, evokes positive emotions, and fosters brand allegiance. Furthermore, it serves as a tool for sharing knowledge: it informs consumers about product benefits and sustainable practices, helping to raise awareness of sustainable consumption. Direct-to-consumer sales offer excellent opportunities to convey a clear product identity. Direct sales channels, such as farm shops, farmers' markets, or food fairs, facilitate personal interaction and provide an ideal setting for communication. Collaborations with the hospitality and food service sectors can also play a crucial role in this regard. Within these direct supply chains, information about the specific characteristics of products can be effectively communicated from producers to consumers, while, conversely, the information needs of consumers can be relayed back to the producers.

## 2.2 Branding and Labelling for Traditional Landraces

Products derived from traditional landraces can be particularly lucrative when accompanied by quality seals or specific labels. Such labeling creates added value by highlighting the quality and authenticity of the products; this facilitates the development of a stable market, which in turn enables producers to invest in long-term product development. At the same time, traditional landraces, as part of a biocultural heritage linked to regional traditions, help support marketing efforts within the competitive landscape of European tourism destinations and serve to revitalize rural identity.

### 2.2.1 The Importance of Branding and Labelling

- How branding and labelling enhance the value of traditional landrace products.
- The role of quality marks and certifications in building consumer trust and securing markets.

- Branding as a tool to preserve biocultural heritage and strengthen rural identity.

### 2.2.2 Case Study: Territorial Brand "Bohinjsko/From Bohinj"

- Overview of the "Bohinjsko/From Bohinj" regional brand in Slovenia.
- Certification process and quality assurance for products, services, and experiences.
- Integration of local traditions, gastronomy, and tourism into the branding strategy.
- Examples of products under the brand, such as Bohinj "Trdinka" corn products.

### 2.2.3 EU Labelling and Certification Systems

- Overview of EU geographical indication and quality schemes (e.g., PDO, PGI).
- The role of geographical indications in emphasizing the unique characteristics of products tied to specific regions.
- Examples of GI-labelled products, such as Kalamata olive oil (PDO) and Westfälischer Knochenschinken (PGI).

## 2.3 Bio-Cultural Heritage, Storytelling and Local Identity

Effective branding and impactful communication require credible stories and a solid cultural foundation, one that evokes positive emotions, enhances recognizability, and strengthens brand loyalty. Through storytelling, consumers are connected to cultural narratives and historical contexts. Traditional landrace varieties and the products derived from them often offer a compelling local connection; they are frequently part of a region's rural cultural or biological heritage, forming an essential component of its local history and the identity of its population.

The sustainable use of these traditional landraces—combined with their marketing and promotion—can make a valuable contribution to the revitalization of rural traditions and cultural heritage. This, in turn, strengthens rural identity and supports brand development within the highly competitive landscape of European tourism destinations.

### 2.3.1 The Role of Bio-Cultural Heritage in Branding

- Definition and significance of bio-cultural heritage in rural communities.
- How traditional landraces reflect local history, culture, and identity.
- The connection between bio-cultural heritage and sustainable rural development.

### 2.3.2 Storytelling as a Communication Tool

- The power of storytelling in evoking emotions and fostering brand loyalty.
- How storytelling connects consumers to cultural narratives and historical context.
- Examples of successful storytelling in promoting traditional landraces.

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### 2.3.3 Case Study: The 'Tepka' Pear Variety in Zasip

- The historical and cultural significance of the Tepka pear variety in the village of Zasip, Slovenia.
- The role of local traditions, such as the production of dried pear flour (“Prga”) and pear schnapps (“Tepkovec”), in preserving the Tepka pear.
- The contributions of individuals like Bojana Pipan and the Trglav farm in promoting the Tepka pear through storytelling and culinary innovation.

## 2.4 Market Access and Rural Tourism

### 2.4.1 Market Access Strategies

Direct sales to end consumers offer excellent opportunities to convey the unique story, quality, and distinctive identity of local products, such as those derived from traditional, heirloom plant varieties. By creating occasions for direct, personal interaction, producers not only lay the groundwork for communication and sales but also provide consumers and visitors with memorable experiences. Farm shops, farmers' markets, food fairs, and village festivals in rural areas serve as an ideal setting for such personal contact, exchange, and face-to-face encounters. In this context, collaboration with the hospitality and catering sectors can also play a key role.

- To understand the importance of different market access strategies for traditional landraces, and how these elements can strengthen rural identity and economy.
- Direct Selling: Opportunities for face-to-face communication at farm shops, farmers' markets, and food fairs. The importance of direct selling (e.g., farmer markets, fairs, festivals) in communicating the history and quality of traditional landrace products.
- The role of gastronomy and tourism in enhancing the consumer experience and local identity. Cooperation with Gastronomy: Partnering with restaurants and chefs to showcase traditional landrace products in culinary experiences.
- Short Supply Chains: Strengthening connections between producers and consumers to ensure transparency and trust.

### 2.4.2 The Role of Rural Tourism in Valorising Traditional Landraces

There are diverse and significant synergies between the preservation of traditional local landraces, achieved through their targeted valorization, and regenerative rural culinary tourism. Community-based initiatives, such as local farmers' markets, regional fairs, or culinary festivals, offer visitors authentic, place-based experiences. At the same time, they provide effective market access for products derived from these traditional local varieties and landraces, engaging both tourists and the local population.

Furthermore, traditional local landraces—as an expression of agricultural biodiversity—can form a core element of a diverse gastronomic landscape. They enable restaurants to work with lesser-known varieties that

are deeply rooted in the region's history, offering a unique opportunity to stand out from other market offerings. For the hospitality sector, this creates valuable prospects for promoting local cuisines and traditions, while simultaneously crafting authentic experiences anchored in the region's cultural identity.

The concept of rural culinary tourism, that allows a “taste of place in order to get a sense of place” follows the broader framework of the "food experience". In this context, the potential of the specific local environment should always remain the focal point. Local food products are an essential component of a community's cultural heritage; they reflect the lifestyle and cultural essence of its people and are passed down through generations. Increasingly, they are being recognized as a powerful tool for the development of tourism destinations. Within the scope of regenerative rural tourism, local culinary offerings can help strengthen local entrepreneurship and create new economic opportunities through increased tourist spending. Culinary tourism, which emphasizes interaction with the local population (community-based tourism) as well as authentic cultural experiences, is emerging as a growing trend among European travelers.

**Synergies Between Conservation and Tourism**

- How rural tourism supports the conservation of traditional landraces.
- The concept of "taste of place" as a way to connect visitors with local heritage.
- The importance of food biodiversity in creating unique gastronomic experiences.

**Market Access through Tourism**

- Local farmer markets, fairs, and food festivals as platforms for promoting traditional landraces.
- Engaging both tourists and local communities in the valorisation process.

**Cultural Identity and Gastronomy**

- How traditional landraces contribute to the authenticity of local cuisines.
- Differentiating local gastronomy through unique, lesser-known varieties.

## 2.5 Learning Activities

### 2.5.1 Discussion and Collaborative Projects

- Lectures: Provide theoretical knowledge on branding, labelling, and market access.
- Lectures: Provide theoretical knowledge on bio-cultural heritage, storytelling, and local identity.
- Workshops: Facilitate hands-on activities to develop practical skills in branding and labelling.
- Workshops: Facilitate hands-on activities to develop practical skills in storytelling and direct selling.

### 2.5.2 Practical Activities

- Branding Workshop: Students will design a branding strategy for a hypothetical traditional landrace product, incorporating elements such as quality marks, storytelling, and visual identity.

- Direct Selling Simulation: Students will simulate a direct selling event for a traditional landrace product, incorporating storytelling and local identity into their presentation.
- Storytelling Workshop: Students will create a story for a traditional landrace product, emphasizing its cultural and historical significance.

## 2.6 Expected Outcomes

By the end of this part of the module, students will:

- Understand the importance of branding and labelling in valorising traditional landraces.
- Understand the importance of bio-cultural heritage and storytelling in branding and communication.
- Understand the role of traditional landraces in rural tourism and gastronomy.
- Develop practical skills in storytelling, direct selling, and promoting traditional landraces through rural tourism.
- Identify opportunities for market access through local food festivals, farmer markets, and community-based tourism.

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# Module 3: Availability and Cultivation

## 3.1 The Topic: Management of Seeds and Breeds

There are various approaches to addressing the threat of genetic erosion: a) efforts to strengthen the management of crop diversity directly on the farm (in situ), and b) collection and conservation in gene banks (ex situ). Gene banks can improve the availability of and access to crop diversity and related information, create or promote markets for neglected or underutilized varieties, and optimize local seed through participatory selection or breeding. On-farm approaches aim to foster the conservation of genetic diversity by removing key obstacles that limit farmers' ability to utilize such diversity. One advantage of on-farm conservation is that the varieties circulating within farmers' seed systems are continuously adapted to new conditions.

Farmers' cultivation practices and innovations are fundamental to preserving genetic diversity, as well as to further developing and adapting crop varieties to new conditions and needs. At the same time, farmers' decisions regarding which crops and varieties to grow are influenced by agroecological, climatic, demographic, economic, and cultural factors. This dynamic of variety management has the potential to both increase and decrease genetic diversity; furthermore, it can lead to gene flow into traditional varieties. Various approaches, most notably participatory plant breeding (PPB) and community seed banks (CSBs), are part of an agenda for decentralization and participation within the discourse and practice of development policy.

The conservation, documentation, and propagation of traditional seed varieties and breeds are essential elements for preserving them through sustainable use.

## 3.2 Community Seed Banks and Participatory Plant Breeding

### Community seed banks (CSB)

The primary purpose of community seed banks is to preserve seeds for local use—often as part of community development initiatives. In this capacity, they fulfill several functions, including: a) the conservation and reintroduction of genetic material (germplasm); b) the provision of seeds to community members; and c) the strengthening of seed and food sovereignty.

Across the globe, community seed banks are emerging in response to concerns about the gradual loss of biodiversity in agricultural systems and the loss of seeds due to natural disasters, as well as a desire among farmers to play an active role in locally-led strategies for conserving diversity. Such seed banks can serve as effective platforms for local, collective action and the enhancement of self-determination, particularly regarding the conservation and sustainable use of plant genetic resources for food and agriculture. Initiatives for community-based seed conservation contribute not only to the preservation and continued use of important crops, but also to the protection of numerous lesser-known species that are

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frequently overlooked in formal conservation and breeding programs.

More recently, attention has also turned to the potential for community seed banks to help address the impacts of climate change. Increasing the diversity of crops and varieties is one strategy that farmers can use to respond to climatic shifts that are already affecting—or are expected to affect—their local production systems. A decentralized network of seed banks—with well-documented holdings and a regulated exchange of seed material for multi-site trials—would make it possible to assess the adaptability of various species and foster exchange between different regions.

**Participatory plant breeding (PPB)**

In participatory plant breeding, the development of crop varieties is shifted to the level of the local community, with experts contributing during one or more phases of the breeding program. The primary focus is on breeding for local adaptation: this process relies on the creation of highly genetically diverse populations. This facilitates multiple cycles of natural selection, even before the targeted selection of specific traits, as well as ongoing selection that continues after a variety has been introduced.

Emphasizing genetic diversity, both within and between species, is considered an essential component of a farm management approach in organic agriculture or in low-input farming systems. In other contexts, the goal is to improve yield stability in heterogeneous environments by developing genetically diverse populations.

A frequently cited argument in favor of participatory plant breeding is that, compared to conventional breeding programs, it enables the development of varieties that are better adapted to local environmental and management conditions; this is particularly significant for smallholder farmers in developing countries. In addition to the involvement of farmers, decentralization is a core element. Another often-highlighted advantage is that material developed through participatory breeding is adopted more rapidly, precisely because farmers are actively engaged in the process.

Furthermore, the evolutionary potential of these breeding methods is being discussed as a possible approach for addressing climate change; however, further research is required to establish a scientific foundation for this approach.

### 3.2.1 Community Seed Banks (CSB)

- Purpose: Local seed preservation and sovereignty.
- Functions: Conserving/reintroducing germplasm, community seed access, local empowerment.
- Response to challenges: Role in disaster response, climate adaptation, and underused species conservation.

### 3.2.2 Participatory Plant Breeding (PPB)

- Definition: Decentralizing breeding to include local farmers and communities.
- Process: Farmer involvement in selection, adaptation to local conditions, and continual improvement.

- Benefits: Faster adoption, better adaptation, increased diversity and resilience.

### 3.2.3 Case Studies and Experiences from Practice

- VASO Participatory Maize Breeding (Portugal): Collection and selection of maize landraces, local competitions, and farmer-driven improvements.
- ANCRA (Arouquesa Cattle, Portugal): Breed preservation, DOP certification, and sustainable breeding practices.
- S. Pedro do Sul Bean Inventories (Portugal): Preservation through inventories.

## 3.3 Production of Seeds and Breeds

Seed production is of critical importance for ensuring the availability of seeds for various crop varieties in sufficient quantities and of appropriate quality. Over time, different organizational models for seed production have emerged, depending on the specific crop or variety, its intended use, its economic value, and the applicable quality standards. These include on-farm seed multiplication by farmers, the centralized production of certified seed, and various models of decentralized seed production.

There are numerous examples of traditional seed storage technologies, as well as standards and procedures designed to safeguard seed quality both before and after harvest. One advantage of on-farm seed multiplication and storage is that the seed is immediately available to farmers at the time of sowing; furthermore, it is significantly more cost-effective than certified seed. Farmers often evaluate seed quality differently than experts in the formal seed sector, depending on which quality criteria they prioritize and the value they assign to them. Consequently, they do not necessarily prefer certified seed, nor are they always willing to pay the higher price associated with it. In some cases, it is crucial to integrate local seed enterprises as key players within seed sector networks in order to generate demand and secure recognition and support.

### 3.3.1 General Aspects of Reproduction and Breeding

- Plants: Controlled through pollination systems (selfing, outcrossing).
- Animals: Managed via controlled mating systems, with inbreeding risks if populations are small.

### 3.3.2 Population Management

- Plants: Focuses on seed viability, regeneration cycles, and maintaining genetic heterogeneity.
- Animals: Involves managing effective population size, avoiding genetic bottlenecks, and tracking pedigrees.

### 3.3.3 Storage & Longevity

- Seeds can be stored for decades to centuries at −18°C, ensuring long-term preservation.
- Semen and embryos need specialized cryogenic facilities, and their viability can vary depending on species and storage conditions.

### 3.3.4 Models of Seed Production

- Farmers' own seed production: On-farm preservation and storage; advantages in cost and accessibility.
- Centralized certified seed production: Higher quality control, but often more expensive and less tailored to local needs.
- Decentralized seed production models: Networks of local producers, balancing quality and local adaptation.

### 3.3.5 Traditional Seed Storage and Quality Assurance

- Traditional technologies and practices: Pre- and post-harvest processing to maintain seed viability.
- Quality perceptions: Differences between farmers' and formal seed systems in evaluating seed quality.
- Role of local seed enterprises: Importance of embedding seed producers in broader sector networks for recognition and demand.

## 3.4 Seed Dissemination: Networks and Exchange

For many smallholder farmers, seeds saved from previous harvests are the primary source of planting material for local crop varieties. However, most of these households do not produce enough seed to meet their total requirements. Consequently, they turn to other sources to supplement their stocks, replace poor-quality seeds, or acquire seeds for which they lack the necessary knowledge, skills, or suitable conditions for propagation or storage.

Seed-exchange networks also contribute to the distribution of seeds and the functioning of seed systems, though their significance varies depending on the specific crop and context. Within these networks, seeds are shared among relatives, neighbors, and friends—whether as gifts, through barter, or via direct purchase. Such exchange systems, which farmers utilize alongside institutional plant-breeding systems, help preserve agricultural and cultural diversity and identity, while simultaneously strengthening resilience against ecological and economic shocks. A key question, however, is how to successfully transition from these innovative yet relatively isolated activities—initiated by individual farmers—toward a more comprehensive, interconnected structure at the national or international level.

### 3.4.1 Sources of Planting Material

- Farm-saved seeds: The backbone for smallholders, but often insufficient to meet all needs.
- External sources: Supplementing own production with exchanged, purchased, or gifted seeds.

### 3.4.2 Seed Exchange Networks

- Structure and function: Sharing among relatives, neighbours, and friends; includes gifting, barter, and sales.
- Benefits: Maintains agrobiodiversity, cultural identity, and resilience to shocks.
- Scaling up: Challenges in moving from isolated local initiatives to broader regional or national networks.

### 3.4.3 Regulatory Frameworks

- Plants are governed by seed laws, certification rules, and the FAO Treaty on Plant Genetic Resources.
- Animals are regulated through herdbooks, breed standards, and the FAO Global Plan of Action for Animal Genetic Resources.

### 3.4.4 Case studies and Experiences from Practice

- Sementes Vivas, Portugal: Commercial enterprise recovering and marketing traditional varieties. Network of 35 farmers producing organic and biodynamic seeds. Registration of traditional varieties (e.g., Pau Roxo das Seis Marias carrot, Murtosa bean).
- VERN Association, Germany: Non-commercial network preserving and recultivating old and rare cultivated plants. Membership-based access to a diverse seed catalogue (1200+ origins). Educational outreach, research, and a propagation garden.
- Dreschflegel, Germany: Hybrid commercial and non-commercial network (18 gardening farms). Focus on propagating neglected old varieties and experimenting with new ones. Financial sustainability through breeding, propagation, and marketing of organic seeds.

## 3.5 Learning Activities

### 3.5.1 Discussion and Collaborative Projects

- Debate the advantages and challenges of centralized and decentralized seed production and dissemination models.
- Debate the value of certified seeds versus traditional farmer-saved seeds.
- Interview local farmers or breeders about their challenges and successes.

### 3.5.2 Practical Activities

- Create a small seed exchange network within the school or local community.
- Investigate and document traditional crop varieties in the school's region.

## 3.6 Expected Outcomes

- Recognize the role of farmers in cultivating and innovating crop varieties.
- Understand how CSBs enhance seed and food sovereignty.
- Understand the practical challenges and successes of community-led breeding and conservation.
- Understand how seed exchange networks support genetic diversity and resilience.

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# Module 4: Food Products and Regional Value Chains

## 4.1 The Topic

The development of short food supply chains is often associated with various structural challenges—such as fostering collaboration among diverse stakeholders, coordinating regional activities, and organizing processing and logistics for smaller volumes. Traditional plant varieties and livestock breeds are frequently distinguished by a unique flavor, a distinctive appearance, or a health-promoting nutritional composition. Furthermore, they often possess other characteristic traits or a rich history that conveys an authentic local narrative. These attributes provide an excellent foundation for revitalization efforts or the development of innovative new products. Such items can evolve into defining regional symbols for rural areas—or simply serve as attractive offerings that sharpen a region's profile.

Many regions and biosphere reserves already make targeted use of specific livestock breeds and plant varieties in their tourism marketing. These initiatives promote regional distribution channels for a diverse range of products and strengthen local food processing and its associated value chains, including within the tourism and hospitality sectors. In this context, the role of traditional crops and livestock breeds in rural agritourism can be understood as a form of market access at the end of regional food supply chains.

## 4.2 Products and Consumer Groups

Tourists in rural areas are often drawn to authentic, traditional, and local food products that offer a distinctive "taste of place". However, it is not just visitors who seek out authentic and reliable local food; the local population also values purchasing regional products for their daily needs. Their motivations typically include a desire for fresh and nutritious food, an effort to reduce environmental impact, and a commitment to supporting their own community, cultural heritage, and rural development. Consumers often perceive products derived from local landraces—traditional plant varieties adapted to a specific region—as being of higher quality than those from high-yield varieties; consequently, they are frequently willing to pay a premium for them. Furthermore, products made from traditional landraces often command higher prices when marketed as regional specialties, thanks to their unique flavor profiles and strong cultural identity.

It is important to inform consumers about the added value associated with purchasing products derived from traditional regional plant varieties and animal breeds. This is particularly significant for small-scale agricultural operations, for which effective labeling can play a crucial role. The relevance of such labeling is especially evident in certain Mediterranean countries, where food is closely intertwined with cultural identity. In these regions,

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products derived from local landraces are highly valued, widely recognized in the marketplace, and frequently featured as regional specialties on restaurant menus.

### 4.2.1 Who buys local? Understanding consumer groups

- Rural tourists vs. local consumers.
- Motivations: authenticity, freshness, community support.
- Willingness to pay a premium.

### 4.2.2 The power of labelling and regional identity

- How branding and labelling enhance the value of traditional landrace products.
- The role of quality marks and certifications in building consumer trust and securing markets.

- PDO/PGI schemes and their significance.

### 4.2.3 Case studies - reviving traditional products

- Champagne rye products from Upper Lusatian Biosphere reserve, Germany**:** key facts (Forgotten since 1960s; revived by VERN in 1994, suited to dry, sandy soils; still on Germany's Red List, 5 farms, 250+ hectares; flour, bread, whiskey products), main actors (VERN, biosphere reserve administration, Rätze Mill (flour), BäckeReck & Fehrmann bakeries, Christian Lissina (whiskey), local shops/supermarkets, main target group and market channels of the products.
- Broa maize bread diversity in Portugal: Key facts of the case study (Made from local maize landraces; varies by village, 51 landraces, 175 varieties identified; old granaries as tradition symbols, Premium pricing for authenticity), main actors (small-scale farmers, researchers, local bakers, tourism sector), main target group and market channels.
- Trdinka corn / Bohinj Žganci in Bohinj region, Slovenia**:** Key facts (Indigenous variety of Julian Alps; multicoloured grains, historically used for žganci, restaurant Sunrose 7 and Bohinj Tourism Organization collaboration; Mohant cheese (EU PDO); main actors (local farmers, Bohinj tourism organization, regional restaurants), main target group and market channels.
- Red Mountain cattle in Upper Lusatian Biosphere reserve, Germany: Key facts (Conservation from 4 to 60 animals (2013–2025), triple-purpose breed; seasonal, extensive production, marketed via farm sales, farmers' markets, restaurants; Sorbian culinary identity, main actors of the case study (Biosphere Reserve, farm Mönau-Uhyst, Sorbian restaurant Wjelbik, farmer market organizers), main target group and market channels.
- Arouquesa beef in central Portugal: **K**ey facts (native breed, mountainous adaptation; PDO status, ANCRA breeders' association; restaurant Casa Arouquesa, annual Festa da Vitela (veal festival); strong local collaboration), main actors (ANCRA, Arouquesa farmers, restaurants, municipality, tourism, festival organizers), main target group and market channels.

## 4.3 Management of Short Regional Value Chains

When considering the role of often-underestimated landrace varieties, along with the products derived from them and the traditions associated with them, a local approach to developing short regional value chains can have a significant impact. This approach not only contributes to the preservation of agricultural biodiversity but also fosters local and regional development, yielding economic, social, and environmental benefits.

Effective collaboration and partnership among various stakeholders, including farmers, processors, hospitality professionals, logistics providers, and the local population, are often crucial to success. Equally important are joint communication and marketing initiatives, as well as a coordinated exchange of knowledge. Direct access to information and expertise, strengthened by personal relationships and a deep familiarity with the local environment, nature, and livestock, builds trust and reliability.

Short regional value chains vary in their structure; their management and coordination entail a range of challenges. In some cases, one of the participating entrepreneurs takes on the coordinating role. In other scenarios, this function might be performed by, for example, the administration of a biosphere reserve or a tourism organization. By implementing shared regional strategies aimed at collective value creation, significant results can be achieved. In this context, entrepreneurial action plays a decisive role in ensuring success.

### 4.3.1 Why coordination matters in short regional value chains

- The role of short value chains in preserving agrobiodiversity and fostering territorial development (economic, social, and environmental benefits)
- The composition of multi-actor partnerships (farmers, processing entrepreneurs, gastronomy professionals, logistics providers, and local residents)
- How shared communication, marketing, and knowledge exchange underpin success.
- How trust is built through personal relationships, direct access to local knowledge, familiarity with the environment, nature, and animals

### 4.3.2 Five models of coordination

- Biosphere reserve administration-led: The reserve administration coordinates the network of farmers, processors, and distributors; provides neutral facilitation and regional credibility (example: Biosphere reserve Upper Lusatia).
- Tourism organisation-led: A tourism body manages territorial branding, certification, and multi-actor communication (example: Turizem Bohinj, Slovenia).
- Municipality-led: The local government coordinates production support, events, labelling, and market organization (example: São Pedro do Sul, Portugal).

- Breeders' association and cooperative-led: A sector-specific association manages quality standards, certification, marketing, and logistics (example: ANCRA, Portugal).
- LEADER LAG-led / decentralized cooperation: The LAG provides strategic framework and funding access but leaves operational cooperation to bilateral actor relationships of entrepreneurs (example: LEADER Bura Zadar, Croatia).
- Challenges per model (capacity, funding, legitimacy, inclusion, scalability).

#### 4.3.3 Entrepreneurial action and collective territorial strategies

- The pivotal role of entrepreneurial initiative in launching and sustaining value chains.
- Common territorial strategies that focus on collective valorisation.
- How Biosphere reserves, tourism organizations, municipalities, and cooperatives create shared frameworks.
- The relationship between individual entrepreneurial action and collective institutional support.

## 4.4 Learning activities

#### 4.4.1 Discussion and collaborative projects

- Debate what motivates tourists and locals to buy traditional products.?
- Debate what made the products commercially viable?
- Debate why is coordination particularly challenging when multiple actors with different interests are involved in a value chain?
- Guest lecture: Product practitioner shares real-world challenges and solutions.

#### 4.4.2 Practical activities

- Stakeholder role-play: Students take on roles (farmer, miller, baker, logistics provider, restaurant owner, biosphere reserve manager) and negotiate a cooperation agreement for a fictitious regional value chain.
- Coordination model matrix: Create a comparative table of coordination models, listing advantages, disadvantages, and real-world examples.

## 4.5 Expected outcomes

By the end of this module, students will be able to:

- Identify motivations of different consumer groups for buying local products with traditional landraces.
- Understand why consumers pay a premium for traditional products.
- Analyse structural challenges in value chain management and propose practical solutions.
- Argue the importance of entrepreneurial action and collective valorisation in achieving value chain success.

# Module 5: Cultural Heritage and Local Identity

## 5.1 The Topic

Many traditional plant varieties and livestock breeds possess a long and remarkable rural history, forming an integral part of our rural cultural heritage. Their revival and sustainable use can make a valuable contribution to strengthening regional traditions and rural identity. Local food products can be an essential component of a community's heritage; they reflect the way of life and the cultural essence of its people, passed down through generations. By consciously utilizing local food products and traditional landraces, communities can be supported and empowered to preserve their cultural identity. This section highlights how traditional landraces serve not only as resources for food production and biodiversity, but also as fundamental pillars of rural cultural heritage, local identity, and community pride.

## 5.1 Cultural Heritage & Traditional Knowledge

Often the farmers and inhabitants of the rural communities, that are familiar with breeding and cultivation practices of traditional landraces, were old. Therefore, there is a high risk that these farmers will retire from agriculture and their knowledge about the traditional seeds and breeds will be lost. Despite their age many of that rural people are enthusiastic with interaction of use and preservation and on learning how to improve their simple selection procedures in order to do better with their own landraces.

### 5.1.1 Significance of Traditional Landraces

- Historical roots: How traditional varieties and breeds reflect centuries-old practices, regional adaptation, and rural lifestyles.
- Role in cultural heritage: Local foods and farming methods as expressions of community identity and continuity.

### 5.1.2 Traditional Knowledge Systems

- Plants: Traditional seed saving, selection cycles, and seasonal adaptation are key knowledge systems.
- Animals: Pastoral knowledge, grazing patterns, and reproductive management are central to maintaining diversity.

### 5.1.3 Threats and Opportunities

- Aging knowledge keepers: The risk of losing valuable know-how as older generations retire.
- Empowering communities: Revitalizing traditions by engaging older and younger members, and supporting learning and innovation.

## 5.2 Extensive Use and Local Community Practices

Traditional, extensive forms of land use and the practices of local communities are often characterized by their reliance on natural ecological processes, minimal need for external inputs, and integration into the surrounding landscape. A central element of these systems is

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community-based management. Within this framework, local communities serve as repositories of knowledge, managers of resources, and custodians of cultural values; they organize collective activities, such as rotational grazing, communal harvests, or the use of jointly operated processing facilities. This collective action not only ensures the sustainable use of shared resources but also strengthens social cohesion and adaptability in the face of ecological and economic change. Far from being mere relics of the past, such practices can offer contemporary models for sustainable land management, the conservation of biodiversity, and the preservation of cultural identity.

### 5.2.1 Community-based Management of Extensive Use

- Traditional extensive use practices: As contemporary models for sustainable land management, biodiversity conservation, and the preservation of cultural identity.
- Role of community action: Collective rotational grazing, harvesting, and shared processing supports sustainable use, social cohesion and adaptive capacities in the face of changes.

### 5.2.2 Case Studies and Experiences from Practice

- Arouquesa cattle (Portugal, Manhouce): Extensive, free-range grazing in mountains. High-quality beef with DOP status; local, decentralized slaughterhouse.
- Goat herding in Covas do Monte, Portugal**:** Communal grazing of native Serrana and Bravia goats. "Bio aldeia" (organic village) status; integration of livestock, landscape, and local gastronomy.
- Tepka Pears (Zasip, Slovenia): Historic famine crop; innovative uses (pear flour "Prga", brandy, compotes). Collective harvesting and drying; preservation of pear orchards and local landscape.

## 5.3 Local Community Gatherings and Celebrations

Local community gatherings and festivals are far more than lively celebrations. They are the cultural anchors that sustain rural identity, transmit tradition, and knit together generations. Across Europe's countryside, these communal events serve as vital platforms for showcasing local food and crafts. They enable residents to affirm their shared heritage and foster a sense of belonging. Festivals rooted in agricultural cycles, local foods, and regional rituals reflect the profound connection between people and their landscapes. They not only celebrate the fruits of collective labour, beans, cattle, fish, or cheese, but also act as moments of demonstration, where history is performed, values are reaffirmed, and the local community's distinctiveness is made visible to visitors and residents alike.

### 5.3.1 Local community Gatherings and Festivals as Cultural Anchors

- Roots of gatherings and celebrations: Agricultural cycles, local foods, and communal rituals reflect the connection between people and landscapes.
- Role of community events: Showcasing local food and crafts, transmit tradition, and knit

together generations in maintaining local identity.

- Demonstration of history and present: history and values are demonstrated as moments of development and identity of local community.

#### 5.3.2 Case studies and Experiences from Practice

- Bean Festival (São Pedro do Sul, Portugal): Annual event celebrating with about 25 local bean varieties. Producers receive support, and local recipes are showcased—strengthening identity and social bonds.
- Cow's Ball / Cika Cattle Festival (Bohinj, Slovenia): Historic celebration of alpine grazing and return of cattle. Parade and traditional festivities; challenge of balancing tradition with growing tourism.
- Lusatian Fish Weeks (Germany): Autumn festivals in the Upper Lusatian Biosphere Reserve. Fresh fish, traditional fishing demonstrations, music, and crafts as part of living heritage.

## 5.4 Learning Activities

#### 5.4.1 Discussion and Collaborative Projects

- How do traditional crops and breeds shape local identity and pride?
- What are the dangers of losing traditional knowledge, and how can communities safeguard it?
- Interview local elders or farmers about traditional varieties or practices.

#### 5.4.2 Practical Activities

- Organize a “heritage food day” at school, featuring local dishes and crops.
- Develop a local garden plot with traditional varieties, documenting cultivation and culinary uses.

## 5.5 Expected Outcomes

- Understand the historical and cultural importance of traditional crops and breeds in rural communities.
- Recognize the risks of losing traditional knowledge and the importance of intergenerational transfer.
- Learn how decentralized, extensive practices contribute to breed and crop conservation.
- Recognize the role of community events in maintaining and revitalizing local identity.

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# Module 6: Ecosystem Services of Traditional Landraces

The products and regional value chains highlighted in the European AgroBioCom project regions emphasize that traditional landraces offer a broad range of ecosystem services. These services contribute significantly to food security, biodiversity, rural livelihoods, and resilient agroecosystems. The benefits of traditional landraces can be broadly categorized into four main types:

- Provisioning services: Genetic resources, food, and fibers.
- Regulating services: Landscape management, disease control, and climate regulation.
- Cultural and heritage services: Cultural identity, traditional knowledge, and tourism.
- Supporting services: Nutrient cycling, soil health, and agroecosystem resilience.

In this module, we focus on the ecological benefits of traditional landraces and their role in supporting agroecosystems, particularly under the challenges of global environmental change.

## 6.1 Introduction to the ecosystem services

- Definition and categories of ecosystem services (provisioning, regulating, cultural/heritage, supporting).
- The role of traditional landraces and breeds in food security and rural livelihoods.
- Case studies: Champagne rye (Upper Lusatia), Trdinka maize (Bohinj), maize landraces (Northern Portugal), bean varieties (S. Pedro do Sul), Arouquesa cattle (Manhouce), Lika Pramenka sheep (Croatia), Red Mountain cattle (Upper Lusatia), Tepka pear orchards (Zazip).
- Interconnections between ecosystem services and sustainable development.

## 6.2 Resilience and stable yield under harsh conditions

This part explores how traditional landraces contribute to agroecosystem resilience, stable yields under harsh conditions, and genetic diversity for future breeding. It focuses on drought resistance, water management, and the role of genetic resources in climate adaptation, drawing on multiple European examples.

- Adaptation of traditional landraces to harsh environments.
- Drought resistance and water management (Champagne rye, Trdinka maize).
- Stable yields and food security in challenging climates (S. Pedro do Sul beans, northern Portugal maize).
- Genetic diversity as a resource for breeding and agroecosystem adaptability.

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- The role of landraces in intercropping and polycropping systems.

## 6.3 Landcare and Landscape Management

This part focusses on how traditional livestock breeds and crop varieties support sustainable landcare, landscape management, and biodiversity conservation. It is about grazing systems, wildfire prevention, grassland and orchard management, and the preservation of cultural landscapes.

- Extensive grazing systems and landscape integration (Arouquesa cattle, Lika Pramenka sheep).
- Wildfire prevention and habitat preservation through traditional grazing (Arouquesa cattle, Lika Pramenka sheep).
- Maintenance of grassland and moist habitats (Red Mountain cattle, Upper Lusatia).
- Orchard meadows and biodiversity (Tepka pear orchards, Zazip).
- Cultural landscapes and the preservation of traditional practices.

## 6.4 Nature-based solutions

The final part is focusing on traditional landraces and heritage breeds as nature-based solutions for climate adaptation and resilient agroecosystems. It is about policy, innovation, and future challenges, preparing them to advocate for and implement sustainable practices.

- Framing traditional landraces and breeds as nature-based solutions for climate and environmental challenges.
- Policy frameworks supporting ecosystem services and agrobiodiversity.
- Linking ecosystem services to sustainable rural development.

## 6.5 Learning activities

### 6.5.1 Discussion and collaborative Projects

- Debate how do traditional grazing and orchard systems support biodiversity and climate adaptation?
- Debate on how the landraces contribute to food security in their regions?
- Debate on how can these ecosystem services be integrated into local value chains?
- Guest lecture and Q&A: Practitioner from a real-world example shares challenges and solutions.

### 6.5.2 Practical activities

- Field visit or virtual tour of a local landscape managed by traditional practices.
- Multimedia storytelling**:** Create a multimedia presentation or story map illustrating the cultural and ecological value of a traditional landscape.
- Nature-based solution case study**:** Analyse a case where traditional landraces have been used as a nature-based solution to an environmental challenge.

## 6.6 Expected outcomes

By the end of this module, students will be able to:

- Identify and describe ecosystem services provided by traditional landraces in real-world contexts.
- Evaluate the role of traditional landraces in supporting food security during climate extremes.
- Analyse the importance of genetic diversity for future breeding and agroecosystem adaptability.
- Describe how traditional grazing systems contribute to landscape management and biodiversity conservation.
- Explain the role of heritage breeds in wildfire prevention and habitat preservation.
- Assess the ecological and cultural value of orchard meadows and other traditional landscapes.

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