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Project Result 5: Digital Course in Circular Agriculture

“SKILLS”

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“Strengthening Key Competences in Agriculture
for Value Chain Knowledge”



VYTAUTO DIDŽIOJO
UNIVERSITETAS



Erasmus+



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Digital Course: Introduction to Circular Agriculture

Chapter 4

Value chain for minimizing waste resources in CA

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4.4 Packaging-Introduction

- **Importance:** Facilitates handling, transport, stacking, storage, and distribution in the food industry.
- **Main Roles:**
 - Protects food from environmental conditions.
 - Prevents transfer of harmful substances.
 - Ensures microbiological stabilization.

Packaging Design

- **Standards:**
 - Simplicity.
 - Integrated design.
 - Right sizing.
- **Functions:**
 - Protection.
 - Marketing.
 - Storage.
- **Efficiency:** Minimizes excess material and avoids unnecessary layers.

Sustainable Packaging Solutions

- **Materials:**

- Recycled content.
- Biodegradable materials (paper, cardboard, bioplastics).
- Renewable resources (bamboo, plant-based plastics).

- **Benefits:**

- Conserves natural resources.
- Lowers carbon footprint.
- Reduces landfill waste and environmental pollution.

Reusable Packaging

- **Strategies:**

- Refillable containers (glass bottles, sturdy plastic containers).

- Durable materials for multiple uses.

- Return systems (beer kegs, milk bottles).

- **Objective:** Enhance sustainability by promoting multiple uses.

Lightweighting Packaging

- **Approach:**

- Use thinner materials that maintain strength.
- Employ innovative structural design techniques.
- Leverage advanced materials with high strength-to-weight ratios.

- **Benefits:**

- Reduces material usage.
- Lowers transportation emissions.
- Minimizes environmental impact from production to disposal.

Recyclable Packaging

- **Principles:**
 - Single material design for easy recycling.
 - Clear labeling with recycling instructions.
 - Use of materials accepted by local recycling programs.
- **Goal:** Minimize waste and promote efficient reuse of materials.

Compostable Packaging

- **Focus:**
 - Certified compostable materials meeting industrial or home composting standards.
 - Designs with home compostability features.
- **Education:** Inform consumers on proper composting techniques.
- **Impact:** Reduces landfill waste and supports soil health.

Supply Chain Optimization Strategies

- **Techniques:**

- Bulk shipping to minimize individual packaging.
- Reusable shipping containers for logistics.
- Optimized shipping and storage practices.

- **Benefits:**

- Reduces excessive protective packaging.
- Enhances resource management.
- Lowers environmental impact across the supply chain.

Conclusions



- **Comprehensive Approach:**
 - Combines various strategies for sustainable packaging.
 - Emphasizes durability, reusability, lightweighting, recyclability, and compostability.
 - Integrates innovative solutions and supply chain optimization.
- **Outcome:** Creates a sustainable and efficient packaging system that benefits the environment and meets consumer demands

References



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