How a High-Tech Water Model is Future-Proofing Manitoba's Farms, Soils and Grasslands

Manitoba Forage and Grassland Association have partnered with technology firm Aquanty to put leading-edge water forecasting tech in the hands of Manitoba's farmers.

D.F. McCourt

The prairies are the heartland of Canada's food supply and home to so much of the nation's biodiversity. But this is not promised. Though the native grasslands of Manitoba have served as a bountiful ecological reservoir since before humans ever walked those fields, the advent of climate change and large-scale market pressures mean today that the irreplaceable soil and the vital water resources that keep this landscape flourishing must now be carefully managed.

As a farmer-led organization, Manitoba Forage and Grassland Association (MFGA) is extremely sensitive to the needs of those who rely on the land for their livelihood. But they also recognize that the economic pressures of our current reality do not always incentivize the practices that will keep Manitoba's prairies healthy and productive for future generations.

It's time for a whole system approach to agricultural resiliency and soil health

"In 2018, we declared our position on regenerative agriculture, especially around soil-boosting practices such as armouring the soil, covering the land, and livestock grazing integration," says MFGA Executive Director Duncan Morrison. "Regenerative agriculture aligns with natural areas. We want to help advance ecological goods and services, which are all those natural benefits provided to society such as water, biodiversity, and carbon, while ensuring the ability for farmers to be profitable. We need to shift the paradigm into systems-based thinking from single-focus solutions."

There is nothing adversarial in this philosophy. Farmers and stakeholders want the same thing, sustainable land and a prosperous tomorrow. Thanks to funding from the AAFC and the Province of Manitoba, MFGA has partnered with Aquanty, a water resources science and technology firm in Waterloo Ontario. Aquanty's world-leading hydrogeological modelling platform provides never before available insight into the myriad of ways in which the health of Manitoba's agriculture land revolves around water.

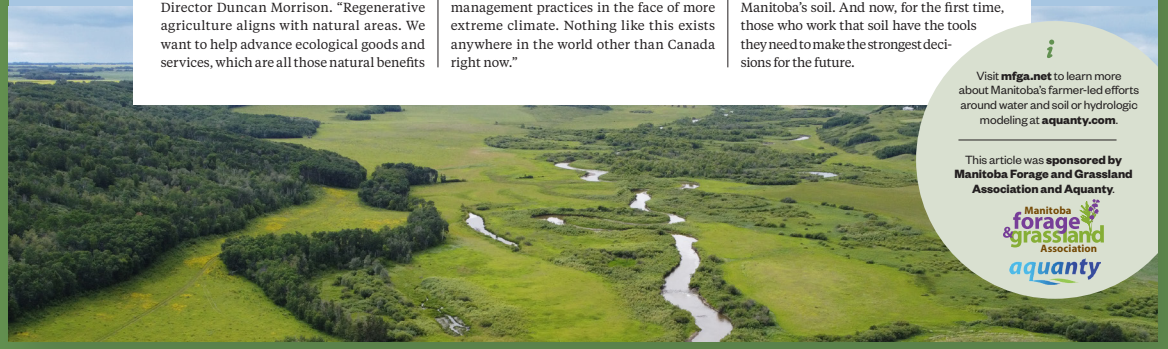
"What the software does is simulate the movement of rainfall and snowmelt through the soil profile, over the land surface, through the river and stream channels, and through the groundwater system," explains Aquanty Senior Scientist Steven Frey. "The technology's ability to simulate the integrated groundwater and surface water system gives us a much better ability to simulate water availability for crop growth. This is a leading-edge tool that helps farmers adapt their management practices in the face of more extreme climate. Nothing like this exists anywhere in the world other than Canada right now."

Putting the highest tech solutions directly in the hands of farmers

Aquanty and the MFGA have rolled out this forecasting technology — in the form of the MFGA Water Forecast Portal — for use across the Assiniboine River Basin of Manitoba, Saskatchewan and North Dakota as well as the Pembina River Watershed in the Red River Basin. The response from farmers has been overwhelmingly positive - including a landmark partnership with the Dairy Farmers of Manitoba. Many, of course, are still kicking the tires and considering how best to integrate this new technology into their decision making. It will be a learning process, but farmers are eager to learn. So too are conservation agencies, industry groups and Indigenous communities.

"When you don't have water, you do have problems," says Lawrence Knockaert, chair of the MFGA's board, and a dairy farmer. "With the right focus and support, this tool can be a difference-maker around water and carbon by championing the natural areas and farmer-led soil management practices needed for our ag lands to prosper via profitability with added climatic resiliency and boosting the incredible values that our agricultural areas provide."

The flow of water is the key to understanding and protecting the magic locked in Manitoba's soil. And now, for the first time, those who work that soil have the tools they need to make the strongest decisions for the future.



Visit **mfga.net** to learn more about Manitoba's farmer-led efforts around water and soil or hydrologic modeling at **aquanty.com**.