Driving Decisions Newsletter

March 2023

app.Cropintel.ca

New 2023 Crop Intelligence Features

As the probe population and knowledge grows across Western Canada, so do the insights that drive the continued development of new tools and features in Crop Intelligence. This year, we are excited to introduce another offering within Crop Intelligence for irrigation, as well as 4 new features: Soil Moisture Recharge, Growing Degree Days (GDD) and Growth Stages, Adjusted Water Driven Yield Potential (WDYP), and Alerts with Push Notifications.

Crop Intelligence Irrigation

Crop Intelligence Irrigation uses industry-leading technology to record, track, and report natural rainfall and irrigation as they're used by your crops, boosting your confidence in water management decisions. Expansion of irrigation infrastructure and increased public pressure for water management drives a need for more agronomic focused irrigation planning and resources for documentation.

Focused research and development, in partnership with customers, vendors, and Innovation Saskatchewan, enabled us to identify and build 5 key tools for irrigation growers to manage their water: *Hardware Optimization, Irrigation Log, Irrigation Deficit, Budget Lines, and Irrigation Potentials*. On March 14, we shared these details and more with vendors, customers, and industry. If you missed our launch event, there is another opportunity to learn more in 2 webinars this spring covering Irrigation Hardware and Irrigation Agronomy.

DATA-DRIVEN IRRIGATION

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Farm Moisture Recharge

The next years potential tool (2023 Potentials) uses winter and early spring precipitation averages from the Environment Canada station network. Depending on the population of stations, Environment Canada's data can overestimate or underestimate the amount of precipitation influencing recharge. Customers and their consultants can now leverage multiple years of on-farm data (3 years+) to provide personalized recharge values. More importantly, this is a direct measurement of average recharge from fall to spring across the farm. Check out the 2023 Potentials feature or create a new Year End Report, to see your farm specific recharge! The example below is a field that shows 5.5 inches of winter precipitation opportunity from Environment Canada, but the realized Farm Average Recharge is 2.7 inches. Based on the 2023 Potentials in the report, our yield potential was inflated over the true opportunity for planning next year.

5"	5.5"	10.4"
(126.9mm)	(140mm)	(264.4mm)
CROP AVAILABLE WATER	30YR AVG PRECIP (NOV 1 - APR 30)	30YR AVG PRECIP (MAY 1 - AUG 15)

Your farm has multiple years of data within Crop Intelligence. Because of that, we were able to calculate an over winter recharge average of **69.6mm** for your farm. Would you like to use this recharge rate in your potentials calculations instead of the Environment Canada-derived data above?

☑ Yes, use my calculated farm average

Temperature Statistics (celcius)

Mos	Min	Max	Days >0c	Days <30c	GDD	30YR GDD
May	7.2	27.4	8	8	80.7	182.1
Jun	1.8	33.2	30	30	345.2	321
Jul	8.5	32.3	31	31	433.1	430
Aug	5.7	31.6	31	31	441	400.3
Sep	-0.7	32.5	30	30	288.5	233
Total	-0.7	33.2	130	130	1588.5	1566.4

2023 Crop Potential

Field Productivity	Winter Precipitation	Fall CAW*	30yr Avg Winter Precipitation	30yr Avg Precipitation
Medium	100%	126.9mm (5")	140mm (5.5")	264.4mm (10.4")

2023 Potential	HRS Wheat (bu/ac)	2023 Potential	Peas (bu/ac)
50% In-Season	68-78	50% In-Season	50-62
75% In-Season	85-97	75% In-Season	60-74
100% In-Season	93-107	100% In-Season	72-88
125% In-Season	99-113	125% In-Season	73-89

Farm Average Annual Recharge

2022	2021	2020
84.9mm (3.3in)	59.7mm (2.4in)	64.3mm (2.5in)

Average Recharge
69.6mm (2.7in)

CAW*

CAW = crop available water calculated from the soil moisture sensor readings and parameters determined by the soil texture at the probe location.

Fall CAW = crop available water calculated on October 15, or the last data available prior to October 15

Start CAW = crop available water calculated five days after soil moisture probe installation

Harvest CAW = crop available water calculated at earliest harvest or season-end date.

Growing Degree Days and Growth Stages

Growing degree days can be used as a weather-based indicator for assessing crop development. GDDs are a measure of heat accumulation used to predict plant and pest development rates such as the date that a crop reaches maturity. For 2023, growth stage data will be available for Barley, Wheat HRS, Oats, Canola, Canary Seed, Flax, Chickpeas, Lentils and Peas when set to a 0-degree base and 30-degree maximum. Other crops or changes in the base and max temperatures will not display growth stage information for 2023. If the projected growth stage is ahead or behind the crop stage observed in the field, the 'Start Date (Biofix)' can be adjusted to the seeding date, date of germination, or what the customer and consultant deem is appropriate.

As we review more literature for Western Canada and the Northern Plains and consider feedback from agronomists and farmers in the coming years, this tool will continue to be in development to better understand the value of GDDs by crop type.

22 Canola L1

GDD Base:	Temp Max:	Start Date (Biofix):	End Date:
0C	30C	2022-05-01	2022-07-13

Update GDD Calculation

Growing Degree Days

661.3	**1014.6**
Growing Degree Days	30Y Historical GDD
775.8	**1077.5**
Corn Heat Units	30Y Historical CHU

Growth Stage Analysis

Growth Stage Image Coming Soon

Stage 6

Flowering

Flowering begins. At least one open floret on 50% or more plants.

Disclaimer: Growth Stages are from the BBCH-scale and based on a 0C GDD base and 30C Temp Max.

Adjusted WDYP

Variability in environmental conditions year to year can mean factors, other than water, are more limiting to yield. For example, hail during flowering or seed development stages, or extreme heat for extended periods of time. Crop Intelligence is NOT a yield prediction tool, but if in-field observations suggest greater limiting factors, you can now evaluate how that may impact your WDYP.

> *Example:*
> *Farmers John and Jane have a wheat field with a WDYP of +19.7 bu/ac above the yield goal, suggesting a great opportunity to capture more yield this year. Unfortunately, a hailstorm came through the area and the local agronomist estimated there was 30% damage to the yield potential this year.*

In this example, the Crop Intelligence customers went to the 'Adjusted WDYP' tool and moved the Management Factor (bu/inch of water) down 30%. The new yield potential showed -5.3 bu/ac off their yield goal, and they made the decision to remain with the inputs plan they had for the yield goal they had this year.

This tool allows you to create simulated water driven yield potential values based on adjusted agronomic settings.

This reading exists *alongside* and does not replace your Crop Intelligence default yield potential.

Your custom water driven yield potential is unique to your account.

Custom WDYP preferences updated.

Custom Yield Potential:

-5.3 bu/ac

Last updated March 30, 2023 1:17pm

Crop Intelligence Yield Potential:

19.7 bu/ac

Last updated March 30, 2023 1:14pm

Management Factor

| 5.5 |

Remaining Season Precip Expectation

| 100% |

Starting Moisture (mm)

| |

Your zone is not using a starting moisture override. **A starting moisture value is not required.**

Sensor Texture & Ratings

Depth	Texture	Factor
10cm	- Soil Texture -	- Factor -
20cm	- Soil Texture -	- Factor -
30cm	- Soil Texture -	- Factor -
40cm	- Soil Texture -	- Factor -
50cm	- Soil Texture -	- Factor -

Alerts with Push Notifications

Up until now, the Crop Intelligence app did not interact with the user. The individual would have to manually open the app to engage with any of the data they were interested in. With the addition of alert push notifications, the customer, consultant, or vendor can decide what types of alerts they receive, Agronomic and Environmental, Reports, and Features, and how they receive it, Phone (push notification) or Email.

In addition to customizing the type of alert or how it is received, the user can create their own 'Rules' for the various types of agronomic and environmental data. Rules can be made for individual sensors, like wind speed for spraying operations, or for multiple sensors, like temperature, humidity, and leaf wetness for disease. More importantly, its customizable for each user on their own devices.
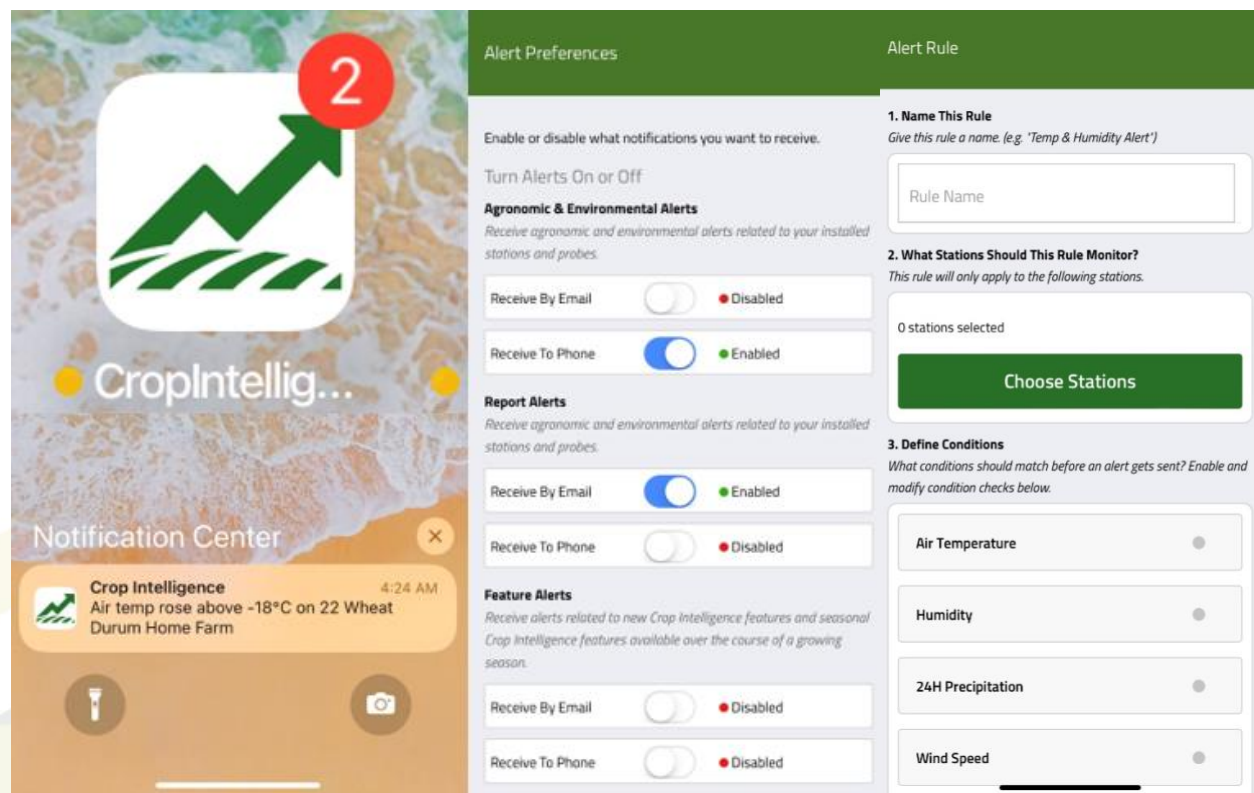
Watch for more information throughout the season, including our 'Feature Fridays' in April showing our new features in action. Crop Intelligence webinars are also back this year to help farmers, agronomists, and vendors think differently about the data!

Have questions? Reach out to your Crop Intelligence partner for more information or email us at info@cropintel.ca.