



## VRT: The next frontier for spraying in precision farming?

*New precision farming approaches to manage spraying better within the field are close. Next comes links to management systems.*

It's a concept with lots of appeal. Variable rate technology (VRT) for spraying would allow farmers to vary spraying rates within a field, potentially resulting in greater efficiency and the opportunity to "optimize" crop protection and ultimately environmental protection.

In practice, the indications are VRT for spraying is at a very early stage and there are substantial hurdles to overcome to make this a widely adopted approach. Yet there is no question the potential is there and many see VRT systems for spraying as the way of the future.

In Alberta, a fresh window on the progress and potential in this area is available through the Agricultural Research and Extension Council of Alberta (ARECA). This provincial association of non-profit producer groups has been active on several fronts, including offering precision farming training workshops, producing a manual on precision farming and VRT, and also participating in research to understand the economic benefits of precision farming approaches.

"Right now, precision farming and VRT is clearly growing steadily in adoption for use in seeding and fertilizer placement," says Ty Feachner, Executive Director of ARECA. "Spraying is currently a very small part of the mix but there too we are seeing some inroads. We can see there is good potential for the future as more progress is made in how this technology can be applied."

For producers who have already invested in the core enabling technology for GPS and GIS based precision farming, or are considering doing so, the good news is they now have a strong base of VRT capability that can begin paying off right away through a variety of uses. This same type of technology can be used for VRT spraying approaches as they become more viable in the years ahead.

### A window on the potential

ARECA's new manual, titled "Precision Farming and Variable Rate Technology (VRT): A Resource Guide," was developed for use in the precision farming training

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workshops hosted by ARECA and its member associations in Alberta. It provides an introduction and overview to precision farming and its core enabling technologies as well as to VRT and its applications, requirements and benefits, and is available at [www.areca.ab.ca](http://www.areca.ab.ca) for reading or download.

For VRT, the manual emphasizes the broad potential of this technology to boost efficiency and targeting for many applied products.

As many farmers are familiar, VRT is typically accomplished by developing a “prescription map,” transferring it to a controller in the cab of the vehicle, and driving the field. The controller changes the application rate based on the prescription map, and records how much was applied where. Some more advanced VRT approaches can also be done “on-the-fly” with sensors that measure what is needed by the crop and adjust the rate accordingly in real time.

## Spraying use: A work in progress

Though VRT is proving a practical option with immediate payback advantages for seeding and fertilizer application, the specialized requirements of spraying make the precision pathway a difficult one to navigate. For one, there is the sheer size and speed issue: With many sprayer booms now in the 90 to 120 foot range and moving across the field at a rapid clip, the logistics of spraying at variable rates within a field are a formidable challenge. Another challenge is keeping in line with recommended rates in the process.

Progress by researchers and equipment manufacturers is chipping away at these obstacles. In the meantime some producers are finding ways to take advantage of the capability available currently.

This past winter, ARECA surveyed farmers who attended three VRT training workshops in different locations of the province. Of those participants who completed the survey, 29 percent have adopted VRT of fertilizers, 17 percent have adopted VRT of seeding and six percent have adopted VRT of herbicides.

“It’s important to recognize that the vast majority of the producers at the workshops already have and use precision

farming technology, so they don’t represent the general producer population,” says Faechner. “Still, for spraying, it does indicate that at least some producers are testing the waters.”

## Starting with simple approaches

There are different degrees of VRT use and Faechner suspects that for many of these producers VRT for spraying is practiced at a basic level where spraying is turned on and off to reduce overlap when turning or to avoid obstacles such as bushes or a slough.

“The technology exists now where you can use the electronic guidance either automatically or manually to vary rates as you move across the field either across the full boom or for different sections of the boom,” he says. “That’s a capability that wasn’t there a few years ago at a very practical level but it is there now.”

For herbicide application, another approach some farmers are taking is to use the capability to vary rates only for specific targets that tend to be hot spot concerns, says Faechner. “For example, some farmers will apply a uniform rate for their broadleaf weeds because they don’t want to take any chances with missing any, but they’ll have a second boom and they’ll use that to vary rates for their wild oat chemical.”

Farmers can also incorporate their own historical knowledge of their fields with weather conditions to make judgments on where to spray or not spray within a field. Likewise, farmers with a history of using a particular product can also apply this judgment as a factor in their variable rate strategies for applying that product.

“We’re at an early stage with VRT in spraying, but we’re making headway and innovations are coming along. The best approach for producer interested in this area is to keep talking to your advisors, including equipment people, and take advantage of some of the educational resources available.”

*Note to Alberta producers: For Growing Forward opportunities check [www.GrowingForward.Alberta.ca](http://www.GrowingForward.Alberta.ca).*

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