

## BATTLE RIVER AGRONOMY UPDATE

### A NEW APPROACH TO FERTILITY – WESTERN AG PROFESSIONAL AGRONOMY

When I first started using John Deere technology as the cornerstone for a variable rate fertility program, I anticipated that properly identifying the various management zones within a field would be the greatest challenge. And while that part of the equation has indeed been challenging, what I didn't anticipate was the difficulty I would find with how to manage the zones once they were identified!

In a dryland farming system where moisture is our most common limiting factor, how do we measure our fertility program to ensure we are getting the best possible return for the money spent? This is a big issue regardless of whether you are looking at management zones or entire fields. We tend to apply fertilizer based on a combination of historical data (what we have learned to be effective over time) supplemented by soil testing. While soil testing is very good at telling us what concentrations of nutrients are in a given sample, I am sure we have all received results that had recommendations attached to them that we have found questionable. Over the last several years, I have struggled to find a lab that could give me recommendations that accurately reflected the soil variations I was finding in the field. The inherent weakness with all the labs I used was the same; they took the soil I submitted to them, extracted the nutrients from them using methods that they felt best reflected the levels that would be available to the plant, and then tried to work that into a recommendation by modelling the effects that cation exchange capacity, pH, salinity, and other variables would have on the ability of the plant to take up nutrients.

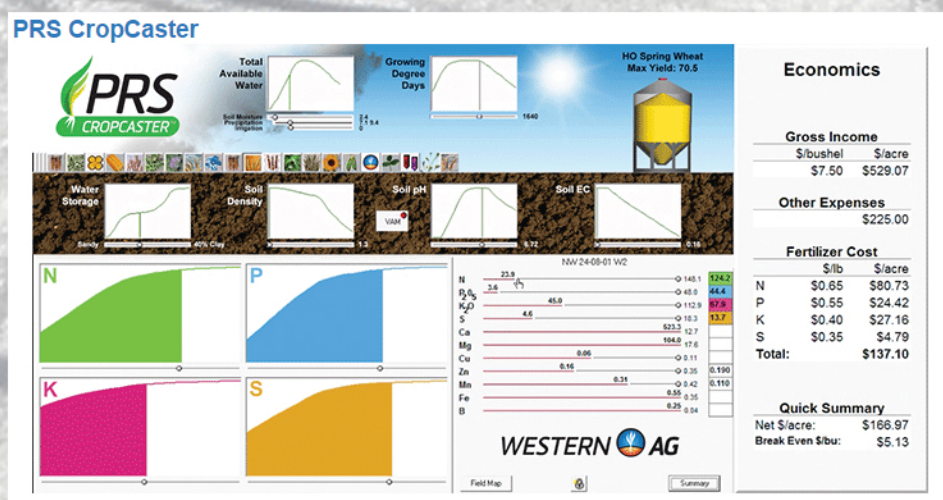
As you can see, the lab has to make a lot of assumptions about the interaction between the soil and the crop, as well as assuming the extraction methods of the lab are accurate across all the variations of soil we find in central Alberta. As a result, there are really too many factors in play to properly assess the effectiveness of the fertility program. How was the resulting yield impacted by rainfall and the soils ability to hold water, by heat, or by compaction? How could we measure whether or not we are supplying the crop with enough nutrients to take advantage of favorable environmental conditions, but be reasonably sure that we are not wasting money with excess fertilizer applications?

My research into these questions led me to Western Ag Professional Agronomy. They use a unique method of arriving at their recommendations, by use of something called plant root simulators (PRS). PRS technology was developed over 20 years ago at the University of Saskatchewan and is used in agricultural research work worldwide (the technology is the basis for over 2,000 published, peer reviewed papers to date). It uses 2 probes - one that exchanges positively charged ions with the soil and one that exchanges negatively charged ones - to simulate what a root would be experiencing in the soil.



The nutrients are allowed to accumulate on the screens over a set amount of time, with a soil of a known temperature and moistened to field capacity. The screens are then washed to collect the nutrients. So rather than measuring the concentration of nutrients and then trying to account for pH, salinity and other variables, the probes simulate what the root of a plant is seeing and holistically measures the supply of nutrients available to the plant. The results are then fed into a sophisticated computer modelling system that allows for adjustment by crop type, soil, heat and moisture conditions, as well as the economics based on your exact fertilizer prices and your own crop marketing plan to produce recommendations based on local field conditions and economic factors – something no other soil test will give you.

The other unique factor you get with the Western Ag Agronomy program is the ability to “backcast” your fertility program, by putting in the actual moisture and growing degree days you had during the season along with the fertilizer supplied to the crop. If the soil testing has been done properly, and good agronomy has been practiced, the “backcast” should come up with a yield within a few bushels of what was actually achieved, once actual environmental conditions for the growing season are entered into the model. You can also provide predictions of net returns based on any other fertility or weather scenarios you would like to evaluate to help your decision making in future years. The accuracy of the model, and its ability to evaluate the effectiveness of the fertility program in the context of the varying conditions we see year to year and field by field, makes it an invaluable tool in making both agronomic and economic decisions on a field by field (or zone by zone) basis.



Battle River Implements is running a small program with Western Ag this spring to see how this model works for our customers, and how it might fit into our long term plan as part of our integrated solutions package. If you would like to learn more about this innovative decision making tool that can help you quickly evaluate both the economics and agronomics of different crops and fertility plans, check out the [westernag.ca](http://westernag.ca) website or call me at (780)781-1616 for more information.

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