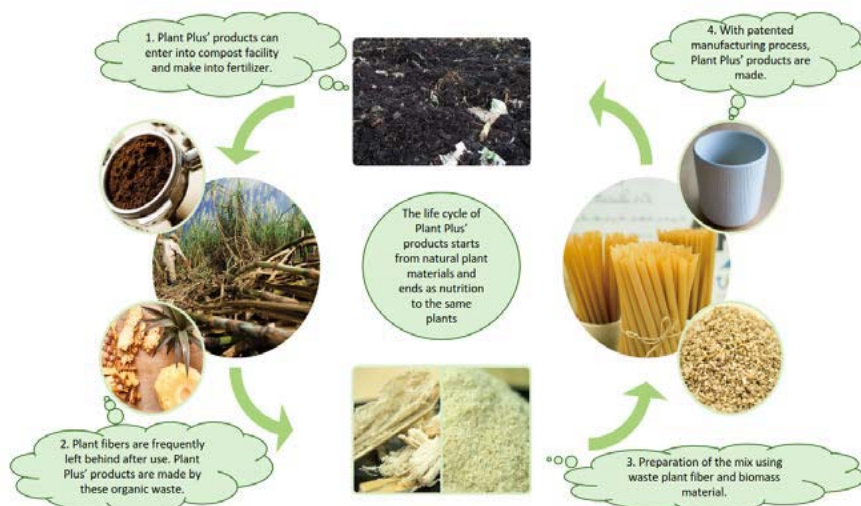


Plant Plus Fibre-Based Polymer

Canadians generated more than 3 million tonnes of plastic waste in 2016, with over 94% of that waste comprised of petroleum-based plastics. To reduce plastic pollution, the Government of Canada is limiting the use of six single use plastic items, including checkout bags, straws, stir sticks, six-pack rings, cutlery, and food ware made from hard-to-recycle plastics by the end of 2021. Plant Plus' production facility is under construction at Edmonton International Airport to make biodegradable straws from a plant fibre-based polymer as replacement for petroleum-based polymer. The goal of this project is to use biomass available within Alberta to manufacture the plant fiber-based polymer in the province instead of relying on import of this materials from abroad. The objective is to utilize Alberta Biomass feedstock, support local industries, and reduce plastics waste and GHG emission.



RECIPIENT:
 Plant Plus



PARTNERS:
 EIA, Bio Industrial Research Centre, Viresco Solutions



TOTAL BUDGET:
 \$291,000



AI FUNDING:
 \$120,000



PROJECT DATES:
 OCT 2021-
 JUL 2023



PROJECT TRL:
 Start: 5
 End: 6

APPLICATION

This project contributes to circular economy by enabling plant fibre-based polymer production in Alberta. Plant fibre-based biodegradable polymers can replace petroleum-based polymers, which are been sent to landfills after their uses. The agriculture industry providing feedstocks for these polymers is one of the beneficiaries of this line of development. The manufacturing facility to make plant fibre-based straws and cutlery located in Edmonton International Airport supports EIA in meeting its sustainability goals.



ALBERTA INNOVATES CLEAN RESOURCES

CLEAN TECHNOLOGY

BIOENERGY – CIRCULAR ECONOMY

PROJECT GOALS

- The main goal of this project is to test the suitability of select Alberta feedstocks (such as spent grain, hemp hurd, sugar beet pulp, canola straw, sawdust, potato starch, and wheat starch) in the Bio industrial Research Centre's lab facilities to make plant fibre-based polymer. One or two of the feedstocks with the best performance will be tested in the Plant Plus facility to assess their suitability for use in the commercial plant.
- Plant Plus will develop a techno-economic assessment comparing the manufacturing facility producing the polymer using Alberta feedstock compared with the imported polymer. Project results will contribute to the design and construction of a future facility using local biomass resources.

BENEFITS TO ALBERTA

- This project will specifically focus on the use of Alberta feedstock, which is needed to inform the design and development of manufacturing plant in Alberta benefiting the agricultural value chain and keeping economic impacts in the province.
- The project will also utilize Alberta infrastructure and personnel, including the Bio Industrial Research Centre in Edmonton, and research expertise from the Alberta research community.
- Developing single use products from renewable feedstock in Alberta contributes to reduction of GHG emissions and diversion of waste from landfills.



2 Project Jobs



1 New Product



**25% GHG reduction per unit
of product (future)**

CURRENT STATUS

OCT 2021

The project was kicked off in October 2021. The experimental designs for formulation of polymer additives have been completed and four plant fibres have been sourced for processing and testing.