

Precision Agriculture and Data Management



Today's high-tech tools are generating massive amounts of data. How can we convert this data into information that busy farmers can actually use?

Marlene Caskey believes that, in the rush to commercialize new technology, equipment companies seem to have skipped a step or two. Unless farmers understand why and how to use new technology, many will be reluctant to make the investment. Can you blame them?

It's a message Caskey, who farms near Oyen, conveyed at one of the ACIDF Cropping Initiative Issues/Solutions sessions. By the end of the sessions, *Precision Agriculture and Data Management* had emerged as a priority area for future funding.

"Sometimes the research isn't complete before the new product or innovation is introduced," says Caskey. "From the farmer's point of view, because the research isn't complete, we don't have the big picture. *We* end up being the research."

Her concern isn't just what a new technology can *do*, but the risks involved in using it and the impact it can have on a farming operation. She'd like to fully understand the risks and the potential impacts *before* making the move.

Beyond increasing production, Caskey sees precision agriculture and data management allowing farmers to meet consumer demands for evidence on how food is grown. In concept, farmers could supply highly detailed information on their farming practices, very easily.

Bring it on, notes Caskey, but not before addressing what she views as a glaring shortage of information for producers.

"As a farming community, we need a middleman," she says. "Give us some information that we can use to make it work and have less risk doing it. Get us the research ahead of time and help us do our jobs better."

Converting data into information

Bushels, tonnes, bales andgigabytes? Fact is, with today's precision farming technology, data is now one of the most important outputs of crop production in Alberta.

It's a revolution that Jay Bruggencate of Lacombe has seen first-hand as Alberta Director for Farmer's Edge. The company's precision agronomists work with producer-clients to bring the benefits of variable-rate fertility applications and other technologies.

Bruggencate attended an ACIDF Cropping Initiatives Issues/Solutions Session and made the case that *Precision Agriculture and Data Management* ought to be a priority area for research.

"We help producers with data management and with decision-making focused on the data," says Bruggencate. "We see a real technology gap out there. The equipment manufacturers have provided a lot, but right now there is poor standardization and poor alignment on data, although it is improving."

In this highly competitive space, different types of equipment can't or don't share information with each other. In a manner of speaking, green doesn't talk to red and blue doesn't talk to either of them

Bruggencate draws a crucial distinction between two types of material. First, there's *data*: that's the raw stuff that yield monitors and precision equipment throws off in great quantity. This resource is dense and technical, such that most non-specialists won't have a clue what it says.

What really matters is *information* – that’s your raw data, processed by context, relevance and priority, and presented in a manner that producers can use to make decisions.

Too much data, not enough information. As Bruggencate sees it, there’s the crop industry’s key problem with precision agriculture in a nutshell.

"Our clients tell us they want to get work done on the farm, not manage and maintain data and try to turn it into information," says he says. "They want to have the data turned into information *before* it comes to them, in order to support their decision-making."

Other session participants indicated they’re more or less sold on the conceptual benefits of precision agriculture. They just need three things to hop on board: someone to interpret the data, someone to fix the equipment if it breaks and some assurance they can make a buck this way.

For producers concerned by the difficulty of implementing precision agriculture, Bruggencate has reassuring words. In the long run, all this will be sorted out and Alberta farmers will be much better positioned to reap the benefits.

"Farming today has the ability to produce massive quantities of data," says Bruggencate, "and this data is important not just to individual producers but to the industry as a whole. I think will take industry, government and all of us working together to capture its full value. Who is going to take the lead? Someone needs to."

Precision Agriculture and Data Management:

Issues identified by stakeholders

- ability to access and utilize data through compatible systems
- ability to turn data into solutions
- access, interpretation, relevance
- score sheets for decision-making
- cost/benefits and/or proof-of-concept of precision agriculture
- variable-rate use and reliability year to year
- return on investment
- equipment: improvements to sprayers, investment, replacement
- crop damage
- training
- optimize land use

Precision Agriculture and Data Management:

Action items: what should be researched first

- identify the most important factors and focus on them
- develop a simplified zone delineation which gives producers the ability to use precision agriculture effectively
- develop a template for on-farm precision agriculture research
- technical support for equipment and software
- develop software programs/models to integrate, translate and track data generated, to give producers the analysis and information they need for their decision-making
- explore potential uses beyond production management and sustainability, such as traceability
- unbiased testing of equipment and product
- determine key factors/measures to determine which processes provide the largest benefit.