

## **Task 4.2.5 Transferability Plan for agriculture dairy supply chain in ITALY**

## TRANSFERABILITY PLAN

### 01. Strategic phase

#### 01.1. Identification of the target supply chain(s) that will benefit of the transferability action

Type of supply chain (sector): Dairy sector and mainly the sector of zootechnical productions that use hay and silage as livestock feed.

Region / country: Italy

Brief description: The pilot action was carried out in the dairy sector (Agricultural phase), but the recommendations developed to reduce inorganic waste in general and more specifically the research carried out focusing on round bales nets and plastic silage covering films can be expected to disseminate the results also to all those zootechnical productive activities that use hay and silage in the feeding such as: beef cattle, buffaloes, sheep and goats. However, since the Reinwaste project has also been developed in the horticulture sector, the results obtained can also be disseminated to other productive sectors of vegetable production.

#### 01.2. Ex-ante analysis and diagnosis of the target supply chain(s) current state, in order to identify what are needs and main challenges in the framework of inorganic waste minimization that justify the transferability action

The Reinwaste experience carried out in the dairy livestock sector was developed from some premises. The first is that in general inorganic waste in agriculture is produced in reduced quantities compared to other sectors and areas; the second is that in particular in the dairy sector, due to the type of production (milk) and the Region in which the trial was conducted (Emilia Romagna), which allocates 90% of milk production in Parmigiano Reggiano, the management of inorganic waste has not yet represented a problem for farmers and waste plant managers.

These premises are also the basis of the fact that in the research phase of innovative solutions to reduce inorganic waste, no innovative solutions of literature and projects already existing, specific for the dairy farming sector, were found. Despite this, the experimentation conducted confirmed some situations and highlighted some new elements to guide the sector towards a reduction of plastics.

The waste characterization phase highlighted that most of the inorganic waste produced by the dairy livestock sector are nets for round bales and films for silage which together represent 49% of the inorganic waste produced. At the same time, however, the experimentation has also highlighted that even small

interventions or changes in the methods of production, supply and maintenance can contribute to the reduction of inorganic waste. It was also found that the innovative solutions currently available to reduce the production of the various types of inorganic waste, have focused on process modifications, such as the use of:

- larger containers for detergents with the possibility of refill the containers,
- eco-design solutions, such as reducing the thickness of the silage film or packaging,
- good practices, such as the use of LED lighting systems to reduce consumption energy, reducing the maintenance of the lighting system and the production of hazardous waste (mercury, argon).

The research carried out that for the dairy sector there are no innovations that make it possible to replace plastic materials with biodegradable materials or the few researches and experiments carried out, such as those on plastic silage covering films, do not yet have a mature technology to be applicable to such use.

In addition, a substantial difficulty has emerged in significantly reducing the use of plastics at least with the technologies currently available as alternative materials are not available at the moment with the same performance. There are also difficulties to recycle the waste from round bales nets or plastic covering films for silage, due to the residual material (e.g. hay, straw, earth) which does not allow recycling due to the difficulties in cleaning the waste. It is also highlighted how the good practices of protecting this waste from atmospheric agents put in place by farmers help to improve the quantity of plastics sent for recovery.

## **02. Pre-intervention phase**

### **02.1. Describe the general and specific objectives (linked to the ex-ante analysis) that the transferability measures aims to achieve**

Confagri consult is a company connected to Confagricoltura which is an Association of the agricultural sector that associates about 500,000 companies. The transfer plan will include actions on Fairs, conferences and events as illustrated in the table below.

### **02.2. Explain to which extent the results of the pilot actions implemented into the WP3 pilot could be transferred to the target supply chain**

The results of the research carried out in the Reinwaste project have made it possible to identify some general recommendations for the reduction of inorganic waste and more specifically measures to be implemented to reduce the production of plastic given by round bale nets and plastic silage films that can be transferred to other companies in the dairy sector or other livestock sectors.

#### Recommendations for reducing non-organic waste

- To protect round bale nets and plastic silage films became waste; to avoid wind, rain and further contamination of soil and water, in order to keep the material dry and clean. This also decreases disposal / recovery costs;
- To use larger containers for detergents with the possibility of refill the containers;
- To adopt LED lighting systems in order to reduce the electrical consumption, the maintenance and the production of hazardous waste;
- To use plant protection products contained in biodegradable packaging;
- To use plastic silage films with reduced thickness, maintaining the same resistance index;
- To use agronomics and productive best practices to reduce drugs, antibiotics, plant protection products, etc. in order to minimize the waste packaging.

#### Focus on round bale nets and plastic silage films

Alternative solutions:

##### **Conventional round bale nets** (high density polyethylene)

Mesh net casing used for packing cylindrical bales

- Alternative 1. Use of round bale net with a 5 % lower weight  
Mesh net casing with reduced thickness used for packing cylindrical bales

- Alternative 2. Polypropylene twine

Thin rope casing made of polypropylene used for the packaging of bales

- Alternative 3. SISAL twine

Thin rope Sisal wrapper used for packing bales.

Sisal (vegetable textile fiber derived from the leaves of *Agave sisalana*)

- Alternative 4. Use of the Big Baler

High density pressing for the packaging of large prismatic bales

- Alternative 5. Use of the two-stage haymaking process of loose hay

Haymaking technique which involves a first pre-drying phase in the field and a second phase in which the product is brought loose in the barn to complete drying.

##### **Conventional use of plastic silage film**

Plastic films for covering and protecting silage in order to guarantee their shelf life.

Alternative 1. Use silage film of less thickness

Plastic films for covering and protecting silage in reduced thickness trenches with the use of smaller quantities of plastic materials.

Alternative 2. Use of haylage round bales

Silage technique that involves the complete wrapping of the bales by plastic films.

### 03. Intervention deployment (options: in presence, virtual, only on paper)

List below the most suitable transferability initiatives dedicated to the target supply chain(s). This list can include ideal and/or potential interactions to be organized even after the project lifetime. Whether you manage to organize some of them into the project lifetime, please indicate it into the scheme and provide the dissemination material as attachment.

List of transferability initiatives		Description of the objective of the transferability	Main beneficiary	Timing (deployment period)
N°	Type of intervention (workshop, webinar, study visit etc...)			
1	Vinitaly Fair in Verona	creation of a dedicated project corner for the entire duration of the fair within the institutional stand of Confagricoltura to disseminate the results of the project in the dairy sector through paper or digital communication materials, including videos made	National and international wine sector operators in the agricultural and industrial chain, trade associations, institutions.	19-22/04/2020
2	Cibus Fair in Parma	creation of a dedicated project corner for the entire duration of the fair within the institutional stand of Confagricoltura to disseminate the results of the project in the dairy sector through paper or digital communication materials, including videos made	National and international agri-food sector operators in the agricultural and industrial chain, trade associations, institutions.	11-14/05/2020
3	Cibus Fair in Parma	Reinwaste event organized together with Federalimentare and Arter	National and international agri-food sector operators in the agricultural	13/05/2020

			and industrial chain, trade associations, institutions.	
4	Naples University during the event organized for the soil day.	creation of a dedicated project corner to disseminate the results of the project in the dairy sector through paper or digital communication materials, including videos made	researchers, students, trade associations, institutions.	28/05/2020
5	event organized by Confagricoltura in Rome to celebrate 100 years , attended by the highest offices of the Italian State (President of the Republic and Prime Minister)	creation of a dedicated project corner for the entire duration of the event to disseminate the results of the project in the dairy sector through paper or digital communication materials, including videos made	Confagricoltura associations at regional and provincial level, agricultural entrepreneurs associated with Confagricoltura and representatives of trade associations and of Italian institutions at national level	28/10/2020
6	ECOMONDO Fair in Rimini	creation of a dedicated project corner for the entire duration of the fair within the institutional stand of Confagricoltura to disseminate the results of the project in the dairy sector through paper or digital communication materials, including videos made	Operators in the waste and bioeconomy sectors, researchers and universities, operators in the agricultural and industrial sectors, trade associations, institutions.	03-05/11/2020
7	Vinitaly Fair in Verona	creation of a dedicated project corner for the entire duration of the fair within the institutional stand of Confagricoltura to disseminate the results of the project in the dairy sector through paper or digital communication materials, including videos made	National and international wine sector operators in the agricultural and industrial chain, trade associations, institutions.	starting from 2021

8	Cibus Fair in Parma	creation of a dedicated project corner for the entire duration of the fair within the institutional stand of Confagricoltura to disseminate the results of the project in the dairy sector through paper or digital communication materials, including videos made	National and international agri-food sector operators in the agricultural and industrial chain, trade associations, institutions.	starting from 2021
9	ECOMONDO Fair in Rimini	creation of a dedicated project corner for the entire duration of the fair within the institutional stand of Confagricoltura to disseminate the results of the project in the dairy sector through paper or digital communication materials, including videos made	Operators in the waste and bioeconomy sectors, researchers and universities, operators in the agricultural and industrial sectors, trade associations, institutions.	starting from 2021

Add rows if needed

#### 04. Post-intervention phase

To be filled out in case you manage to organize some transferability initiatives during the project lifetime

##### 04.1. How do you globally evaluate the effectiveness of the transferability plan deployment?

- ☐ Poor (low efficacy of the transfer plan / poor interest by the external stakeholders)
- ☒ Good (the transfer plan meets the expectations of the external stakeholders)
- ☐ Excellent (the transfer plan likely mobilize the external stakeholders to consider the REINWASTE approaches / solutions as strategy to reduce inorganic waste)

##### 04.2. How many external economic stakeholders did you globally concern into the transferability phase?

250 people participated in the event organized by Confagricoltura with the possibility of transferring the information received to 500,000 associated companies

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**04.3. What are the main barriers that the target stakeholders / supply chain should face when approaching the solutions proposed by REINWASTE**

The study highlighted that the economic and environmental benefits of each alternative solution to the use of traditional plastic materials cannot be considered universally valid for all farms in the livestock sector. Therefore, the choice of an alternative solution should be assessed by the basis of the company characteristics (size, management, production cycle).

**04.4. Will the target stakeholders / supply chain likely implement the REINWASTE approach / solutions afterwards?**

Yes