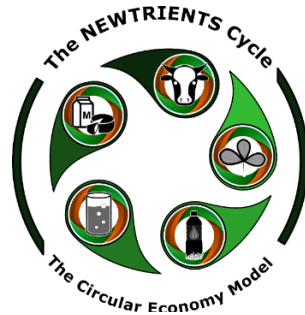




Dairy Processing Wastewaters: From Remediation to Valorisation for Circular Economy Opportunities

Dairy industry expansion in Ireland is resulting in substantial increases in dairy processing wastewater. Remediation of such processing wastewater constitutes a significant cost for the industry in Ireland. Conversely, dairy industry wastewater represents an exploitable source of chemical components that can act as feedstocks for value-added products such as bioplastics and animal feeds. Technological opportunities exist therefore to incorporate such wastewaters into circular economy strategies to enhance sustainability and profitability within the dairy processing sector.

The EPA-funded NEWTRIENTS project at University College Cork is developing such eco-innovative technologies, enabling the reuse of valuable components present in the effluent with potential environmental and economic benefits.



NEWTRIENTS aims to deliver innovation and efficiency through value-added dairy wastewater resource recovery using two novel linked technologies carried out in sequence:

- 1. Acidogenic fermentation of dairy industry waste yielding building blocks for bioplastics production.** The project is delivering optimised microbial bioreactor systems for the 2 step conversion of wastewater organic matter to volatile fatty acids via anaerobic digestions followed by fatty acid packaging by specialist bacterial communities into biodegradable polyesters of commercial significance in the global bioplastics market.
- 2. Production of duckweed biomass which is a protein-rich resource with potential as a high-value agricultural feed.** Technologies to grow duckweed, and especially native *Lemna minor*, on dairy industry processing wastewater have been developed by NEWTRIENTS. Productivity is high, and protein content can be as much as 40% of dry matter, with high levels of essential amino acids, identifying Lemna as a high-value feed.

Stakeholders in the dairy processing and/or feed/agricultural sector are invited to liaise with the NEWTRIENTS team to explore opportunities for further collaborative development.

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