

“Don't let an opportunity go to waste”

**A collaborative approach to the sustainable management of
Waste & By-Products by South Canterbury's
Food Processors and Manufacturers**

Update – March 2021

Since the Next Steps event in August, we have been working with businesses and academics to progress opportunities identified from the student research. This update will highlight the work currently underway to advance technically feasible opportunities, and outline some funding prospects we have on our radar to support these. But first, some updates on the Sustainable is Attainable team as follows:

- Abi Goodhew has come on board at Venture Timaru to coordinate the programme and assist with advancing these opportunities. Please feel free to contact Abi anytime – abi@venturetimaru.nz
- Ria Chapman has stepped into the role of Institute Manager for the Biomolecular Interaction Centre (BIC) at UC while Rebecca Hurrell is on secondment to Deputy Director of Research & Innovation at UC.
- Jennifer Crowther, a Research Advisor in the BIC team, is working closely with Ria on outcomes of the programme.

Opportunities – Biowastes

Nutraceuticals/Cosmeceuticals

Useful material can be extracted from plants, for potential applications in cosmetics and/or to formulate nutraceuticals and cosmeceuticals. Initial experiments are underway to explore these potential applications, using samples supplied by businesses. A selection of businesses have waste/by-product material that could be useful contributors for this opportunity.

Turning Dairy Organic Waste into biohydrogen fuel

Organic waste material from dairy manufacturers has the potential to be used to grow microorganisms that produce biohydrogen. Businesses have agreed provide waste samples for a Masters student

research project which commenced on 1st February. There is also potential to include yeast filter sludge within the study.

High Value Soil Conditioners

There is potential to blend different waste streams for use as a soil conditioner on nearby land, which can replace nutrients and restore soils to allow higher food yields.

Potential Applications for Yeast Filter Sludge

A Callaghan Innovation student is being hosted on site in Timaru, looking at alternatives including sludge application as a compost or fertiliser for local farms. A University of Canterbury researcher (along with a PhD student) and a postdoctoral fellow in the BIC team are conducting research in this area. Samples of fresh sludge and pre-processed powder (sludge needs to be in a loose powder form for application as a compost or fertiliser) have been supplied by one of the businesses.

DAF Sludge as Stock Feed

DAF sludge has historically been used in New Zealand as a stock feed for animals. It has been found that the sludge is more useful when it is dry, as it allows for safe storage to compensate for seasonality of the dairy industry (source of sludge). Dry DAF sludge can also be mixed with other feed to lower dietary fat content for the animals.

Animal Skins as Compost

Animal skins have been identified as a valuable waste stream for converting into compost. We are working closely with the Ministry for Primary Industries to investigate specific opportunities for redirecting this waste.

Using Insects to Transform Food Waste

Insects can transform food waste and other organic residue into valuable ingredients for human nutrition, animal feed and plant fertiliser. Over summer, research was conducted by UC in collaboration with ESR to explore the usefulness of black soldier flies as a catalyst.

Opportunities – Plastic waste

All Sustainable is Attainable businesses contribute personal protective equipment (PPE) to landfill. We are working with a graduate from UC on an opportunity around pyrolysing the plastic into a liquid fuel source. The graduate has developed a machine to process the waste (including contaminated material), and the output can be used as a valuable fuel for a variety of purposes. They are currently undertaking trials with samples of contaminated waste from some of the businesses, and clean waste from a national PPE supplier.

Funding Opportunities

We are exploring opportunities to fund projects originating from the Sustainable is Attainable collaboration. We welcome expressions of interest to take part in funding applications.

Sustainable Food and Fibre Futures Fund (SFFF)

This fund supports problem-solving and innovation in New Zealand's food and fibre sectors and is well-suited to Sustainable is Attainable projects.

Bioresource Processing Alliance (BPA)

BPA provides investment for research and development projects with alliance partners (AgResearch, Callaghan Innovation, Plant & Food Research, Scion) and universities. Their goal is to generate additional export revenue for NZ by working with the Primary Sector to get better value out of biological secondary streams.

Waste Minimisation Fund – Ministry for the Environment

This opportunity supports projects that increase the reuse, recovery, and recycling of materials.

Summer Scholarships – UC Centre for Entrepreneurship & Callaghan Innovation

Opportunities will become available closer to September, to apply for 2021/22 summer scholarships through UCE and/or Callaghan Innovation.

Additional Activity

UC Brain Date

Nigel spoke at a 'BrainDate' sustainability event hosted by UC in January. His presentation outlined the benefits of industry collaboration, highlighting the opportunities we are working on. There were around 120 guests at the event, including industry representatives, academics, and students. Some excellent connections were made, which we are currently fostering to advance opportunities.

NZ Food Waste Summit 2021

New Zealand's inaugural Food Waste Summit was held on Monday 22 March. The event brought together experts in food waste reduction, including academics, researchers, food rescue organisations, food producer industry bodies, retailers, and hospitality professionals. Nigel attended the Summit as a guest speaker, representing Sustainable is Attainable. This was a fantastic opportunity to promote the work we are doing to reduce food waste at a processing and manufacturing level, and to network with representatives that we could work with to advance our contributions in this space.

AgResearch

We are currently talking to representatives at the AgResearch Innovation Centre of Excellence, around key projects that could align with Sustainable is Attainable. There is a particular focus on projects relating to circular economies and bio-based product realisation.

Student Research Project – can agricultural by-products reduce costs for cellular agriculture?

High costs associated with the developing science of cellular agriculture (meats and other products grown from a small biopsy) are standing in the way of industrialization in this field. Students at the University of Auckland have undertaken a research project to analyse the potential for utilising NZ agricultural by-products as ingredients to reduce costs. The students approached Venture Timaru about collaborating with Sustainable is Attainable to provide by-product samples, with several food processors & manufacturers generously contributing. Results have shown that use of these by-products shows exciting potential for lowering costs, and therefore driving large-scale commercialization of cellular agriculture.

Next Steps

The Sustainable is Attainable team will continue to progress all the opportunities outlined in this update, and we remain open to any new prospects.

Business involvement is vital to our programme success, and we thank you for your continued contribution in making these opportunities a reality.

As always if you have any feedback or queries, please do not hesitate to get in touch with either of us.

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