Alberta Farmer EXPRESS

Nailing down the value of precision agriculture

The potential for geo-referenced yield maps and variable rate is huge, but how it works in the field is key

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Crops

Precision agriculture has great potential, but much of it is not yet farm ready. *Photo: Farming Smarter*

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People have been talking about precision agriculture as the next big thing in farming for more than two decades.

Of course, back then, GPS wasn't as commonplace. Today, almost all smartphones have built-in GPS and the things that you can do with the right "app" are pretty amazing. You can geo-tag your pictures (which means locate it precisely on a map so you know exactly where you took it), get your current location on Google maps, and even hook up with single people based on your current latitude and longitude!

Yeehaw… I mean, "Of course I don't do that, Dear."

Farm GPS technology is equally cool. Autosteer allows you to drive straighter than Grandpa could have ever imagined while easily flagging obstacles and reducing your overlap to almost zero. But really taking it to the next level eludes us so far. The next level to me means effective variable-rate applications and statistically valid on-farm research.

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There are still many opportunities for farmers to take advantage of new technologies, but they also need to clearly see the value. Farming Smarter has conducted several applied research projects using geo-referenced yield maps. These include the feasibility of two sclerotinia-controlling biofungicides, nitrogen rates in canola, phosphorus inoculants in peas, and fusarium head blight management with fungicides and irrigation scheduling.

We are now working on two precision agriculture projects. The first is looking at electro-conductivity sensors (Veris and EM38) used to map soils for variable-rate applications. This project studies the utility of the sensors and how various types of field data correlate with different nitrogen and seed

rates across a quarter section. We have five fields across the province involved in this study.

A new project led by Agriculture and Agri-Food Canada starts this year using multiple years of combine yield data to study the effects of variable-rate nitrogen in canola. This approach uses small study blocks within a field that intersect with three production zones (low-, medium- and high-yielding areas).

Both projects have so far proven to be difficult, but we have learned a lot. Many technical issues arise when trying to work in this area. We had to buy a heavy-duty, everything-proof laptop because tractor vibration causes problems. We found the new USB ports don't work as well as the old com ports. Because we had two types of soil sensors working on the same laptop, we had to split the GPS signal. This required some technical shenanigans involving cables to get it to work. We also had challenges getting instruments to communicate properly with monitors, software functionality issues, and problems with file formats.

So it's not hard to see why this hasn't caught on with the average farmer. But we are confident now that we will have valuable advice regarding these challenges.

With the systems working now, I'm optimistic that at the end of these projects, we will be able to recommend the types of useful data for farmers — and where and when to collect it. Even if it means losing a little more hair!