

AgriChemWhey

An integrated biorefinery for the conversion of dairy side streams to high value bio-based chemicals

Summary

The European dairy industry, as a by-product of whey protein manufacture, produces substances known as whey permeate and – following extraction of lactose - delactosed whey permeate. These dairy-processing sidestreams lack effective, reliable disposal routes. From a sustainability perspective, this presents a challenge, particularly in the light of the EU's 'post milk quota era'.

The AgriChemWhey project proposes to convert these sidestreams into added-value products – specifically L-Lactic acid, polylactic acid, minerals for human nutrition and bio-based fertiliser - for growing global markets. In the process, it will develop a blueprint for an economic sustainability model that can be replicated throughout Europe.

Objectives

The main objective of the AgriChemWhey is to develop the world's first integrated biorefinery for converting food-processing residues to bio-based chemicals. It will see a dedicated plant developed in Ireland. The project will see a new value chain for lactic acid from dairy production residues. Specifically, the project will:

- Demonstrate the ability to use innovative biorefinery technology to convert food-processing residues to food, feed and polymer grade LA at industrial scale.
- Optimise the technology by reducing production times and increasing yields, thus simplifying the process and making it more energy efficient.
- Establish industrial symbiosis to valorise side streams using with local partners - particularly of gypsum, calcium phosphate and fermentation residue – for agriculture and human nutrition.
- Develop and rollout exploitation strategies that will ensure commercialisation and wider uptake of the biorefinery technology.



AgriChemWhey

<https://www.agrichemwhey.com/>

Type of Action:

Innovation Action – Flagship

Value Chain: VC4 – organic waste

Start date: 01 January 2018

End date: 31 December 2021

BBI JU contribution: €

Expected impacts 22,007,931.38

The AgriChemWhey project aims for the following impacts :

- Developing rural communities by creating local jobs. Replicating AgriChemWhey biorefineries has the potential to create over 1,000 rural jobs within four years of project completion.
- Securing the future for dairy farming by making milk production more sustainable and increase the amount that farmers can earn from their outputs and protecting them against price volatility
- Regional development, by replicating one to five similar AgriChemWhey-style biorefineries attracting from private investments up to 325 MEUR.
- Improving the EU trade balance through greater resource efficiency and by reducing current EU L-lactic acid imports (currently 80,000 tonnes per annum) and ultimately turning Europe into a net exporter.
- Encourage industrial symbiosis that inspires the creation of new value chains.
- Provide inspiration through the success of the project, encouraging society and industry to embrace the growth and competitiveness of a European circular

bioeconomy.

- Create CO₂ savings in a range from 18,000 - 89,000 tonnes CO₂eq/year, depending on the number of AgriChemWhey-style biorefineries.

Achievements & milestones

Converting dairy by-products into high value bio-based chemicals

19 March 2018

11 partners from 5 member states (manufacturers, technical specialists, councils and educational institutions) are working together to valorise excess by-products from the dairy industry to value added products such as lactic acid, polylactic acid, minerals for human nutrition and bio-based fertilisers. [Read more](#)

Project coordination

- Glanbia Ingredients (Ireland)
- University College Dublin (Ireland)
- Trinity College Dublin (Ireland)
- Commercial Mushroom Producers Co-operative Society Ltd (Ireland)
- PNO Consultants Ltd (United Kingdom)
- GIG Karasek GmbH (Austria)
- Tipperary County Council (Ireland)
- Teagasc - The Agriculture and Food Development Authority (Ireland)
- Greenwin Wallonie (Belgium)
- Katholieke Universiteit Leuven (Belgium)
- EW Biotech GmbH (Germany)

Organisation name: Glanbia Ingredients (Ireland)