

## BUILDING, FENCING &amp; LAND MAINTENANCE

# Soil sensor tech nears tipping point

While this type of technology is advancing rapidly, there are a number of things to consider

BY BRITTANY EKELUND  
AF CONTRIBUTOR

**S**oil nutrient sensor technology offers to save producers time and money, but do those promises measure up?

The answer so far is a tentative yes, say researchers at Olds College.

"It's showing quite a bit of promise," said Abby Sim, a research technician at the college. "A lot of them seem like they will be easier than having to ship them to a wet lab and then you're avoiding those wait times as well. You'll have an almost immediate turnaround."

In theory—because they offer faster results and the ability to do more soil tests—soil nutrient sensors can help producers keep a closer eye on their fields and make more informed decisions. That could potentially reduce fertilizer applications and costs.

"Rather than taking one sample per field, now they take zone samples and get more into variable rate technology," said Sim. "Or if they are unsure about a result, they can go out and take another sample with still enough time to plan their fertilizer for seeding."

Sim has been testing soil nutrient sensors at Olds College since 2020. Of the four units tested, the Teralytics probe was the only one that didn't work at the Smart Farm.

"We weren't even sure how they were reading because they were having battery issues and connectivity problems," Sim said.

The one that worked best in trials was the ChrysaLabs probe. It uses AI technology to rapidly analyze nutrients in soil.

"The scans usually take less than 30 sec-

onds, and if you have cell service, both for the probe and your phone, then you can view (the results) pretty much instantly," Sim said. "It is very fast. It's really the only real-time soil sensor that we were able to test."

The probe measures 13 micro and macro nutrients, soil pH, organic matter, moisture, CEC (cation exchange capacity), buffer pH, and total organic carbon and texture.

"It has pretty much most nutrients that you would be testing for in the lab," Sim said. "It also does them in multiple lab methods."

If there's no connectivity, results are stored in the probe until cell service resumes. The unit's battery is long-lasting, added Sim.

"We're taking like hundreds of samples in a day, and we never had any low battery or anything," she said. "Honestly, I was very impressed."

The iMETOS MobiLab, a portable wet lab, was another time-saver with results taking an hour or two. It's faster than sending samples out, Sim said, but it wasn't as tailgate-friendly as advertised.

"It didn't quite work in the field as anticipated, but I could see it working if you had it set up in a shop or something," Sim said, adding the lab needs an internet connection to work.

Additionally, when Olds tested it, the MobiLab only measured nitrogen, potassium, sodium and chloride.

Sim said the Western Ag Plant Root Simulator (PRS), measured a good range of micro and macro nutrients but didn't save time.

"It's not like an instant analysis like with some of the other ones," she said. "You still have to wait a couple of weeks to ship them out and get the results back."

The PRS results were also not easy to read because different nutrients were measured in different ways.

"The measurements weren't in parts per million," said Sim. "But if you were working with an agronomist who is trained in the technology, then I think they could be a good fit to use as soil sampling."

The study didn't directly compare sampling results from the four devices to traditional soil tests as "that was largely outside the scope of this project," said Sim.

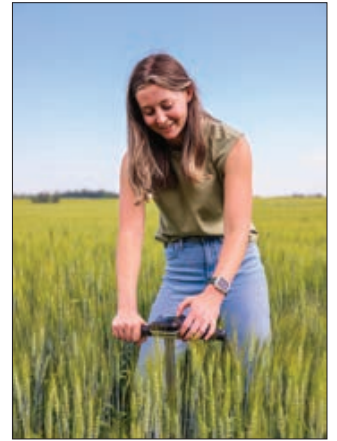
"We perform testing and data collection on the sensors to calibrate them and to evaluate their use in western Canadian soils," she said. "This information is provided to the company for the improvement of their technology."

The PRS is pay per test while the MobiLab costs around \$5,000 and has a lifespan of between 300 and 500 tests. An annual subscription for a ChrysaLabs probe will cost around double that, but testing is unlimited over the year.

"Having unlimited sampling, having the data right away, really allows you to have a bigger picture and a more in-depth picture of what's going on in your field," said Cailyn Wolberg, a ChrysaLabs customer rep.

"It can be cost prohibitive to get enough sampling done at the lab and to have the data density that you really need to see the different variations in a field or across several fields."

One limitation of the Quebec-based ChrysaLabs, Sim said, is that the probe has less data from western Canadian soil—such as black soil with high organic matter—which can affect accuracy in the region.



Faster results and the ability to test multiple spots in a field are the big advantages of soil sensor probes, says Abby Sim, an Olds College research technician who has been testing probes since 2020. PHOTO: OLDS COLLEGE

"Certain soils require specific AI model training more than others due to their unique qualities," Wolberg said. "With this project that we did with Olds College, we're able to make our database more robust and have more information to improve our algorithms."

To help build the database, Olds sent approximately 600 samples to ChrysaLabs last fall and Sim said they've since seen the probe improve.

"The more we can expand the number of users in that area, the better the product is really going to be for Alberta soil specifically," Wolberg said. "(We're) really encouraging people to be open to the technology and to reach out and learn more."

## STEEL FRAME STORAGE BUILDINGS

Take your Farming Operation to the next level with a custom designed WeCover Storage Building.

A WeCover engineered steel frame storage building is the perfect solution for farm equipment storage, commodity storage or shop space. With up to 160' wide freespan design and straight sidewalls, you'll have an abundance of wide open, high clearance storage space without any obstacles. Build your WeCover storage building with a steel roof option and enjoy a fully insulated indoor environment.

Call WeCover Today!

1-866-609-6345

**WE COVER**  
STRUCTURES

wecover.net

