

# In the future, we'll drive what we grow



A full tractor hood and fender panels created with bioproducts

Photo by CIC.

## Removing obstacles from Manitoba's bioproducts industry

One day farmers may be able to grow their own tractors, or at least that's the goal of Manitoba's expanding bioproducts industry. New research into bioproducts is realizing the potential to use the crops we harvest to—among other things—help create the equipment and fuel sources we use on our farms. Bioproducts are materials, chemicals and energy made with renewable biological resources such as wood, seeds or straw.

## Guaranteeing quality

One organization working to advance the bioproducts industry in Manitoba is the Composites Innovation Centre (CIC). Located in Winnipeg, CIC is a not-for-profit corporation working toward growing the bioproducts and advanced materials industry. It helps design composite parts, assisting with all stages of the process from conceptual models to prototyping to production ready components.

Sean McKay, president and CEO of CIC says that over the last 10 years CIC has been successful in helping industry bring material like flax and hemp straw in from the field to be used in a variety of products from vehicles to roof panels to insulation.

"We look at technology gaps that prevent industry from using bioproducts and we work to remove them," says McKay. "We've supported a few companies that didn't have composite capabilities before and, from working with us, they now do."

A particularly interesting project that CIC has worked on is demonstrating the quality and feasibility of creating a full tractor hood and fender panels with bioproducts. The

renewable product is used as an alternative to fibreglass and is lighter and potentially less costly. When used in over the road vehicles such as buses, it can result in fuel savings and reduced wear and tear on roads.

The Manitoba bioproducts industry is still in its infancy, which is why McKay says the funding CIC and other industry organizations receive through *Growing Forward 2* is so important.

"The industry is so new there are not many players around that have the cash to take these products to market," he says. "*Growing Forward* and *Growing Forward 2* have been invaluable for moving the bioproducts sector forward."

CIC is currently spearheading a project called FibreCITY, which received \$1.3 million in funding through *Growing Forward 2*.

CIC recognized that manufacturers in the automotive, construction, aerospace and other sectors needed quality assurance if they were going to switch to using bioproducts. Natural fibres are more variable than synthetic fibres, and the industry needs to understand that variability and how it will affect the quality of a product.

"What we're putting in place is essentially a stamp of approval process," says Dr. Simon Potter, vice-president of product innovation at CIC. "We're looking at biomass material—mostly flax and hemp—to determine the differences in the fibre from molecular structure, strength, physical properties, chemical content and much more. Eventually we'll be able to associate the variables in the fibre with performance and quality in the end product and be able to predict that performance consistently."

Along with giving the industry the confidence to adopt bioproducts, the research will be a valuable resource to

help producers know which varieties of crop will produce the best fibre.

"Our end goal is to help farmers grow the right varieties and process them in the right way so that valuable products can be made from them," says Potter.

Potter says though the bioproducts industry is moving in the right direction there is still a lot of work to be done to complete the supply chain from farm to final product. With the help of funding from *Growing Forward 2* he believes we'll see many of those gaps filled in the next few years, which will create benefits for everyone along the line, especially producers.

"If we develop a strong bioproducts industry in Manitoba it could be transformative for farmers," he says. "You're talking about value-adding to crops that are grown anyway. It would change the entire landscape."



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Harvey Chorney,  
vice-president of PAMI

### Developing skills for success

Life Science Association of Manitoba (LSAM) is another organization that plays a key role in advancing the bioproducts industry in Manitoba with help from *Growing Forward* and *Growing Forward 2* funding.

"LSAM's activities are focused on four key strategic goals to help develop a sustainable life science industry," says Tracey Maconachie, LSAM president. "We are a connector for people, information and ideas, we support the development of Manitoba's human resource capacity, we strengthen the business environment for our members

### Tested and true in Manitoba

Another area that Manitoba is using bioproducts is in our fuel. A crucial player in advancing the renewable fuel industry in Manitoba is an organization called Prairie Agricultural Machinery Institute (PAMI).

Harvey Chorney, vice-president at PAMI's Manitoba operation says that their goal is to remove the technical concerns involved with using renewable fuel in Manitoba. He explained they've done a number of projects where they've looked at the effects of using biodiesel in Manitoba's climate.

"I think in 10 years many of the parts in our cars that are right now made with fibreglass will be made with bioproducts and be held together with natural biochemicals."

and we provide a strong voice for the life science industry in Manitoba."

The organization's work strengthens Manitoba science-based companies. It helps businesses develop the skills to take advantage of international trade opportunities and sell their products. LSAM also helps businesses become aware of funding opportunities and has developed a series of videos to showcase Manitoba companies that can be used by the companies as a promotional tool.

Maconachie says she sees great potential for the growing bioproducts industry in Manitoba.

"I think in 10 years many of the parts in our cars that are right now made with fibreglass will be made with bioproducts and be held together with natural biochemicals," she says.

She sees the market for flax and hemp taking off as the industry grows and encourages Manitobans to support Manitoba made bioproducts when they come to market. With that support, she says local businesses will succeed and we can all benefit from a strengthened bioproducts sector.

"We did a tractor performance evaluation," he says. "We ran four different types of engines with various types of fuel from 100 per cent diesel to 100 per cent biodiesel and then we compared the results."

Today provincial regulations require that the total amount of diesel sold in Manitoba for on and off-road use, including on farms, is at least two per cent biodiesel. PAMI's research helped prove that blended biodiesel fuel worked in Manitoba.

"The greenhouse gas problem isn't going away," says Chorney. "The cost of fuel isn't going to go down over the long term. Agriculture is very dependent on fossil fuels. We need to use huge amounts of diesel fuel and anhydrous ammonia to produce grain. As those products become more expensive, we have to look for solutions to run our operations more efficiently."

A potential solution to lowering costs is improving the quality, reliability and price of bioproducts.

"I'm not going to say bioproducts are a silver bullet solution, but it's one of many options we're looking at," says Chorney. "We need to keep investigating and researching possible solutions so that one day, if fossil fuel prices should double, we don't find ourselves with our back against a wall." ■

## Funding research and development

*Growing Forward 2's* Growing Innovation – Agri-Food Research and Development Initiative (ARDI) funds industry-led innovative research and development activities in crops, livestock, environment and food. The goal is to improve the competitive position of Manitoba's agricultural, agrifood and agriproducts sectors by accelerating the pace of innovation in market development, production and proactive risk management.

See below for a few organizations supported recently through the program:

**\$45,000** **Manitoba Egg Farmers** received support for two projects including the development of an ammonia removal system for cage-free laying hen barns and an assessment of cleanout and biosecurity programs in layer barns.

**\$135,000** **St. Boniface Research Foundation** received funding to research the effect of dietary flaxseed on patients with high blood pressure.

**\$320,000** **National Sunflower Association of Canada** received funding to develop adaptable, disease-resistant and herbicide-tolerant, confection sunflower hybrids that meet the needs of international markets and demands from Canadian growers.

**\$300,000** **Manitoba Wheat and Barley Growers Association** received funding for two projects including a study of the influences on the sustainability of Canadian Western Red Spring Wheat as a premium wheat class in the prairies as well as the development of tools to accelerate wheat breeding that incorporates preharvest sprouting tolerance.

**\$400,000** **Western Feed Grain Development Co-op Ltd.** received funding to identify parent material for non-GMO feed wheat trait development focusing on flood tolerance in early stages of development, salinity tolerance and aster yellow tolerance.

**\$138,000** **Manitoba Corn Growers Association** received funding for a corn agronomy, fertility and agrometeorology project.

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