



Curriculum for Vocational Schools: “Food Products and Regional Value Chains with Traditional Crop Varieties and Livestock Breeds”

This curriculum equips students with the knowledge, skills, and practical tools to understand, manage, and advocate for food products and regional value chains rooted in traditional crop varieties and livestock breeds. 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 four modules that build on each other but also can be used individually.

Module 1: Introduction to Agrobiodiversity and Genetic Resources

Module 2: Products, Consumer Groups and Market Channels

Module 3: Management of Short Regional Value Chains

Module 4: Ecosystem Services of Traditional Landraces



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Module 1: Introduction to agrobiodiversity and genetic resources

Students explore the basics of agrobiodiversity, the decline of traditional varieties, and the importance of genetic resources for sustainable agriculture, rural identity, and tourism. The module introduces the challenges and opportunities in building short food value chains around traditional crops and breeds.

1.1 Introduction

1.1.1 What are landraces and why do they matter?

- Definition and examples of landraces
- Landraces vs. modern varieties: characteristics and trade-offs
- Importance for genetic diversity and resilience
- Causes and consequences of decline in traditional varieties
- Genetic resources as natural capital

1.1.2 Short food value chains and structural challenges

- Structure and benefits of short food value chains
- Challenges: cooperation, coordination, logistics
- Role of biosphere reserves in supporting these chains

1.1.3 Traditional varieties and regional branding potential

- Unique qualities of traditional varieties (flavour, appearance, history)
- Storytelling and regional branding
- Opportunities for revival and innovation

1.2 Learning activities

1.2.1 Discussion and collaborative projects

- Classroom debates:
 - Stakeholder perspectives on protecting old varieties.
 - Why are landraces and traditional breeds important for future agriculture?
 - How do short food value chains benefit rural communities?
 - What makes a traditional product attractive for regional branding?
- Guest lecture: Conservation practitioner shares real-world challenges and solutions.
- Case study analysis: brainstorming branding ideas.





1.2.2 Practical activities

- Research and mapping: three traditional crop varieties or livestock breeds from own region: brief history, current status, existing producers or users.

1.3 Expected outcomes

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

- Explain agrobiodiversity and distinguish landraces from modern varieties.
- Identify reasons for decline and its consequences.
- Analyse structural challenges in short value chains.
- Explain regional branding potentials.





Module 2: Products, consumer groups and market channels

Students learn about consumer groups for traditional products, motivations for purchasing, and the importance of labelling and market channels. The module highlights the role of effective communication in commercial success.

2.1 Products and consumer groups and market channels

2.1.1 Who buys local? Understanding consumer groups

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

2.1.2 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
 - Labelling for small farms

2.2 European case studies — reviving traditional products

2.2.1 Case study: Champagne rye products from Upper Lusatian Biosphere reserve

- Overview of Champagne rye products
- Key facts of the case study:
 - 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 of the case study: VERN (seed revival), Biosphere reserve administration, Rätze Mill (flour), BäckeReck & Fehrmann bakeries, Christian Lissina (whiskey), local shops/supermarkets.
- Main target group and market channels of the products.

2.2.2 Case Study: Broa maize bread diversity in central and northern Portugal

- Overview of 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 of the case study: Small-scale farmers, researchers, local bakers, tourism sector.
- Main target group and market channels of the products.

2.2.3 Case Study: bean varieties in São Pedro do Sul region, Portugal

- Overview of the bean varieties in São Pedro do Sul region
- Key facts of the case study:
 - 25+ bean varieties; women's custodianship
 - Sample boxes in tourist office; annual festival since 2014
 - Direct farmer-to-consumer sales
- Main actors of the case study: Farming families (women), municipality, producers, gastronomy, tourism, market organizers.
- Main target group and market channels of the products.

2.2.4 Case Study: Red Mountain cattle in Upper Lusatian Biosphere reserve, Germany

- Overview of the Red Mountain Cattle in Upper Lusatian Biosphere reserve
- Key facts of the case study:
 - 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, market organizers.
- Main target group and market channels of the products.

2.2.5 Case Study: Arouquesa beef in central Portugal

- Overview of the Arouquesa beef in Portugal
- Key facts of the case study:
 - Native breed, mountainous adaptation; PDO status
 - ANCRA breeders' association; restaurant Casa Arouquesa
 - Annual Festa da Vitela (veal festival); strong local collaboration





- Main actors of the case study: ANCRA, Arouquesa farmers, restaurants, municipality, tourism, festival organizers.
- Main target group and market channels of the products.

2.2.6 Case Study: Trdinka corn / Bohinj Žganci in Bohinj region, Slovenia

- Overview of the Trdinka corn / Bohinj Žganci
- Key facts of the case study:
 - Indigenous variety of Julian Alps; multicoloured grains
 - Historically used for žganci (similar to polenta)
 - Restaurant Sunrose 7 and Bohinj Tourism Organization collaboration; Mohant cheese (EU PDO); creative dishes
- Main actors of the case study: Local farmers, Bohinj tourism organization, regional restaurants
- Main target group and market channels of the products.

2.2.7 Case Study: Tepka pears / Prga in Zasip village, Julian alps, Slovenia

- Overview of the Tepka pears / Prga in village of Zasip
- Key facts of the case study:
 - Tepka pear variety; Prga = dried pears/flour
 - Tradition from empress Maria Theresa era; used in bread, dumplings, pastries, high gastronomy
 - Restaurant Kurej (tasting menu); Trglav family farm (pear brandy, 30+ schnapps flavours)
- Main actors of the case study: Local producers, Kurej restaurant, Trglav family farm, tourists
- Main target group and market channels of the products.

2.2.8 Case Study: smoked carp from pond farming in Upper Lusatian Biosphere reserve, Germany

- Overview of the smoked carp from pond farming in Upper Lusatian Biosphere reserve
- Key facts of the case study:
 - 750+ years tradition; one of the largest pond areas in Europe
 - Medieval origins; mirror carp; Ermisch Trout and salmon farm (Klitten)
 - Seasonal direct sales via farm shops; Lusatian fish weeks (autumn event)





- Main actors of the case study: Pond farmers (Ermisch farm), local restaurateurs, event organizers
- Main target group and market channels of the products.

2.2.9 Case Study: Lika lamb in Zadar region of Croatia

- Overview of the Lika lamb in Zadar region
- Key facts of the case study:
 - Lika Pramenka sheep (indigenous breed); resilient to rocky mountain pastures
 - EU PGI status; unique meat flavour from mountain herb diet
 - Agro-tourism services; gastronomic events/food festivals boost tourism and community pride
- Main actors of the case study: Sheep farmers, restaurants, event organizers, tourism sector
- Main target group and market channels of the products.

2.3 Learning activities

2.3.1 Discussion and collaborative projects

- Classroom debates:
 - What motivates tourists and locals to buy traditional products?
 - What made the products commercially viable again?
 - How does collaboration with innovative restaurants support revival?
 - What is the value of direct farm sales?
 - In what ways does regional identity support marketing efforts?
- Guest lecture: Product practitioner shares real-world challenges and solutions.

2.3.2 Practical activities

- Consumer survey: Design and conduct a survey on attitudes toward traditional products.
- Product tasting: Compare sensory qualities of landrace vs. commercial products.
- Market channel comparison: Table comparing direct and indirect channels.





2.4 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.
- Explain the concept of "Taste of Place" and its marketing value.
- Understand why consumers pay a premium for traditional products.
- Evaluate market channels for small-scale producers.





Module 3: Management of short regional value chains

Students are introduced to the theoretical foundations of managing short regional value chains for traditional varieties and breeds. The module covers the impact of local approaches on agrobiodiversity, territorial development, and the importance of multi-actor cooperation, trust, and entrepreneurial action. Students compare coordination models and analyse structural challenges.

3.1 Management of short regional value chains

3.1.1 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

3.1.2 Models of coordination — who leads and how

- Overview of five coordination models with descriptions and examples:
 - Biosphere reserve administration-led: The reserve administration coordinates the network of farmers, processors, and distributors; provides neutral facilitation and regional credibility (example: Champagne rye, 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)





3.1.3 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
- Conditions for success

3.2 European case studies in value chain management

3.2.1 Case study: Biosphere reserve as value chain coordinator — Champagne rye in Upper Lusatia

Overview und key facts of the case study:

- Biosphere reserve administration as value chain coordinator
 - Network structure: farmers, mill, bakeries, retailers, biosphere reserve
 - Economics: price premiums, yield compensation, market pricing
 - Agro-ecological advantages: drought resilience, soil suitability, chemical-free production
 - Communication and awareness: guild meetings, media, training
 - Distribution channels: craft bakeries, supermarkets, direct retail
 - Social and environmental impact: community identity, biodiversity, regional image
- Value Chain: VERN (seed propagation) → Farms → Rätze Mill → ~20 Bakeries → Rewe/Edeka Supermarkets + Direct Bakery Sales → Consumers/Tourists
- Coordination Model: The Upper Lusatian Biosphere Reserve Administration plays the central coordinating role, bringing together farmers, the Rätze Mill, and approximately 20 bakeries into a cohesive regional network. This model relies on the reserve's neutral institutional position and regional authority to align diverse actors, facilitate relationships, and promote the product through media and training. The collaboration with VERN ensures seed propagation, while higher farmer payments and a good price premium on flour can create the economic incentives needed to sustain.





3.2.2 Case study: Tourism organisation as territorial brand coordinator — Turizem Bohinj, Julian Alps

Overview and key facts of the case study:

- Tourism organisation as territorial brand coordinator
 - Multi-actor branding: food, gastronomy, crafts, accommodation, experiences
 - "Bohinjsko/From Bohinj" brand: structure, certification, visual identity, storytelling
 - Traditional landraces in branding: Trdinka maize, Cika cattle
 - Agricultural development strategy as branding foundation
 - Local supply chain logistics: ordering, delivery, cold-chain management
 - B2B networking and joint promotion
 - Carbon footprint reduction through local supply chains
- Value Chain: Local Farms (Trdinka maize, Cika cattle, vegetables, dairy) + Craft/Design Producers + Experience/Accommodation Providers → Turizem Bohinj (certification, coordination, communication) → "Bohinjsko/From Bohinj" Certified Register → Restaurants / Shops / Guided Experiences / Accommodations → Tourists (primary) + Local Residents
- Coordination Model: Turizem Bohinj provides comprehensive tourism-organisation-led coordination, managing internal and external communication, qualification, and cooperation across a broad range of product and service categories. The "Bohinjsko/From Bohinj" certification system uses external expert evaluation to ensure quality, authenticity, and geographical origin, creating a verified register of providers promoted through tourism channels. Traditional landraces (Trdinka maize and Cika cattle) are integrated as partners of the territorial brand, strengthening the connection between agrobiodiversity and regional identity. The Bohinj Agricultural Development Strategy 2021–2030 provides the long-term strategic framework.

3.2.3 Case study: Municipality of São Pedro do Sul as value chain coordinator

Overview and key facts of the case study:

- Municipality as coordinator of cultural and genetic heritage value chains
 - Annual food festivals as coordination and marketing tools
 - Local labelling systems as territorial identity tools
 - Farmers' markets and direct sales: benefits and storytelling





- Value Chain: Local Bean Farmers (25+ varieties) → Municipality (collection, monetary support, coordination) → Annual Bean Festival & Fair + Farmer's Market (with local labelling) → Consumers / Tourists / Local Residents
- Coordination Model: The Municipality of São Pedro do Sul acts as the central coordinator, actively collecting beans from producers who cannot attend the festival, providing monetary support to encourage cultivation, organizing the annual festival in collaboration with local producers, tourism, and gastronomy, and managing the local labelling system. This public-sector led model is particularly suited to protecting genetic heritage and community cohesion in a region where many producers are small-scale and cannot individually access markets. Direct farmer-to-consumer sales at the farmer's market eliminate intermediaries and enable the communication of each variety's history and quality.

3.2.4 Case study: Management of the Arouquesa beef value chain by breeders' organisation ANCRA

Overview and key facts of the case study:

- Breeders' associations as value chain managers: ANCRA and Arouquesa breed
 - PDO/DOP certification management
 - Cooperative models for livestock logistics: Carnarouquesa
 - Multi-channel distribution: butchers, supermarkets, restaurants
 - Hygiene, cooling, and quality management in meat value chains
- Value Chain : 2,000+ Certified Arouquesa Farms (28 municipalities) → ANCRA (quality standards, breed certification, regulatory oversight) → Carnarouquesa Cooperative (certification, marketing, logistics management) → 4 Local Butchers (+ online) + 2 Urban Butchers (Porto/south) + 15 Continente Stores + 20 Restaurants → Consumers (local, urban, national)
- Coordination Model: ANCRA exemplifies a sector-specific breeders' association coordination model operating at significant scale — 2,000+ breeders across 28 municipalities — while maintaining premium quality through PDO/DOP certification. The Carnarouquesa cooperative, established in 1998, handles the complex operational side: once a calf leaves the farm, the producer bears no further costs or responsibilities, as the cooperative manages all certification, logistics, and marketing. This model addresses the critical challenge of livestock-meat value chains: the need for reliable cold chain management, hygiene compliance, and authenticated certification across a geographically dispersed production area. A diverse multi-channel distribution network — spanning local butchers, urban





retailers, a national supermarket chain, and restaurants — ensures broad market reach without sacrificing the product's premium positioning.

3.2.5 Case study: Decentralised value chain cooperation — LEADER Region "Bura" Zadar

Overview and key facts of the case study:

- Spontaneous producer-restaurateur partnerships
 - Traditional agriculture: olives, figs, sheep, family farms
 - Gastronomy and rural tourism as market channels
 - LAGs in rural development coordination and funding
 - LEADER strategy planning for multi-actor cooperation
- Value Chain: Family Farms (olives / sheep / grapes / figs / mixed produce) → Direct Bilateral Cooperation (spontaneous, flexible) → Local Restaurants and Taverns → Domestic and International Tourists
- Coordination Model: The "Bura" Zadar region operates on a decentralized model where value chain cooperation is managed directly and spontaneously by the involved partners — primarily bilateral relationships between individual producers and restaurants. Rather than a unified collective structure, flexibility and adaptability to stakeholder needs are prioritized. The LEADER LAG "Bura" Zadar provides the overarching coordination of rural development activities across the nine municipalities, offering information, advice, project coordination, and facilitating access to EU and national funding. The LEADER strategy plan serves as a shared framework that aligns all partners around a common vision for regional development, without dictating individual commercial arrangements.

3.3 Learning activities

3.3.1 Discussion and collaborative projects

- Classroom debates:
 - Why is coordination particularly challenging when multiple actors with different interests are involved in a value chain?
 - Which coordination model do you think is most effective for a small rural region with limited institutional resources?
 - How does trust between value chain partners develop, and what happens when it breaks down?
 - -In what ways can entrepreneurial action compensate for weak institutional coordination?





- Guest lecture and Q&A: Practitioner from a regional value chain shares coordination challenges and solutions.
- Lecture with group discussion: students brainstorm the actors who might be involved in a local traditional food product's journey from field to fork.
- Working groups: students choose a traditional crop variety or livestock breed from their own region (or invent one).
 - Map the full value chain from production to consumer, naming each actor and their role
 - Select the most appropriate coordination model for their region and justify the choice
 - Present their value chain map and coordination plan to the class

3.3.2 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.
- Structural challenge mapping: Groups identify and map key structural challenges in local value chains, presenting practical solutions.
- Trust and local knowledge essay: Reflective essay on how personal relationships and local knowledge build trust and reliability, using course examples.

3.4 Expected outcomes

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

- Explain why effective coordination is essential for short regional value chains.
- Identify the key actors in multi-actor value chain cooperation and describe their roles.
- Compare at least five different coordination models with examples.
- Explain how trust and personal relationships contribute to value chain success.
- 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 4: Ecosystem services of traditional landraces and heritage breeds

This module explores the vital ecosystem services provided by traditional crop varieties and livestock breeds. Students will learn how these resources contribute to food security, climate resilience, biodiversity, and rural livelihoods. Through in-depth case studies and practical activities, students will connect ecological benefits to value chain management and gain practical skills and critical understanding for a sustainable rural development.

4.1 Ecosystem services of traditional local landraces

4.1.1 Introduction to the ecosystem services

This part introduces the ecosystem services framework as it applies to traditional crop varieties and livestock breeds. Students will learn to categorize and analyse provisioning, regulating, cultural/heritage, and supporting services.

- Overview and key topics:
 - 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), olive varieties (Zadar), maize landraces (Northern Portugal), bean varieties (S. Pedro do Sul), Arouquesa cattle (Manhousse), Lika Pramenka sheep (Croatia), Red Mountain cattle (Upper Lusatia), Tepka pear orchards (Zazip)
 - Interconnections between ecosystem services and sustainable development

4.1.2 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. Students will examine drought resistance, water management, and the role of genetic resources in climate adaptation, drawing on multiple European examples.

- Overview and key topics
 - Adaptation of traditional landraces to harsh environments
 - Drought resistance and water management (Champagne rye, Trdinka maize, Zadar olives)
 - 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
- The role of landraces in intercropping and polycropping systems.

4.1.3 Landcare and landscape management

This part examines how traditional livestock breeds and crop varieties support sustainable landcare, landscape management, and biodiversity conservation. Students will study grazing systems, wildfire prevention, grassland and orchard management, and the preservation of cultural landscapes.

- Overview and key Topics
 - 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

4.1.4 Nature-based solutions

The final part synthesizes the curriculum by focusing on traditional landraces and heritage breeds as nature-based solutions for climate adaptation and resilient agroecosystems. Students will explore policy, innovation, and future challenges, preparing them to advocate for and implement sustainable practices.

- Overview and key Topics
 - 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

4.2 Learning activities

4.2.1 Discussion and collaborative Projects

- Classroom debates:
 - How do traditional grazing and orchard systems support biodiversity and climate adaptation?
 - How do these landraces contribute to food security in their regions?





- How can value chains leverage the resilience traits of traditional varieties?
- 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.
- Working groups with presentation: Draw a diagram showing how a traditional livestock or crop system provides at least three ecosystem services. Present your diagram to the class.
- Working groups: Teams debate which ecosystem service (provisioning, regulating, cultural/heritage, supporting) is most critical for rural communities, using evidence from the case studies.

4.2.2 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.
- Community action workshop: Organize a mock community meeting to plan collective landcare activities, assigning roles and responsibilities.
- Nature-based solution case study: Analyse a case where traditional landraces have been used as a nature-based solution to an environmental challenge.

4.3 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.

