

Feasibility of lactic acid production from cereal residues in the UK

Project number	219-0003	Final Project Report	PR536
Start date	01 July 2013	End date	01 October 2013
HGCA funding	£15,000	Total cost	£15,000

What was the challenge/demand for the work?

The aim of the study was to determine if UK derived cereal residues and associated products provide an economic and technically feasible route to produce lactic acid (LA) at sufficient scale to provide the raw material for a UK world-scale (30,000 tpa) polylactic acid (PLA) plant.

Attention is given to the current state of the EU bioplastics and PLA market, processes required for conversion of cellulosic feedstocks to LA, availability of residues from wheat, oat and barley milling operations and value chain development prospects. Many of the study parameters were based on earlier results published in Reineck (2008), for which feasibility of a 30,000tpa UK PLA plant using starch-based feedstocks was assessed.

How did the project address this?

The production of polylactic acid (PLA), a biodegradable and biobased polymer, from cereal milling residues (wheat, barley, oat, starch) at large scale represents a market opportunity in the UK provided five crucial parameters are in place: 1) a supportive political framework, 2) market attractiveness, 3) technological feasibility, 4) feedstock availability, and 5) economic viability. In consideration of these parameters, this study assessed the potential for developing a UK lactic acid (LA) plant capable of providing sufficient LA for a 30,000 tonnes per year (tpa) PLA plant, utilising cereal milling residues as feedstock.

What outputs has the project delivered?

Ultimately, this study shows that there is a strong and growing market for LA and PLA, the production pathways from cellulosic feedstocks are becoming commercialised and therein lies potential to develop value chains from cereal milling residues in the UK. However, little work has been done to date regarding the manufacture of LA from milling residues, and therefore this opportunity can be expected to have significant risks, especially in regards to technical feasibility.

Who will benefit from this project and why?

UK grain millers will benefit from this project as it offers potential opportunities to add value to residues of milling operations. Lactic acid developers looking to invest in the UK would also see potential benefit.

If the challenge has not been specifically met, state why and how this could be overcome

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Lead partner	NNFCC
Scientific partners	N/A
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