



Measuring water-driven yield potential to make crop management decisions

BATTLE RIVER IMPLEMENTS

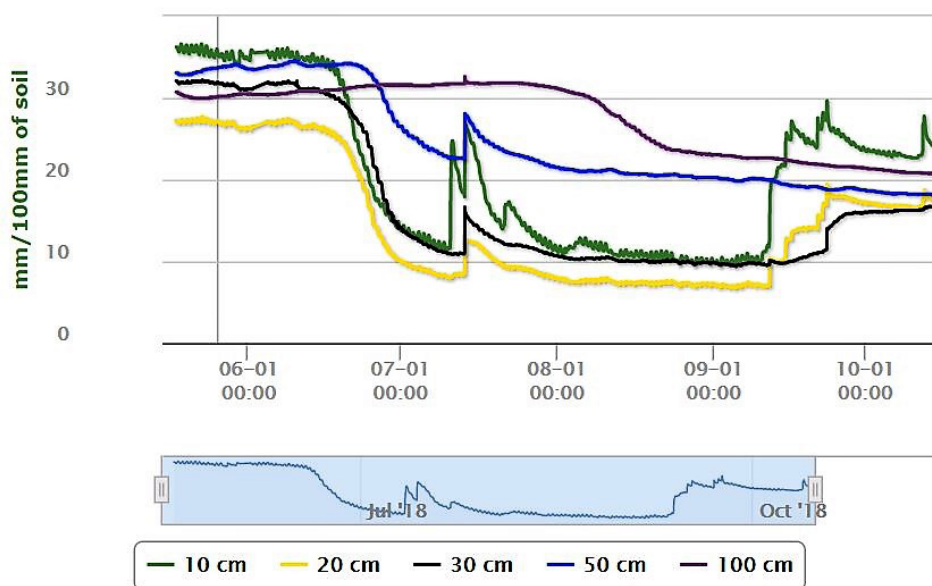
AGRONOMY UPDATE

NOVEMBER 2018



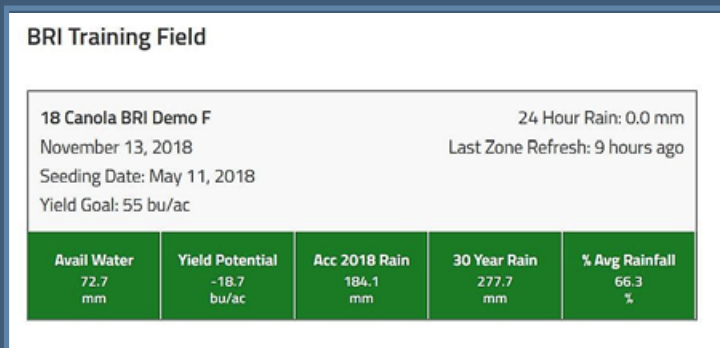
In 2018, Battle River Implements Ltd undertook a pilot project in conjunction with South Country Equipment and six co-operators in our trading area to determine the value of measuring soil available water and using that measurement to project crop yields. Our goal in this project was twofold – we wanted to see if we could consistently project final yields to within 15% of what actually occurred and we wanted to see what in-season agronomic practices could help us take advantage of this information. The real challenge in this project was determining what is “soil available water”? While we have had the ability for several years to measure soil moisture in mm/100 mm of soil at various soil depths (just a straight percentage calculation – see graph below where moisture varies from under 10% soil moisture to over 30% depending on soil depth), how much of that is actually available to the crop?

Soil Moisture Level (Line)



South Country Equipment has developed the Crop Intelligence app that attempts to take the information that you can see on this graph and turn it into a yield projection based on soil texture and crop being grown. What is generated is a yield model based on “water driven yield potential”. It removes all of the potential yield impacts in terms of fertility, environmental stress, weeds, insects and disease pressure and tells you what this crop’s yield potential is based solely on water available to build a crop.

Those taking part in the project would open their app to see a facing page that looked like this;



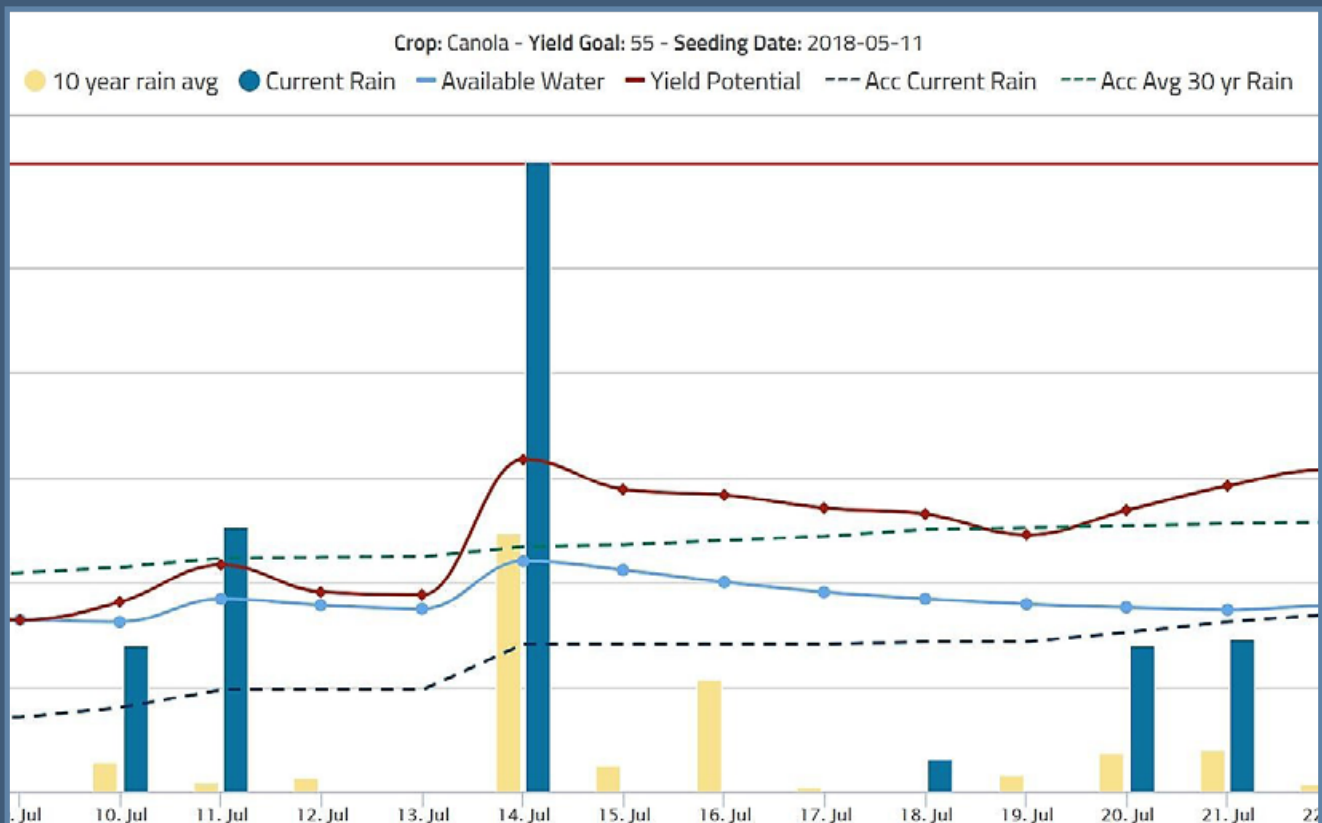
This live, interactive page shows seeding date and yield goal, along with the current soil available water, the YTD in-season precipitation and how that rainfall compares to the 30 year average. The producer can then drill down to show more detail.

The graph below shows roughly a 2 week period in

July when the canola crop was flowering and shows the impact of the rainfall events on the yield potential.

At the beginning of this article I said that we started the year with two goals; can we accurately measure yield potential and can we use that information? We had 8 locations out this year and of those who have reported their yield we have had all but one station fall within the 15% target we started the year with. Our miss (and our near misses) have all under reported the yield potential. For example, the BRI Training Field whose data I have used here projected a yield of 36.3 bushels/acre based on water. Our actual yield was just over 42 bushels, so we technically fell within the 15% variation, but it’s a larger variation than I was hoping for. None of the reporting co-operators so far are showing yields below the potential. Since the model is consistent, but reading low in some of the sites, I tend to think the soil was holding more crop available water than the model was reporting; in other words, I was slightly off on my soil texture analysis. Since this is just a calibration issue, I am reasonably encouraged by our initial year working with the Crop Intelligence modeling system and I think it has some real potential to give us accurate information.

This brings me to our second goal – can we apply some agronomics to the situation that will allow us to increase or maximize yield. Unfortunately, we launched in a year with average to below average starting soil moisture and in season precipitation that was somewhere between 60% and 80% of normal for most of our sites. This meant that for



the most part moisture was our limiting production factor, so in-season fertility of either Nitrogen or micronutrients either didn't happen or had limited impact.

However, that doesn't mean there was no value in the information. Even in a year where no additional agronomic impact is possible, there is still value in having an accurate idea on crop yields during the season. This is the kind of information that allows producers to take advantage of "weather markets" and other pricing opportunities and it's something we used to our advantage on our own training field this year. Despite what looked like a very poor crop, we went ahead early in the season and forward priced over 30 bushel/acre at a good price this summer for off combine delivery. Without access to the information through Crop Intelligence, we likely would have limited that to 15 or 20 bushels.

And finally, Crop Intelligence is giving us one additional piece of information that will help us out next year. We left our weather stations out until mid- October to try to get an idea on year ending soil moisture conditions. The graph below gives you an example of the types of scenarios you can start to work on for 2019 crops.

Our soil moisture probe tells us we have less than 3" of soil available moisture – about 80% of our 30 year average for the Killam area. So now I can start making some decisions about pre buying fertilizer or other inputs based on some likely yield projections based on moisture. I can also start thinking about other management decisions. For example, do I want to fertilize for an 82 bushel wheat crop based on normal conditions, or do I want to fertilize for 70 bushels (which would be the average yield from that field over the last few years), and be prepared to top dress another 15 to 20 lbs of N if conditions warrant it?

Information is the key to decision making, but information is only valuable if it is accurate and you can access it in time to actually make management decisions from it. While I think we have a lot to learn about how to use Crop Intelligence to its best advantage, I am excited about the potential I see for this to be a great tool for both growing and marketing crops.

If you would like to learn more about this program, either talk to your salesman or give me a call directly....I'd be happy to talk to you about it.

Wayne Spurrill, P.Ag

Agronomist

Battle River Implements

www.briltd.com

wspurrill@briltd.com

Cell: 780-761-1616

Office: 780-672-4463

To subscribe or unsubscribe, please email us at

mhafso@briltd.com

