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CHAPTER 6

CASE STUDIES AND BEST PRACTISES IMPLIED IN

CIRCULAR AGRICULTURE

Chapter 6: Case Studies of Circular Agriculture and Best Practices implied in Circular Agriculture

This chapter explores diverse case studies that illustrate the practical application of CA principles. These case studies showcase innovative approaches to resource optimization, waste reduction, and sustainable production within various agricultural sectors. By examining real-world examples, learners gain valuable insights into how circular principles can be implemented effectively to promote environmental sustainability and economic viability in agriculture.

Moreover, this chapter delves into the best practices implied in CA, showcasing innovative approaches. Through an exploration of successful case studies and projects from diverse geographical regions and agricultural sectors, this chapter provides valuable insights into implementing circularity within agricultural systems. Additionally, the chapter integrates friendly innovative teaching methods, artful thinking, and experiential learning. These interactive approaches facilitate the presentation and analysis of good-practice examples of innovation towards circular agriculture, engaging learners in critical thinking and problem-solving.

6.1 Case Studies of Circular Agriculture

6.1.1 Agro-Industry and Circular Agriculture

Case Study: "Synergies Between Agro-Industry and CA: A Case of Biomass Valorization"

This case study explores the correlation between agro-industry and CA, focusing on biomass valorization as a means of resource optimization. It examines the integration of crop residues, along with other agro-industrial byproducts such as fruit pomace, sugar cane bagasse, and rice husks, into biofuel production processes to enhance circularity in agriculture. By valorizing these biomass residues through processes like bioconversion, pyrolysis, or fermentation, farmers and companies can reduce waste generation, lower environmental impacts, and create new revenue streams. The biofuels and value-added products produced can be utilized to power farm machinery, vehicles, and even contribute to decentralized energy production, illustrating the potential of circular principles in transforming agro-industrial processes.

The integration of circular agriculture (CA) with the agro-industry presents a compelling opportunity to enhance resource optimization and sustainability. This case study focuses on biomass valorization, demonstrating how agro-industrial byproducts, such as crop residues, fruit pomace, sugar cane bagasse, and rice husks, can be converted into valuable biofuels and other products. By leveraging processes like bioconversion, pyrolysis, and fermentation,

farmers and companies can reduce waste, lower environmental impacts, and create new revenue streams.

Synergies Between Agro-Industry and Circular Agriculture

Agro-industrial byproducts often represent a significant waste management challenge. However, within the CA framework, these byproducts are seen as valuable resources. Biomass valorization involves converting agricultural residues into biofuels and other high-value products, illustrating the circular principle of turning waste into wealth.

Key Biomass Valorization Processes:

- **Bioconversion:** Utilizing microorganisms to convert organic materials into biofuels, such as ethanol or biogas.
- **Pyrolysis:** Decomposing organic materials at high temperatures in the absence of oxygen to produce bio-oil, syngas, and biochar.
- **Fermentation:** Microbial fermentation processes to produce biofuels like ethanol from sugars present in biomass.

Case Study: Biomass Valorization in Practice

Example 1: Ethanol Production from Fruit Pomace

Fruit pomace, a byproduct of juice production, can be converted into ethanol through fermentation. This process not only reduces waste but also produces a valuable biofuel that can power farm machinery and vehicles. Ethanol production from fruit pomace is a practical example of how agro-industrial byproducts can be integrated into the circular economy.

Steps Involved:

1. **Collection and Pre-treatment:** Fruit pomace is collected from juice production facilities and pre-treated to release fermentable sugars.
2. **Fermentation:** The pre-treated pomace is inoculated with yeast strains, such as *Saccharomyces cerevisiae*, to ferment the sugars into ethanol.
3. **Distillation:** The ethanol is distilled and purified for use as biofuel.

Benefits:

- **Waste Reduction:** Significant reduction in waste generated by juice production.
- **Economic Viability:** Creation of a new revenue stream for juice producers.
- **Energy Independence:** Local production of biofuels reduces dependence on fossil fuels.

Example 2: Biochar from Rice Husks

Rice husks, typically discarded after rice milling, can be transformed into biochar via pyrolysis. Biochar serves as a soil amendment, improving soil health and fertility. It also sequesters carbon, contributing to climate change mitigation. This application demonstrates the environmental benefits of utilizing agricultural residues.

Steps Involved:

1. Collection and Drying: Rice husks are collected and dried to reduce moisture content.
2. Pyrolysis: The dried husks are subjected to high temperatures in an oxygen-limited environment, resulting in the production of biochar.
3. Application: Biochar is applied to agricultural fields to enhance soil quality.

Benefits:

- Soil Health: Improved soil fertility and structure.
- Carbon Sequestration: Long-term storage of carbon in the soil.
- Waste Utilization: Effective use of rice milling byproducts.

Example 3: Biogas from Sugar Cane Bagasse

Sugar cane bagasse, the fibrous residue left after juice extraction, can be anaerobically digested to produce biogas. This biogas can be used for heating, electricity generation, or as a vehicle fuel. The digestion process also produces nutrient-rich digestate, which can be used as a fertilizer, closing the nutrient loop.

Steps Involved:

1. Collection and Preparation: Sugar cane bagasse is collected and prepared for anaerobic digestion.
2. Anaerobic Digestion: The bagasse is placed in anaerobic digesters where microorganisms break down the organic material, producing biogas.
3. Biogas Utilization: The biogas is captured and used for various energy applications.
4. Digestate Application: The remaining digestate is used as a fertilizer.

Benefits:

- Renewable Energy: Production of renewable biogas energy.
- Nutrient Recycling: Utilization of digestate as a nutrient-rich fertilizer.
- Waste Reduction: Effective management of sugar cane processing byproducts.

Benefits of Biomass Valorization:

- Waste Reduction: Transforming agricultural residues into valuable products reduces waste generation.
- Environmental Impact: Lowering greenhouse gas emissions and mitigating climate change through carbon sequestration.
- Economic Viability: Creating new revenue streams for farmers and agro-industries.
- Energy Independence: Producing biofuels locally reduces reliance on fossil fuels and enhances energy security.
- Soil Health: Improved soil fertility and structure through biochar application.
- Nutrient Recycling: Effective recycling of nutrients back into the agricultural system through digestate application.

The synergy between agro-industry and circular agriculture, exemplified through biomass valorization, highlights the potential for sustainable and economically viable agricultural practices. By integrating crop residues and other agro-industrial byproducts into biofuel production, we can foster a more resilient and circular agricultural system.

Takeaways

- Biomass valorization transforms agricultural residues into valuable biofuels and products.
- Circular agriculture principles enhance resource optimization and sustainability.
- Synergies between agro-industry and CA reduce waste and environmental impacts.
- Biomass valorization creates new revenue streams and promotes energy independence.

Ideas to Consider

- How can more agro-industrial byproducts be integrated into biomass valorization processes?
- What are the potential challenges in scaling up biomass valorization technologies?
- How can policy frameworks support the adoption of circular agriculture practices in the agro-industry?
- What role do technological advancements play in enhancing biomass valorization?
- How can biomass valorization contribute to achieving broader sustainability goals?

6.1.2 Nutrient Recycling and Circular Agriculture

Case Study: "Nutrient Cycling in Organic Farming Systems: A Case of Closed-Loop Agriculture".

This case study investigates nutrient cycling practices in organic farming systems, showcasing a closed-loop approach to nutrient management. Organic farms utilize on-farm resources, such as compost, cover crops, and crop residues, to maintain soil fertility and productivity. By recycling nutrients within the farm system, organic farmers minimize the need for external inputs like synthetic fertilizers, reducing costs and environmental impacts. The case study highlights the importance of nutrient cycling in promoting soil health, crop resilience, and sustainable agriculture.

This case study delves into the nutrient cycling practices employed in organic farming systems, emphasizing a closed-loop approach to nutrient management. It showcases how organic farms utilize on-farm resources, such as compost, cover crops, and crop residues, to maintain soil fertility and productivity.

A. Nutrient Cycling in Organic Farming

Compost Utilization: One of the primary strategies for nutrient cycling in organic farming is the use of compost. Composting involves the decomposition of organic matter such as crop residues, animal manure, and food waste into a nutrient-rich soil amendment. By returning compost to the soil, organic farmers replenish essential nutrients, improve soil structure, and enhance microbial activity. This process not only recycles nutrients but also reduces waste and greenhouse gas emissions associated with the decomposition of organic matter in landfills.

Cover Crops: Cover crops are planted during off-season periods to cover the soil rather than for the purpose of being harvested. These crops, such as clover, rye, and vetch, play a crucial role in nutrient cycling. They capture and store nutrients in their biomass, which are then released back into the soil when the cover crops decompose. This practice prevents nutrient leaching, enhances soil organic matter, and improves soil fertility and structure. Additionally, cover crops can fix atmospheric nitrogen, providing an essential nutrient for subsequent crops and reducing the need for synthetic nitrogen fertilizers.

Crop Residues: Crop residues, such as stems, leaves, and roots left in the field after harvest, are another vital component of nutrient cycling in organic farming. Instead of removing these residues, organic farmers incorporate them back into the soil through practices like mulching or tillage. As these residues decompose, they release nutrients that are taken up by the next crop, thus maintaining a continuous nutrient cycle. This method also contributes to soil organic matter, enhances soil moisture retention, and suppresses weed growth.

B. Benefits of Nutrient Cycling in Organic Farming

Soil Health: Nutrient cycling is fundamental to maintaining and improving soil health. By using organic matter to replenish nutrients, organic farming enhances soil fertility, promotes beneficial microbial activity, and improves soil structure. Healthy soil is better able to retain moisture, support plant growth, and resist erosion, leading to more sustainable and resilient agricultural systems.

Crop Resilience: Through effective nutrient cycling, organic farming systems can produce more resilient crops. Adequate and balanced nutrient availability ensures that plants are healthy and vigorous, making them more resistant to pests and diseases. This reduces the reliance on chemical pesticides and herbicides, aligning with the principles of organic agriculture and promoting environmental sustainability.

Reduced Environmental Impact: One of the significant advantages of nutrient cycling in organic farming is the reduction in environmental impact. By minimizing the need for synthetic fertilizers, organic farmers reduce the risk of nutrient runoff into water bodies, which can cause eutrophication and harm aquatic ecosystems. Additionally, nutrient cycling practices help sequester carbon in the soil, mitigating climate change by reducing greenhouse gas emissions.

Economic Efficiency: Nutrient cycling can also lead to economic benefits for organic farmers. Reducing dependence on external inputs like synthetic fertilizers and pesticides lowers

production costs. Furthermore, improved soil health and fertility can enhance crop yields and quality, leading to higher market value and profitability.

6.2 Best practices implied in Circular Agriculture

6.2.1 Identification of exemplary case studies / Showcase of successful projects

Identification of exemplary case studies / Showcase of successful projects: from diverse geographical regions and agricultural sectors, providing valuable insights into successful implementations and outcomes.

I. Best practices in agritourism based on the principles of CA

Best practices in agritourism refer to the optimal methods and strategies implemented by agricultural enterprises that integrate tourism activities. These practices aim to ensure sustainable development, enhance visitor experiences, preserve cultural heritage, and foster economic growth within local communities. They encompass a range of approaches such as promoting organic farming techniques, conserving natural resources, offering educational programs, engaging in community partnerships, ensuring visitor safety, and maintaining high-quality standards. By adhering to these practices, agritourism seeks to balance economic viability with environmental stewardship and cultural preservation, while providing authentic and educational experiences for tourists.

II. The importance of best practices in agritourism

The agritourism is a vibrant sector that honours agricultural traditions, promotes sustainable practices and cultural heritage, and provides immersive experiences for visitors. It blends agriculture with tourism, relies heavily on best practices to ensure sustainable development and positive outcomes for both farmers and visitors. These practices encompass a range of guidelines and strategies aimed at maximizing benefits while minimizing negative impacts on the environment, local communities, and agricultural operations.

The benefits of implementing best practices in agritourism are:

- **Integration:**

Best practices enable the seamless integration of agricultural activities with tourism experiences, allowing visitors to directly participate in farming processes, taste local products, and learn about cultural traditions. This integration enhances the authenticity of visitor experiences and fosters a deeper appreciation for rural lifestyles.

- **Sustainability:**

Sustainability is fundamental for thriving agritourism ventures. This includes employing organic farming methods, conserving biodiversity, and minimizing environmental footprints, all crucial for responsible environmental stewardship. Implementing natural farming

techniques, reducing waste, and sourcing local produce exemplify sustainable practices at the heart of agritourism best practices.

- **Cultural preservation:**

Agritourism actively contributes to the preservation of local cultural heritage by promoting culinary traditions, historical accommodations, and cultural events. This not only enriches visitor experiences but also helps preserve regional identities and traditions.

- **Enhanced visitor experiments:**

In agritourism, integrating agricultural activities with tourism offers visitors opportunities to engage in farm tours, hands-on activities, and educational programs. These experiences deepen their understanding of agricultural processes and forge stronger connections with rural environments. Educational programs, including workshops on olive oil production, cheese-making demonstrations, and local craft workshops, enhance visitor engagement by providing immersive experiences that highlight traditional methods and local culture. Prioritizing these engaging and educational activities not only enriches the visitor experience but also fosters appreciation for agriculture while promoting sustainable tourism practices in rural areas.

- **Community and economic benefits:**

Agritourism stimulates local economies by creating jobs, supporting small-scale producers, and fostering partnerships with local businesses. It enhances community cohesion and contributes to the socio-economic development of rural areas. Community engagement is integral to successful agritourism practices. Farmers frequently partner with local businesses, artisans, and tour operators to craft immersive visitor experiences highlighting the area's distinctive agricultural heritage and products. This involvement not only garners backing for agritourism initiatives but also bolsters local economies. Agritourism enterprises often catalyze community development by generating employment locally, aiding small-scale producers, and promoting collaboration among community stakeholders. Such ventures significantly enhance the socio-economic landscape of rural areas, fostering resilience and sustainable livelihoods.

Agritourism thrives on best practices that intertwine agriculture with tourism, emphasizing sustainability, cultural preservation, and community engagement. These practices not only enrich visitor experiences through educational programs and hands-on activities but also contribute to the preservation of local heritage and traditions. By fostering partnerships with local businesses and promoting sustainable farming methods, agritourism enterprises play a pivotal role in supporting rural economies and promoting environmental stewardship. Ultimately, agritourism emerges as a sustainable and impactful avenue for both economic growth and cultural appreciation in rural communities.

III. Best practice examples in agritourism

- **Best practice No. 1**

The Cretan Olive Oil Farms represent a beacon of traditional agricultural practices and culinary excellence, rooted deeply in the island's cultural heritage. Established in 1995, the farm's journey began with a collaborative effort to document Crete's rich culinary traditions in response to growing interest from Dr. Schleicher's best-selling book, "Der sensationelle Kreta

Diet." This success led to further exploration under the guidance of renowned chef Eckart Witzigmann, who sought to uncover the secrets of Cretan cuisine firsthand.

Over the years, the farm has expanded its mission beyond documentation, becoming a vibrant educational center and a pioneer in sustainable agritourism. Today, it offers a diverse array of activities designed to immerse visitors in the authentic flavors and practices of Cretan agriculture. E-Guided Tours provide a firsthand look at the farm's natural landscapes, showcasing the synergy between olive trees, local fauna like bees and sheep, and traditional farming methods that sustain the ecosystem.

Visitors can engage in hands-on experiences such as olive oil production demonstrations, where they learn the ancient techniques of pressing olives into Extra Virgin Olive Oil. These sessions emphasize sustainability and minimal intervention, reflecting the farm's commitment to preserving centuries-old practices while meeting modern demands. The farm also hosts interactive cooking lessons, guided by local chefs who share the art of preparing authentic Cretan dishes using organic ingredients sourced directly from their garden.

For those interested in dairy products, interactive cheese-making sessions provide a unique opportunity to participate in the entire cheese-making process, from milking goats to tasting freshly prepared varieties like "malaka" and "mizithra." Additionally, pottery workshops offer insights into the island's ancient craft traditions, allowing visitors to mold clay into unique pottery pieces while learning about Crete's historical contributions to pottery-making.

Culinary exploration extends further with Cretan Wine Tastings, where visitors can sample wines cultivated from vines that have thrived on Crete for millennia. These tastings delve into the island's viticultural history, tracing back to ancient times as evidenced by archaeological discoveries like the 3500-year-old wine-press found in Vathipetro. The farm also hosts cultural festivals, providing a festive backdrop to showcase local cuisine, olive oil, and other traditional products.

The overarching goal of the Cretan Olive Oil Farms is to offer a comprehensive experience that not only educates but also inspires a deeper appreciation for Cretan culture and sustainable agriculture. Through their diverse range of activities and immersive programs, the farm invites visitors to rediscover the authenticity of Cretan life, fostering connections between past traditions and contemporary practices that ensure the preservation of this rich cultural heritage for future generations.

The Cretan Olive Oil Farms exemplify sustainability through their commitment to preserving traditional agricultural practices and promoting biodiversity. They employ organic farming methods and minimal intervention in olive oil production, aiming to sustain the ecosystem and support natural cycles. Integration of local fauna like bees and sheep contributes to soil health and pollination, aligning with principles of circular agriculture. Furthermore, the farm's use of organic ingredients from their garden in cooking lessons and cheese-making sessions showcases a closed-loop system, minimizing waste and maximizing agricultural efficiency while fostering a deeper connection to Cretan cultural heritage.



Figure 14. Products of the Cretan Olive Oil Farm



Figure 15. Ceramic mug from the Cretan Olive Oil Farm

For more information visit the website of the farm: <https://www.cretanoliveoilfarm.com/>

- **Best practice No. 2**

Nemunas Delta Regional Park in Lithuania offers various excellent locations for different outdoor activities such as bird watching, kayaking, and nature photography. Here are some specific places within the park that are known for their natural beauty and opportunities for recreational activities.

Mingės kaimo turizmo sodyba (Mingė Village Tourism Farmstead) is more of an agro-tourism site, providing a blend of traditional farming and hospitality. Visitors can learn about local agricultural practices and enjoy the serene environment of Mingė, where the main street is a river. Often referred to as the "Lithuanian Venice," this village is ideal for kayaking and boating. The village is unique as the main street is a river, offering a picturesque and tranquil setting.

Minija Village is a perfect destination for nature enthusiasts, including fishermen, sailors, day-trippers, and water-skiing lovers. The trend of celebrating birthdays and workplace anniversaries in nature, rather than in stuffy restaurants, has made Minija Village increasingly popular. It now hosts small groups and scientific symposia in both summer and winter.

About a decade ago, the residents of Minija Village recognized the potential for tourism and began welcoming holidaymakers with great hospitality, turning it into a thriving business. Stasys Petrošius was among the first to organize leisure activities in the village. He built a beautiful homestead on the bank of the Minija River, following the traditional village style.

Stasys believes that living on-site is essential to properly arrange, prepare, and develop the business. His sons have continued his innovative work, ensuring everything is done meticulously and sustainably.

The homestead offers various amenities and activities, including a café, boating, rentals of boats and water bikes, water skiing, fishing, a Lithuanian sauna, guest houses, and cabins-campers. Miniija Village combines natural beauty with well-developed facilities, making it a model location for sustainable and hospitable tourism.

Visitors to the Nemunas Delta often find themselves drawn to the offerings of the Minge Exotica Homestead. Renting one of their ships opens up a world of exploration, allowing guests to see the vast delta of the Nemunas River and admire the stunning views of the Curonian Lagoon. With the freedom to reach scenic destinations like Nida, Preila, Pervalka, Juodkrantė, and Klaipėda at any time, travelers are spoiled for choice.

Nestled in this picturesque setting is the cozy café “Mingės Exotica,” a welcoming spot that can accommodate up to 80 guests. It's a perfect venue for various celebrations, from weddings and birthdays to christenings and parties. This year marked a significant milestone for the homestead with the opening of a new hotel. The hotel features eleven comfortably furnished rooms, capable of hosting up to 27 guests, and offers a mix of five triple rooms and six double rooms.

For those seeking adventure, the UAB “Mingės Exotica” entertainment complex provides exhilarating activities. Speedboat tours offer a quick way to orbit the Nemunas Delta, visit Neringa, and explore other unique places in the region. Thrill-seekers can also enjoy water skiing or swimming on an inflatable wheel, experiences that promise to be unforgettable and leave guests eager for more.

In the tranquil yet vibrant environment of the Minge Exotica Homestead, every visitor finds a blend of relaxation and excitement, creating memories that last a lifetime.

Miniija Village and Minge Exotica Homestead exemplify principles of sustainability and circular agriculture through their integration of tourism with traditional farming, eco-friendly development, and commitment to local economic and environmental stewardship. The holistic approach to managing both agricultural and hospitality aspects ensures that resources are used efficiently and that the natural and cultural heritage of the area is preserved and appreciated by visitors.

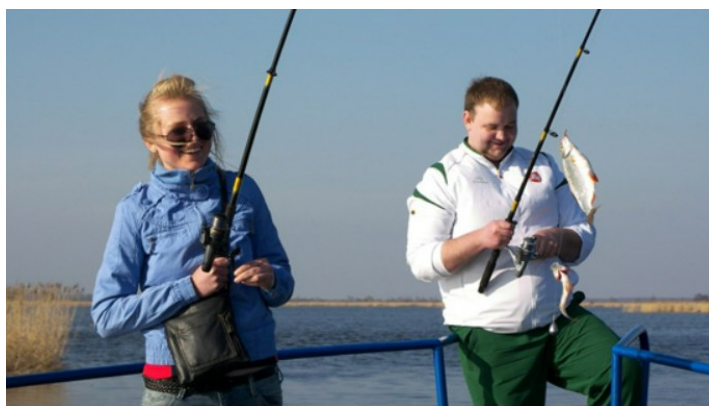


Figure 16. Fishing in the village of Minge



Figure 17. Minge homestead

For more information visit the website: <https://www.mingeskaimas.lt/>

- **Best practice No. 3**

Wine Paths Italy is an online platform from Italy dedicated to luxury wine tourism experiences around the world. It connects travellers with prestigious wineries, vineyards, and estates offering wine tastings, tours, accommodations, and culinary experiences. Wine Paths showcases destinations in renowned wine regions, providing detailed information, virtual tours, and booking options for visitors seeking immersive and high-quality wine-related experiences.

Wine Paths offers curated and luxurious wine tourism experiences across Italy's diverse regions. It features exclusive wine tours and tastings in renowned destinations such as Chianti Classico, Barolo, Brunello di Montalcino, and Prosecco. Guests can stay in luxury accommodations nestled amidst vineyards, enjoy gourmet dining paired with local wines, and participate in cultural activities like cooking classes and visits to artisanal food producers. The platform emphasizes sustainability, promotes local cuisine and culture, and provides personalized itineraries tailored to travelers' preferences. Wine Paths Italy caters to those seeking authentic and immersive encounters with Italy's renowned wine regions.

On the Wine Paths website, **Castello di Radda** showcases its offerings located in the Chianti Classico region of Tuscany, Italy, where visitors can explore its amenities and experiences.

Located in the heart of the Chianti Classico region in Tuscany, Italy, offers a picturesque setting surrounded by vineyards and olive groves, providing panoramic views of the Tuscan countryside. In the Chianti Classico region of Tuscany epitomizes excellence in wine tourism through a holistic approach. It champions sustainable vineyard practices with organic and biodynamic farming, promoting soil health and grape quality naturally. Guided vineyard tours educate visitors on these practices and the art of winemaking, complemented by tastings of esteemed wines like Chianti Classico DOCG in scenic settings showcasing the estate's production.

Castello di Radda oversees approximately 40 hectares of vineyards situated in Radda in Chianti and Gaiole in Chianti, at the heart of the Chianti Classico region. The vineyards face

varying exposures from South-East to South-West, and the soils are predominantly medium clay-limestone with significant gravel content. Radda and Gaiole in Chianti are renowned for producing exceptional wines, particularly Sangiovese, which thrives in these optimal conditions. The estate primarily produces Chianti Classico DOCG, Riserva, and Gran Selezione wines. Additionally, they offer a rosé, two Toscana IGT wines, a Vermouth, and, starting from 2016, Vin Santo.

The estate offers luxurious accommodations blending Tuscan architecture with modern comforts, each providing views of vineyards or the medieval town of Radda in Chianti, alongside gourmet dining featuring regional flavors paired with local wines. Cultural immersion includes hands-on cooking classes with seasonal ingredients and visits to historical sites and artisan workshops, enriching guests' understanding of the region's heritage. Environmental stewardship is prioritized with waste reduction and energy-efficient systems. Educational wine programs deepen appreciation for Chianti Classico's terroir, and interactive workshops with winemakers foster a deeper connection to the estate's wines. Utilizing platforms like Wine Paths for seamless online booking and active engagement on social media enhances visibility and interaction globally, underscoring Castello di Radda's commitment to enriching and unforgettable wine tourism experiences in Tuscany.

In the context of Castello di Radda's operations as described on the Wine Paths website, one of the most sustainable impacts connected with circular agriculture is its commitment to organic and biodynamic farming practices. By embracing these methods, the estate promotes soil health, biodiversity, and grape quality without relying on synthetic chemicals. This approach not only preserves the integrity of the land but also contributes to the long-term sustainability of the vineyards in the Chianti Classico region. Additionally, Castello di Radda's emphasis on waste reduction and energy-efficient systems further underscores its dedication to environmental stewardship, ensuring minimal ecological footprint while maintaining high standards of wine production and hospitality.



Figure 18. Website of the Wine Paths



Figure 19. Website of the Chianti Classico

For more information visit the websites:

<https://www.winepaths.com/destination/italy>

<https://www.chianticlassico.com/aziende/castello-di-radda/>

IV. General report on agritourism best practices

Agritourism has emerged as a dynamic sector that not only celebrates agricultural traditions but also promotes sustainable practices and cultural heritage, offering immersive experiences for visitors. Building upon prior research, this study compares best practices from five partner countries, including case studies from Olon Estate in Greece, Cascina Savino in Italy, Farmers Circle in Lithuania, and Eagle Craft Nest (“Sasfészek”) Courtyard in Romania, highlighting their diverse approaches and common principles that define successful agritourism ventures across Europe. North Macedonia lacks a best practice study in agro-food tourism due to persistent traditional farming methods, insufficient educational outreach, low utilization of subsidies and EU-funded projects, and minimal collaboration between the agriculture and tourism sectors, all of which hinder the development of effective integrated initiatives.

Essential components of successful agritourism enterprises:

- **Integration of agriculture and tourism:**

Each case study seamlessly integrates agricultural activities with tourism experiences, allowing visitors to engage directly with farming practices, local products, and cultural traditions. This integration enhances the authenticity of visitor experiences and promotes a deeper appreciation for rural lifestyles. North Macedonia's integration of agriculture with tourism faces significant challenges due to traditional practices and limited collaboration, but efforts to modernize and follow EU recommendations offer hope for a more promising future.

- **Sustainability practices:**

Sustainability is a cornerstone across all ventures, evidenced by organic farming methods, biodiversity conservation, and efforts to minimize environmental impact. Practices such as natural farming techniques, waste reduction strategies, and local sourcing of produce underscore a commitment to environmental stewardship. North Macedonia's agriculture sector faces challenges in adopting sustainability practices due to traditional methods like field burning and limited educational outreach, but ongoing efforts to modernize farming and align with EU recommendations offer hope for a more sustainable future.

- **Cultural preservation:**

Agritourism ventures actively preserve and promote local cultural heritage through culinary traditions, historical accommodations, and cultural events. This emphasis on cultural preservation not only enriches visitor experiences but also contributes to the preservation of regional identity and traditions. North Macedonia faces challenges in integrating modern agriculture with tourism due to persisting traditional practices, limited educational efforts, and weak sectoral cooperation. Achieving a balance between cultural preservation and sustainable development is crucial for fostering effective agro-food tourism initiatives in the country.

- **Educational and experiential tourism:**

Educational programs play a crucial role in agritourism, offering visitors insights into agricultural processes, product origins, and traditional practices. Hands-on experiences such as olive oil production workshops, cheese-making demonstrations, and local craft workshops enrich visitor engagement and foster a deeper connection with the rural environment. North Macedonia's progress in educational and experiential tourism is constrained by traditional farming practices, inadequate educational programs, and minimal collaboration between agricultural and tourism sectors. Enhancing educational initiatives and fostering stronger sectoral partnerships are crucial for developing immersive tourism experiences that promote both cultural understanding and sustainable agricultural practices in the region.

- **Community engagement and economic impact:**

Agritourism ventures often serve as catalysts for community development by generating local employment opportunities, supporting small-scale producers, and fostering collaboration among local stakeholders. These ventures contribute positively to the socio-economic fabric of rural communities, enhancing resilience and promoting sustainable livelihoods. North Macedonia needs to improve community engagement and economic impact through better collaboration between agriculture and tourism, enhanced educational efforts, and reduced reliance on traditional practices. These steps are crucial for fostering sustainable development and maximizing economic benefits in the country.

Successful agritourism ventures across Europe represent a vibrant tapestry of geographical landscapes and cultural traditions. They offer unique experiences that cleverly combine agriculture with tourism. These businesses seamlessly integrate farming activities with visitor engagement, inviting guests to immerse themselves in local practices, savor regional products, and celebrate diverse cultural heritages. By combining agriculture and tourism in this way, these experiences not only enhance authenticity, but also foster a deeper appreciation of rural lifestyles and the rich cultural tapestry of each region.

Sustainability is fundamental to these ventures, characterized by organic farming methods, biodiversity conservation, and a commitment to minimizing environmental impact. Practices such as natural farming techniques, waste reduction strategies, and local sourcing of produce underscore their dedication to environmental stewardship. Sustainability lies at the heart of these endeavors, demonstrated through organic farming techniques and innovative strategies to reduce environmental impact. Whether situated in the sun-drenched olive groves of Olon Estate in Greece, where ancient olive oil production blends with Byzantine frescoes in local chapels, or amidst the rolling vineyards of Cascina Savino in Italy, where communal

farming initiatives like Vazapp foster community and responsibility among farmers, each location champions sustainable practices tailored to its unique landscape.

Agritourism also plays a crucial role in cultural preservation by actively promoting local heritage through culinary traditions, historical accommodations, and cultural events. This emphasis not only enhances visitor experiences but also significantly contributes to the preservation of regional identity and traditions. Cultural preservation is a focal point, with agritourism ventures proudly showcasing culinary traditions, historical accommodations, and vibrant cultural events that underscore the unique identities of their respective regions.

Educational programs are important factors in agritourism, providing valuable insights into agricultural processes, product origins, and traditional practices. Hands-on experiences such as olive oil production workshops, cheese-making demonstrations, and local craft workshops are pivotal in deepening visitor engagement and fostering a meaningful connection with the rural environment. These programs are instrumental in enhancing visitor understanding and appreciation of rural life. For instance, cheese-making workshops at Lithuania's Farmers Circle and traditional chimney cake crafting at Romania's Eagle Craft Nest ("Sasfészek") Courtyard offer unique opportunities for guests to immerse themselves in local traditions, thereby strengthening their connection to the cultural heritage of the places they visit.

Furthermore, agritourism ventures frequently serve as catalysts for community development by generating local employment opportunities, supporting small-scale producers, and encouraging collaboration among stakeholders. These initiatives make a positive impact on the socio-economic landscape of rural communities, enhancing resilience and promoting sustainable livelihoods. Beyond their role in tourism, these ventures drive local economic growth by fostering employment, supporting small-scale producers, and cultivating partnerships within the community. This multifaceted approach not only strengthens the socio-economic fabric of rural areas but also enhances sustainability and resilience across diverse cultural landscapes.

North Macedonia faces significant challenges integrating agriculture with tourism, including traditional practices, limited collaboration, and sustainability issues. Efforts to modernize and align with EU recommendations provide hope for a more promising future. Enhanced educational efforts and stronger sectoral partnerships are crucial for fostering sustainable development and maximizing economic benefits through agro-food tourism and experiential initiatives in the region.

Successful agritourism ventures exemplify the integration of agriculture and tourism while prioritizing sustainability, cultural preservation, educational engagement, and community development. These elements collectively underscore the transformative potential of agritourism in promoting sustainable practices and fostering a deeper connection between visitors and rural environments.

Common themes and differentiators of successful agritourism enterprises:

These common themes and differentiators illustrate how successful agritourism ventures in Europe integrate agriculture with tourism while addressing sustainability, cultural

preservation, educational engagement, and community development. Each location's unique characteristics contribute to a diverse agritourism landscape across the continent.

Common themes:

- Seamless integration of agricultural activities with tourism experiences.
- Direct engagement with farming practices, local products, and cultural traditions.
- Emphasis on organic farming methods, biodiversity conservation, and minimizing environmental impact.
- Practices such as natural farming techniques, waste reduction strategies, and local sourcing of produce.
- Active promotion and preservation of local cultural heritage.
- Highlighting culinary traditions, historical accommodations, and cultural events.
- Educational programs offering insights into agricultural processes and traditions.
- Hands-on experiences like workshops that deepen visitor engagement with rural environment.
- Catalysts for community development through local employment generation and support for small-scale producers.
- Contribution to socio-economic resilience and sustainable livelihoods in rural areas.

While these agritourism ventures share common themes such as sustainability, cultural preservation, and educational tourism, each location also offers unique elements that differentiate it.

Differentiators:

a. Geographical and cultural contexts:

Each location (Olon Estate, Cascina Savino, Farmers Circle, Eagle Craft Nest) offers unique landscapes and cultural traditions that shape their agritourism approach.

- *Olon Estate from Greece* stands out for its pioneering role in organic olive oil production on Lemnos, coupled with a cultural dimension through its chapel adorned with local frescoes.
- *Cascina Savino from Italy* prioritizes human connection and collaboration among farmers through initiatives like Vazapp, promoting a sense of community and shared responsibility in agricultural practices.
- *Farmers Circle from Lithuania* distinguishes itself with comprehensive event spaces and educational facilities, emphasizing a holistic approach to sustainable agriculture and community engagement in Lithuania.
- *Eagle Craft Nest ("Sasfészek") Courtyard in Romania* excels in showcasing local gastronomy and craft culture, offering authentic experiences like chimney cake crafting and seasonal workshops, while prioritizing sustainability through waste reduction initiatives.

b. Local initiatives:

Initiatives like Vazapp in Italy promote community responsibility, while specific cultural practices like chimney cake crafting in Romania highlight local gastronomy.

c. Challenges and opportunities:

North Macedonia faces specific challenges in integrating agriculture with tourism due to traditional practices and limited collaboration, but efforts towards modernization and EU alignment offer potential for growth.

Conclusion:

In agritourism, the convergence of agriculture, tourism, sustainability, and cultural preservation is evident. The achievements of Olon Estate, Cascina Savino, Farmers Circle, and Eagle Craft Nest (“Sasfészek”) Courtyard highlight how agritourism can drive rural development, promote environmental stewardship, and safeguard cultural heritage. These ventures establish standards for sustainable tourism models that can be replicated globally.

Successful agritourism ventures seamlessly integrate agriculture and tourism while emphasizing sustainability, cultural preservation, educational engagement, and community development. They exemplify how these elements collectively advance sustainable practices and foster deeper connections between visitors and rural environments.

These initiatives showcase the synergy between agriculture and tourism, contributing to sustainability efforts, preserving cultural heritage, and enhancing visitor experiences. By prioritizing environmental responsibility, nurturing community ties, and celebrating local traditions, these ventures embody sustainable tourism practices that benefit both visitors and local communities, showcasing the diverse charm and authenticity of rural landscapes worldwide.

On the topic of the chapter, to find out more, we recommend you to watch the following interesting videos:

- **Tuscany, Italy: Farm to Table - Rick Steves’ Europe Travel Guide - Travel Bite:**
<https://www.youtube.com/watch?v=vGjYqFYK8qE>

This Travel Bite episode of Rick Steves promises to showcase the essence of Italian gastronomy as we delve into the region's farm-to-table traditions. From exploring local markets brimming with fresh produce to visiting picturesque vineyards and olive groves, viewers will witness firsthand how Tuscany's natural bounty shapes its world-renowned cuisine. Through Rick's expert guidance, you'll uncover the stories behind traditional Tuscan dishes and highlight the passion of local artisans dedicated to preserving centuries-old culinary techniques.

- **Farm Pioneering Organics in Croatia:**
<https://www.youtube.com/watch?v=aRxymTETvXk>

Explore the innovative practices of a pioneering farm dedicated to organic agriculture against the backdrop of Croatia's breathtaking natural beauty. From lush fields to thriving orchards, discover how this farm harnesses sustainable methods to produce high-quality, organic produce. Meet the passionate farmers and hear their stories of dedication to preserving the environment while cultivating delicious crops. This video promises to showcase the

harmony between agriculture and nature, offering viewers a glimpse into the future of sustainable farming in Croatia.

- **Three Friends Build Sustainable Farm in Europe's Wealthiest Country:** https://www.youtube.com/watch?v=TWYftfc9LJk&list=PLVQDfYEdBPj4Exe4DHm1BPRoJNT_egDR3&index=12

Explore the remarkable story of three friends who have embarked on a mission to build a sustainable farm amidst stunning landscapes. Discover their innovative farming practices, from organic cultivation to eco-friendly livestock management, as they strive to create a model of sustainable agriculture. Gain insights into their challenges, triumphs, and the impact of their efforts on local communities and the environment. This video promises to showcase the dedication and passion behind sustainable farming practices in Europe, offering viewers a deeper understanding of how small-scale initiatives can lead to significant positive change.

- **Combining Agriculture with Tourism | A Common Farm Discovers a New Way of Bio-Economy - EU Science:** <https://www.youtube.com/watch?v=etPfAYWh7-s>

Discover how this farm applies environmentally friendly practices to crop and livestock production, while inviting visitors to share in the farm experience. From farm-to-table meals to educational tours on sustainable farming practices, see how this initiative promotes economic growth while also fostering environmental stewardship. This video highlights the intersection of agriculture, tourism and sustainability in the EU, giving viewers a glimpse into innovative strategies to achieve a harmonious balance between conservation and economic development.

Audiovisual Material

- Mingè Village Tourism Farmstead: <https://www.mingeskaimas.lt/>
- Ruraltour - European Federation of Rural Tourism: <https://www.ruraltour.eu/>
- The Cretan Olive Oil Farm: <https://www.cretanoliveoilfarm.com/>, <https://www.instagram.com/cretanoliveoilfarm/>
- Wine Paths Italy: <https://www.winepaths.com/destination/italy>
- Castello di Radda: <https://www.chianticlassico.com/aziende/castello-di-radda/>
- Tuscany, Italy: Farm to Table - Rick Steves' Europe Travel Guide - Travel Bite: <https://www.youtube.com/watch?v=vGjYqFYK8qE>
- Farm Pioneering Organics in Croatia: <https://www.youtube.com/watch?v=aRxymTETvXk>
- Three Friends Build Sustainable Farm in Europe's Wealthiest Country: https://www.youtube.com/watch?v=TWYftfc9LJk&list=PLVQDfYEdBPj4Exe4DHm1BPRoJNT_egDR3&index=12
- Combining Agriculture with Tourism | A Common Farm Discovers a New Way of Bio-Economy - EU Science: <https://www.youtube.com/watch?v=etPfAYWh7-s>

6.2.2 Integration of innovative teaching methods: Artful Thinking

Nowadays, teaching and learning have expanded rapidly covering many disciplines. Nevertheless, the crucial point for the educators in every subject area remains the cultivation of critical thinking skills and the creative learning. Many researchers (Corcoran, 2006; Eisner, 1999) support that critical thinking and creative learning could be enhanced through artwork material. The latter has been involved in everyday life in many aspects, the development of computer science and the internet and at the same time the huge growth of the social media gave free access in many museums, artworks, paintings, performances all over the world. This Erasmus project (SKILLS) suggests the usage of artworks in order to cultivate and enhance critical thinking skills and creative learning. Different disciplines could be involved through artworks to promote active learning and probably maintain a more permanent knowledge. The Erasmus project was based in the Artful Thinking educational method so as to combine art with sustainable agricultural waste streams management.

Artful Thinking is an educational method that was developed by Harvard Project Zero in collaboration with the Traverse City, Michigan Area Public Schools (TCAPS). The program was one component of a larger TCAPS grant from the US Department of Education that aimed at developing a model approach for integrating art into regular classroom instruction. The purpose of Artful Thinking is to help teachers regularly use works of visual art and music in their curriculum in ways that strengthen student thinking and learning (Barahal, 2008).

Artful thinking could enhance student's critical thinking and learning using visual art and music. The zero project suggests six thinking dispositions through which students' intellectual behaviors could be enhanced. Artful thinking uses the artist's palette as a central metaphor for this six thinking dispositions. These dispositions are developed through Thinking Routines, which are easy to learn and can deepen students' thinking in the classroom. These routines are: *questioning & investigating, observing & describing, reasoning, exploring viewpoints, comparing & connecting, and finding complexity*. Thinking routines are designed to be used flexibly and frequently. Students can use these routines solo or in small or large group settings and they can be used across subject matters, as also with a wide range of topics and works of art. Above all, they are designed to deepen students' thinking about the topic at hand, whether it is a painting, a historical event, or a mathematical operation (Barahal, 2008, Tishman & Palmer, 2007).

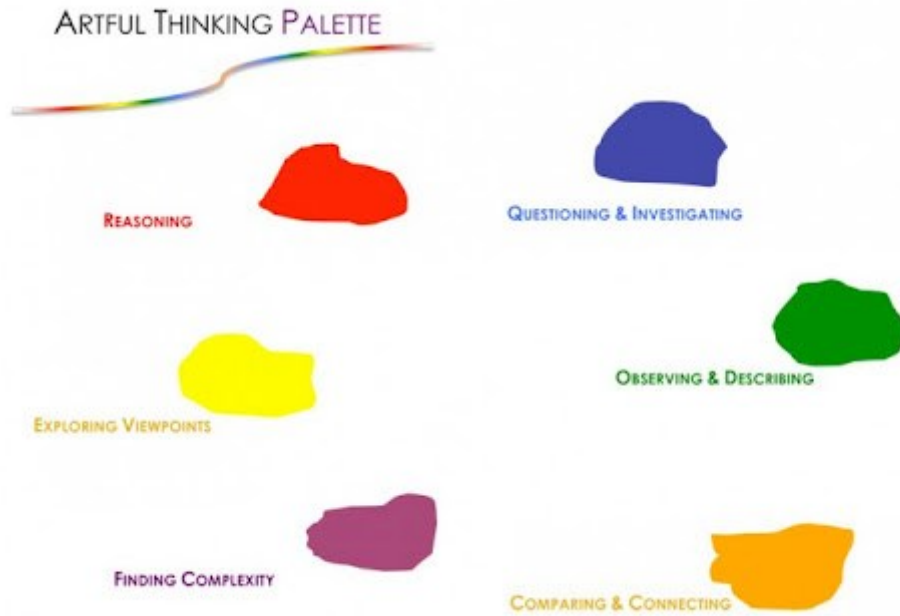


Figure 20. Artful Thinking Palette (http://pzartfulthinking.org/?page_id=5)

You may discover Artful thinking as an applied tool related to Circular Agriculture by pressing the following link:

[Bioprocesses: the heart of circular economy](#)

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