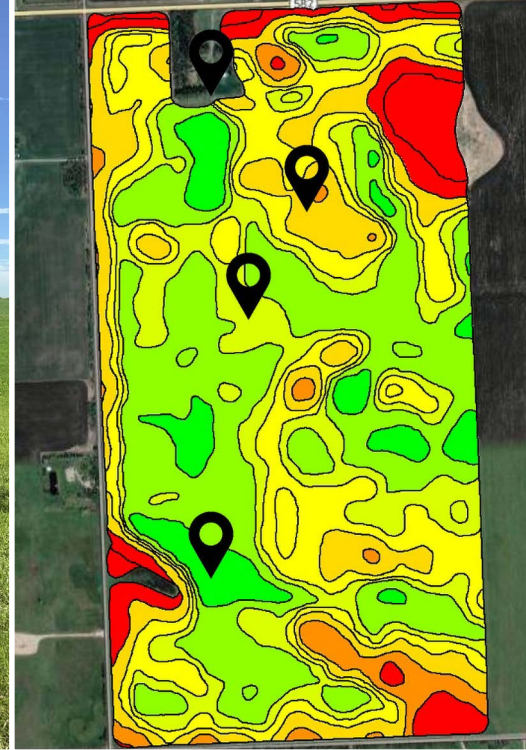In-field weather station installed at Lakeland College Student-Managed Farm - Powered by New Holland (photo supplied from Lakeland College).

iMETOS ECO D3 weather station set up near the crop boundary on Steckler Farm which is the Olds College research location for the Pan-Canadian Smart Farm Network.

Multi-year Normalized Difference Vegetation Index (NDVI) map with pins showing the locations of the weather stations installed at Steckler Farm.

Smart Farm Network Collaborations

Continued Growth for the Pan-Canadian Smart Farm Network

Pan-Canadian Smart Farm Network members — Olds College, Discovery Farm and Lakeland College — are currently conducting research to compare data collected from weather sensors inside and outside of the crop boundary to produce multiple data sets for analysis. The data collection includes measurements such as air temperature, relative humidity, precipitation, global radiation, wind speed and temperature, soil moisture, plant growth, and disease scouting.

The applied research project titled Comparisons of In-Field MicroClimate Variability and External Weather Stations is comparing data from in-field to out-of-boundary weather stations at the three network sites, and evaluating how disease development varies within each zone. This will provide producers with improved accuracy of localized weather data, and determine if the data received within management zones can help them make informed farm management decisions.

"We've used METOS sensor data in our field-scale projects for a couple of years and now, having access in real time to similar data from other sites in Canada will expand our understanding of its value," says Blake Weiseth, Applied Research Lead at Glacier FarmMedia Discovery Farm.

The data collected is being compared between five weather stations: three in-field weather stations, a weather station placed outside the crop boundary, and the nearest publicly available weather station.

Each Pan-Canadian Smart Farm Network member is executing the project following a similar protocol to produce multiple data sets for analysis, and each site's weather station placement was determined by management zones. Network members will also identify if micro-climate data collected within the field provides additional value to farm management decisions, such as a variable rate fungicide application.

Sensors and weather stations are often placed in easily accessible grassed areas outside of crop headlands for operational efficiency. As a result, the data may not represent conditions within the field — especially due to environmental conditions conducive to disease development and the dispersal of spores by wind and rain.

"Disease presence in a field can be tricky. We're exploring if weather stations placed within the field could improve the quality of data compared to a weather station placed near the field to help producers make more informed decisions," says Christina Kaye, Smart Ag Research Technician leading this project for Olds College. "Members from each Pan-Canadian Smart Farm Network site meet regularly to discuss the project and talk about early findings. So far, it's been incredibly interesting to see the data coming in from the three sites including different rainfall levels and weather patterns."

A focus of the Pan-Canadian Smart Farm Network is to share information with producers to help them maximize technology and data when they're making tough management decisions based on what's happening in their fields.

"Working alongside other smart farms in different geographical zones gives increased depth to our research and results," says Kaitlin Hirsekorn, Agriculture Technology Coordinator at Lakeland College. "We want to provide information to producers that will meaningfully inform their decisions about how and where to use sensor technology."

Visit oldscollege.ca/smartfarmnetwork to learn more about the Pan-Canadian Smart Farm Network, or contact Olds College Centre for Innovation to inquire about joining the network.

The Pan-Canadian Smart Farm Network

The Pan-Canadian Smart Farm Network — led by Olds College Smart Farm — is a network of Smart Farms committed to sharing data and expertise that will help farmers, industry and creators better understand, use and develop smart agricultural technologies. With funding from the Canadian Agri-Food Automation and Intelligence Network (CAAIN), the network also includes Glacier FarmMedia Discovery Farm located at Langham, Saskatchewan, and the Lakeland College Student-Managed Farm - Powered by New Holland at Lakeland's Vermilion campus in eastern Alberta.

The overall goal of the Pan-Canadian Smart Farm Network is to build a collaborative framework among Canada's Smart Farm initiatives.

CAAIN Launches National Smart Farm Program

CAAIN recently announced $5 million of funding focused exclusively on encouraging the expansion of a national network of smart farms. CAAIN has funded numerous projects on the Olds College Smart Farm over the last year, and is encouraged by the advancements Olds College is making to Canada's ag industry.

"We have invested significant resources to planning this initiative because it's a necessary step in the nationwide adoption of emerging agricultural technologies," said CAAIN CEO, Kerry Wright. "We currently support a smart farm project at Olds College that has shown tremendous promise in three distinct areas. First, it validates the use of advanced agricultural technology. Second, it demonstrates the functionality of that equipment to farmers, who can then evaluate the potential return on investment for themselves in a real-world farm setting. Third, it is connected to three post-secondary institutions. They, as a result, now have the tools needed to train the next generation of agriculture industry professionals. The success of this first smart farm project prompted us to develop the continuous intake opportunity we unveiled in early June."

For more information about the program, visit CAAIN online at caain.ca or follow them on Twitter and LinkedIn.

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