

Effectively Managing and Maximizing the Benefits of Crop Inputs

Which combination of inputs, under which agronomic conditions, will give farmers their most profitable crop? Who wants to know? Just about everyone.

In 2012, Canadian farmers spent \$5.1 billion on fertilizer – that’s more than was spent on family and non-family wages combined – as well as \$2.3 billion on pesticides. Still, how effective was this investment?

The way Sheri Strydhorst sees it, farmers walk a fine and sometimes perilous line when it comes to the use of crop inputs like fertilizer, herbicides, fungicides and insecticides.

“Clearly, these products are important to growing a high-yielding, profitable crop,” says Strydhorst, who farms near Barrhead and works as an Agronomy Research Scientist with Alberta Agriculture and Rural Development. “They are also expensive, so they need to be used in a way that optimizes that investment. If they are overused, however, that has financial implications for growers, and potentially environmental concern as well.”

This is a message that Strydhorst expressed at the ACIDF Cropping Initiatives Issues/Solutions Session she attended. In this, she had plenty of company. After the views of 80 farmers and 20 agronomy consultants in seven meetings were gathered and analyzed, *Effectively Managing and Maximizing the Benefits of Crop Inputs* emerged as the #1 priority issue.

‘Optimize’ is a word Strydhorst returns to often, and it points to an agronomic and economic dilemma faced by all Alberta crop producers. In her view, the key question isn’t what volume of inputs will create the highest possible yield. It’s about determining which volume and combination of inputs will produce the most profitable result for a grower.

“Many people think about their production costs in terms of cost per acre,” says Strydhorst. “I’d sooner we thought in terms of cost per unit of yield – cost per bushel, in other words – because this could drive a significant change in how we look at inputs.”

Strydhorst stresses that a significant amount of work is needed to create a better base of knowledge for optimizing the use of inputs. As a farmer and researcher, she’d start with fertilizer use.

Strydhorst sees many producers applying fertilizer with the apparent goal of growing a top-yielding crop. That’s understandable but, when all costs and benefits are considered, that comprehensively nourished bumper crop could be less profitable than a slightly lower-yielding crop grown with a lower fertilizer bill. Specifically, Strydhorst believes there is insufficient data to support many growers’ practice of in-crop nitrogen application.

Fungicides have become an important part of many farmers’ agronomic toolbox. Trouble is, these products only work well when conditions favor disease development. Strydhorst advocates that researchers help bring more rigor to growers’ assessment of the cost and value of a fungicide application.

This could be one result of a big push by researchers and agronomists to understand how to optimize the use of crop inputs.

Says Strydhorst: “We can potentially put all this information in a package for producers that could improve their economic drivers and environmental stewardship.”

Time to update the rulebook

Today, Alberta farmers are growing their crops according to scientifically proven information and well-established agronomic insights. The problem? As Steve Larocque explains, most of this information was researched in the 1980s or 1990s.

Larocque, who farms near Drumheller and works as a consulting agronomist between Drumheller and Olds, took part in an ACIDF Cropping Initiatives Issues/Solutions Session.

He's urging that Alberta undertake a wide-ranging review and updating of agronomic practices, particularly as they pertain to crop inputs.

"If we are managing inputs according to guidelines that are 20 and 30 years old, that's a problem," says Larocque. "For one thing, we've had 30 years of zero-till since then and the soil is different now."

What's more, he notes, many agronomic guidelines are based on work done at Agriculture and Agri-Food Canada research stations. These recommended practices may be valid for Brandon, Man., Saskatoon, Sask. and Lacombe, Alta., but Larocque asks: what about the millions of acres in between?

He's particularly concerned about the value of recommendations for specific practices that were developed in isolation from the rest of the cropping system. For example, we have fertilizer guidelines and fungicide guidelines, but what happens when you do both at once, in many possible soil zones?

Says Larocque: "This is a hard idea to research, but one of the biggest things we need is to understand what happens when you combine different inputs in different ways. That would be relevant to how people are farming today."

Effectively Managing and Maximizing the Benefits of Crop Inputs:

Issues identified by stakeholders

- in-season nitrogen management
- effectively managing crop inputs
- pulling together existing research to make it more accessible to farmers and agronomists
- effectively managing micro-nutrients
- information/education on plant growth regulators
- interaction between various inputs
- turning information and understanding into tools producers can use
- optimizing combinations and timing of inputs

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Action items: what should be researched first

- managing in-season nitrogen for source, rate, time and role as a risk tool
- nitrogen-use efficiency product evaluation: products, rates, timing
- pulling together existing research to make it more accessible to farmers and agronomists
- micro-nutrient management: timing, application, rate and placement of copper, zinc and boron.
- increased knowledge about the benefit and use of plant growth regulators.

- assess the need to revisit past research, e.g. for soil test recommendations, as much of it was performed under conventional tillage systems.