Case Study: Farm Innovation Program Project - Tire Pressure Adjustment Reduces Soil Compaction

Farmers using large equipment to haul manure, spray crops and do other fieldwork are finding that the heavy equipment can cause soil compaction which can contribute to lower yields.

Soil can be compacted in a variety of ways, but for pork producer, Jake Kraayenbrink of Moorefield ON, the problem stems from the weight of his manure spreader. If conditions aren't perfect when he's applying manure in the spring and fall, 30 tonnes of equipment and manure can compact the soil. The solution; deflate the tires in the field to create a larger footprint which spreads pressure over more square inches of soil to reduce pressure. Then, re-inflate them before driving down the road to avoid excess tire wear.

Kraayenbrink looked to other countries for a ready-made solution and found that producers in Europe use central tire inflation systems, particularly on manure application equipment. When in the field the tires are deflated, and re-inflated once the spreading is done and the farmer gets back on the road. Farmers in Germany and the Netherlands use this technology frequently on manure tankers, and also on tractors and other equipment including sprayers.

This technology could change Canadian farming practices and Kraayenbrink is setting out to bring it here. Funding from the Farm Innovation Program (FIP) has been instrumental in making his plan become a reality. Aimed at boosting agricultural research, competitiveness, and productivity in Ontario's agricultural sectors, the program provides grant money to different agriculture commodity organizations, including Ontario Pork. The FIP is a $12 million dollar program that is part of the Innovation and Science Suite of programs under Growing Forward, a federal-provincial-territorial initiative.

Kraayenbrink, along with Ontario Ministry of Agriculture, Food and Rural Affairs' Corn Industry Program Lead, Greg Stewart and Ontario Pork's Environmental Specialist, Sam Bradshaw will be working together to bring in the right equipment.

The three travelled to Nuess Germany and Raalt Holland to gain a better understanding of exactly how producers there are using the equipment and what, if any, adjustments or changes would be needed to suit Canadian conditions. In Germany they visited with equipment company, PTG, and discussed opportunities to move their tire inflation equipment technology to Canada. They also visited with a local farmer and saw firsthand a custom operator applying liquid manure with a built in "on the go" automated tire pressure regulation system. The 'on the go' tire pressure system was being used effectively and the manure application was carried out with little apparent visual tracking issues in the field. The group met with several other Dutch and German companies where they discussed the advantages of different technologies and the possibility of bringing this equipment into Canada.

“The use of this technology on Ontario farms will go a long way toward reducing soil compaction, widen the manure application window and dramatically reduce fuel consumption,” says Bradshaw.

The next step is to retrofit a tractor and tanker with the proper equipment and conduct research to determine its effectiveness. For this, the group will be using a manure tanker made by Nuhn Industries Inc., a manufacturer of liquid manure equipment.

“We feel that Nuhn will bring us the right expertise and equipment to move this project forward,” says Kraayenbrink. “We will start testing the equipment this spring, with the hope of having it fully operational by this summer.” In the fall they will be touring some farm shows to provide hands-on demonstrations in that hopes that other farmers will see its potential and usefulness.

The FIP is administered by the Agricultural Adaptation Council on behalf of Agriculture and Agri-Food Canada and the Ontario Ministry of Agriculture, Food and Rural Affairs. The program is open to non-supply managed farm organizations, including Ontario Pork, and to individual farmers in partnership with commodity organizations. Visit www.adaptcouncil.org to learn more about FIP.