

Converting potato waste into pre-biotics and other valuable products

The challenge

Australia is the largest producer of potatoes in the southern hemisphere yet up to 40% of potatoes are rejected because they do not meet market specifications.

This large waste volume is currently used for animal feed where it receives \$10/tonne or it is disposed in landfill at a cost. However, graded out potatoes could become products that already have a market such as functional foods, bioplastics, packaging materials, coatings and adhesives.

Our plan

The aim of this project is to explore options for the transformation of waste potatoes into higher value products so the industry can improve profitability as well as reduce food waste volumes.

Given potato starch sells for \$500-800/tonne, if we consider an average potato waste stream of 100,000 tonnes per annum, this represents an annual value of \$50m for raw starch only. The known starch component Amylose can also be extracted from graded out potatoes to engineer low GI foods, and other forms of starches can be converted into a whole range of innovative products such as edible films, bioplastics and packaging.

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... this project aims in part to produce raw starch here in Australia to reduce the 20,000 tonnes per year that we import given we currently lack a potato starch industry.







Australian Government Department of Industry, Innovation and Science Business Cooperative Research Centres Program

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Another opportunity to convert potato waste into higher value is to refine the starch for high-end applications in the pre-biotic and functional food sectors. Research has shown that the less digestible starches make superior pre-biotics that can help prevent pathogen infections and the development of colon cancer. These proven methodologies will be used to create prebiotic products from potato waste.

The participating potato producers in this project will gain commercial benefit from the diversity of highervalue products developed from which new revenue can be generated. Biochar will be an end-product of the research process undertaken in this project. This is an important carbon-rich product that has been linked with improvements to soil fertility and carbon sequestration. This opportunity will be explored in a future Fight Food Waste CRC R&D extension project following the completion of this research project.



On a broader level, this project will achieve:

- conversion of large volumes of current potato waste into commercial products including liquid chemicals and using potato starch for packaging or bioplastics
- increased income and profitability for the Australian potato producers
- enhance the reputation of Australian food products through exports of high quality starches and starch-based
- functional foods
- fulfilment of national and international targets for reductions in carbon emissions in Australia
- job creation
- de-risking the sector against future carbonpricing/carbon-trading regimes that are anticipated to emerge in national and/or international markets.

Timeline November 2019 - December 2021 **Project leader**

Professor Vincent Bulone The University of Adelaide

Participants









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