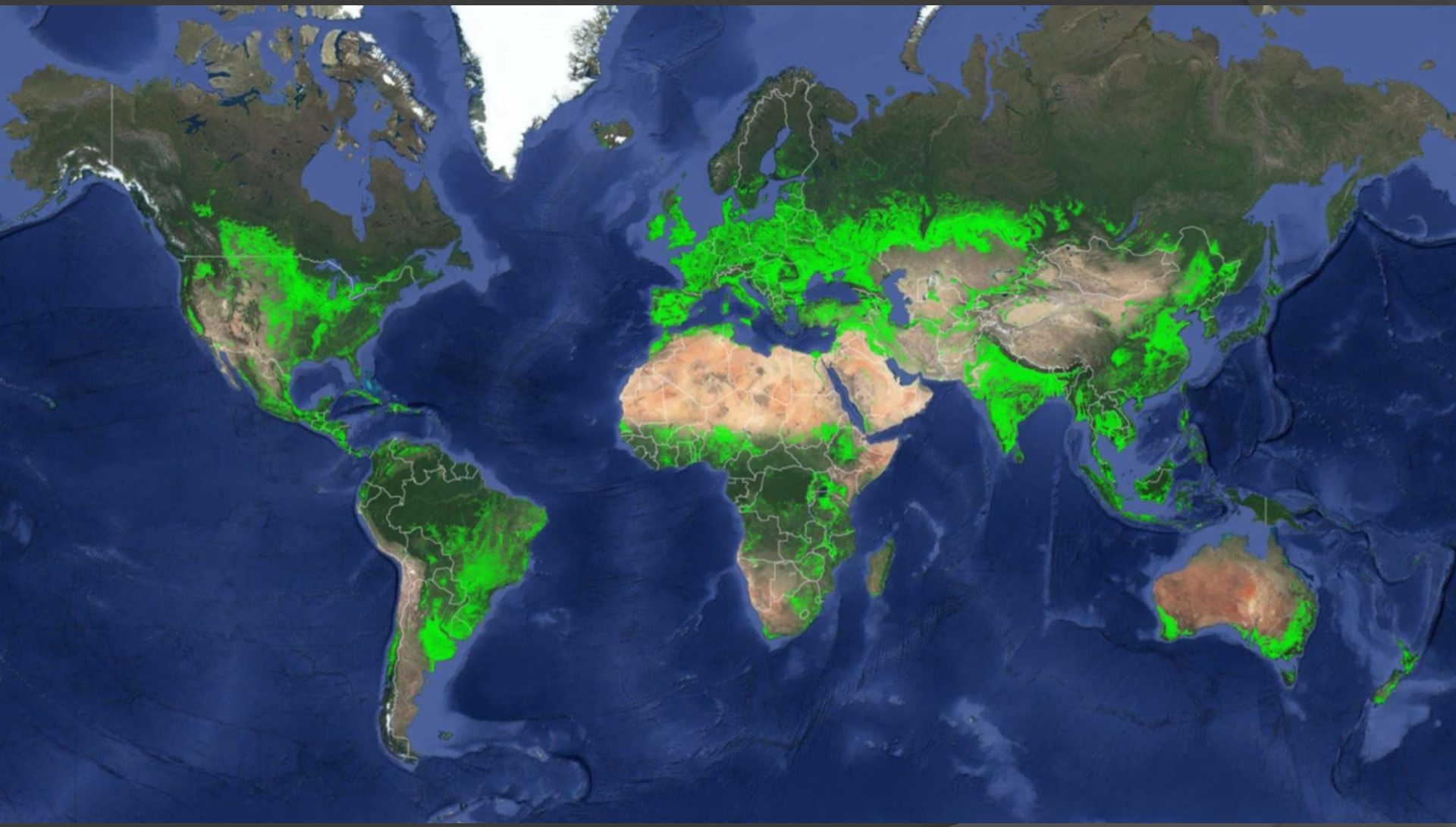
GREENTRONICS

Yield Monitors in Potato Production

Precision Ag

ARABLE LAND ACROSS THE WORLD



courtesy US Geological Survey.

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THE CHALLENGE

“With 9.5 billion people living on the earth by 2050, we will require an estimated 80% increase in agricultural outputs. The burden of this increase will fall on farmers - farmers who must now do more with less, while maintaining profitability.” (article on Tomorrows Farm, Niagara College)

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EXAMPLES OF TECHNOLOGIES IN AG

Information gathering:

- Yield Monitoring
- GPS based soil sampling
- Prescription mapping and variable rate application
- Using long-term satellite imagery
- Drone technology

"If you don't measure it, you can't manage it"

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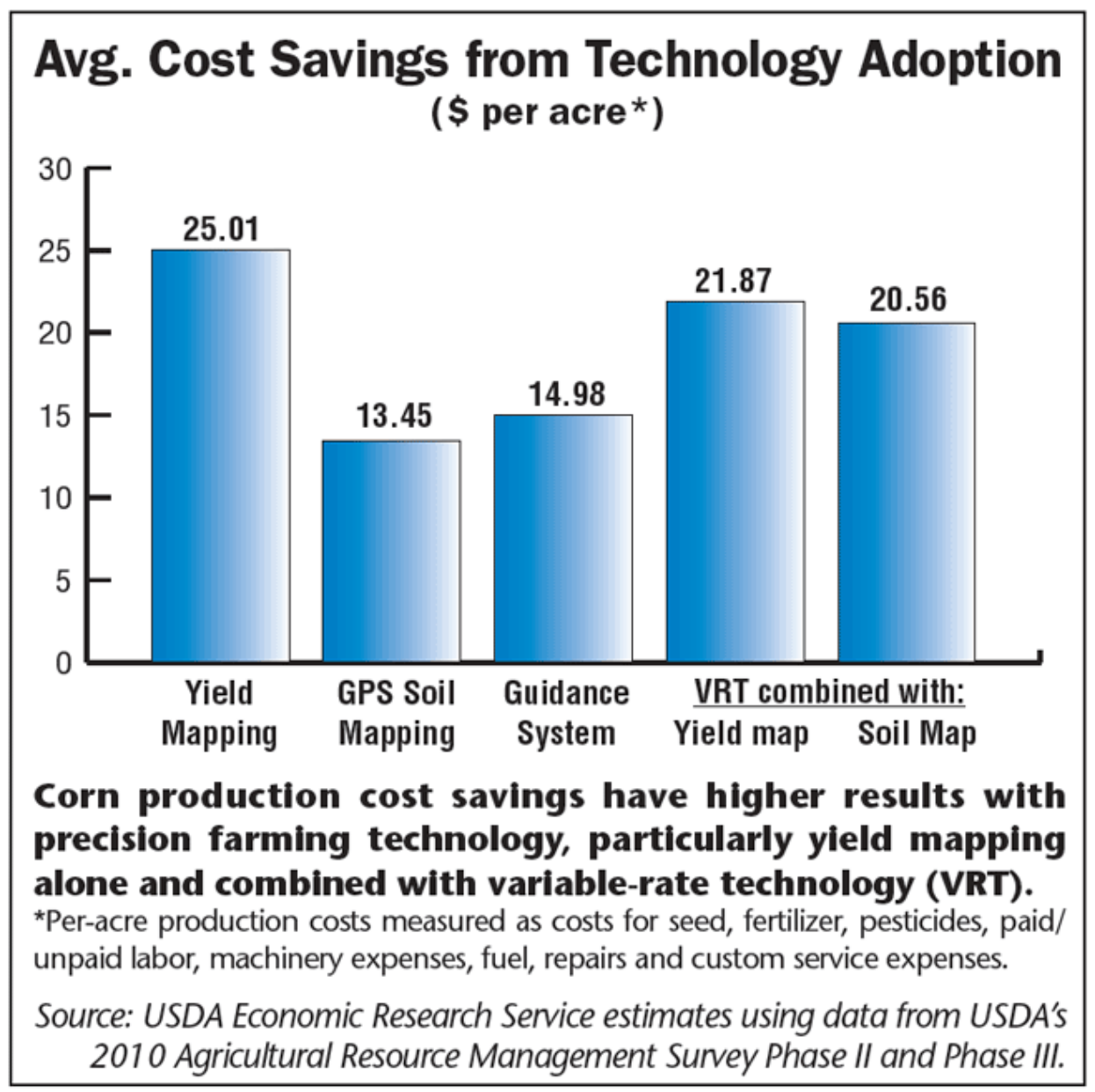

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BENEFITS OF YIELD MAPPING:

- Identify extent of yield variability
- Compare to other information: soil types, pH and nutrient levels, topography
- Compare varieties, effects of different inputs
- Basis for designing prescription maps for variable rate fertilizer application
- Compare multiple years to identify effects of management decisions
- YOUR REPORT CARD

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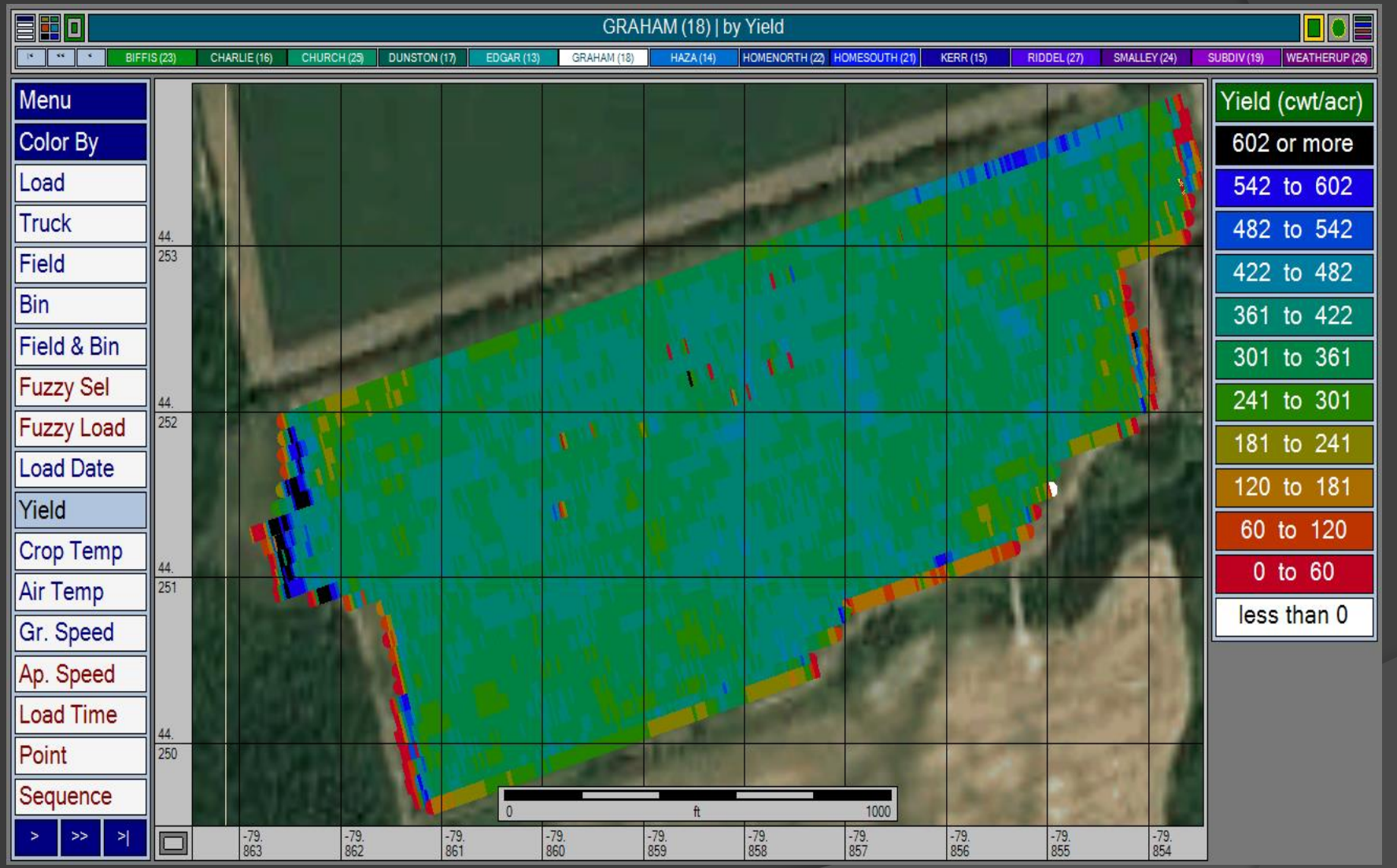
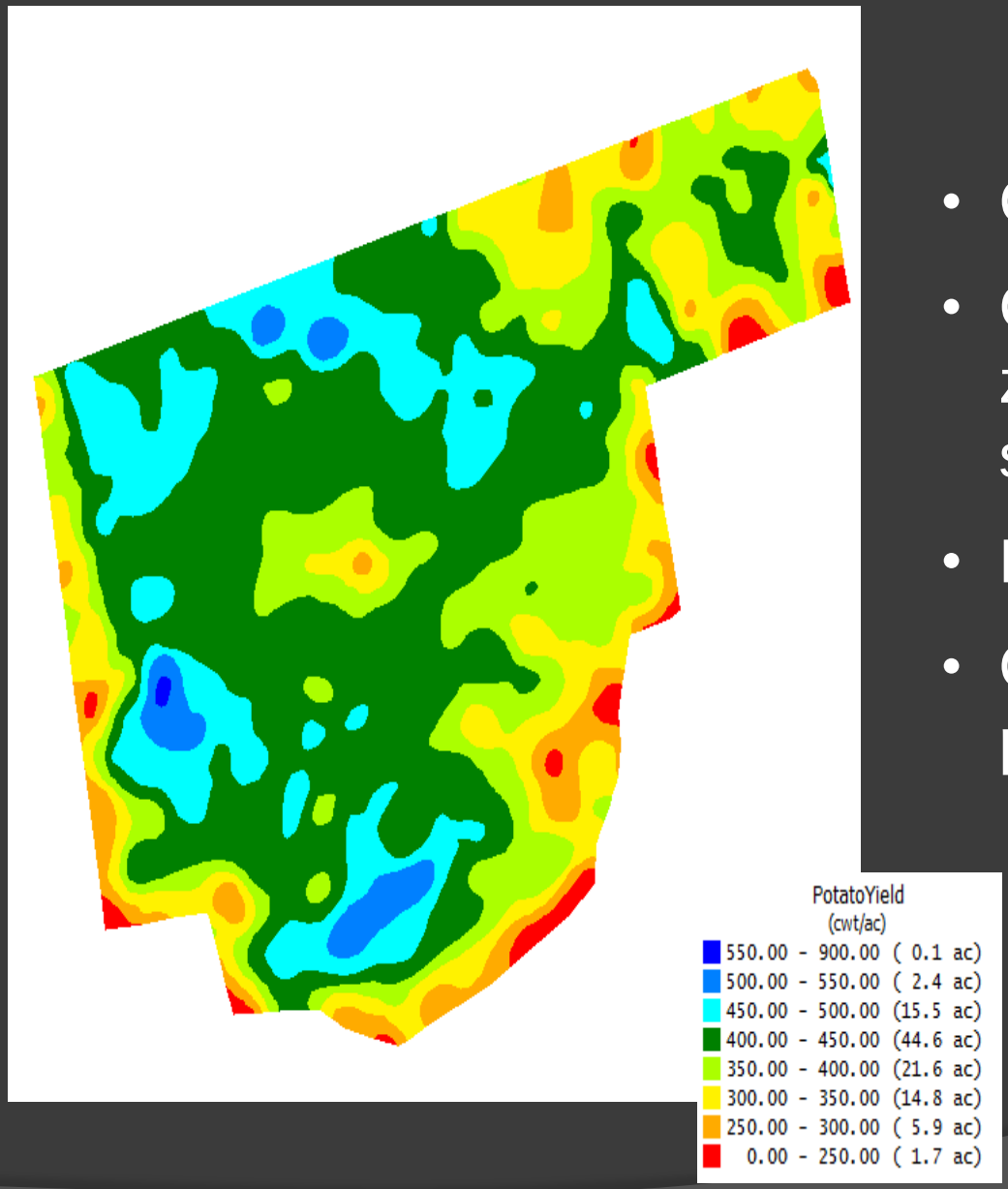
YIELD MAP – RAW DATA





DATA TRENDS

- Calculate nutrient removal
- Create management zones for Variable Rate strategies
- Formulate yield goals
- On Farm research for products or practices

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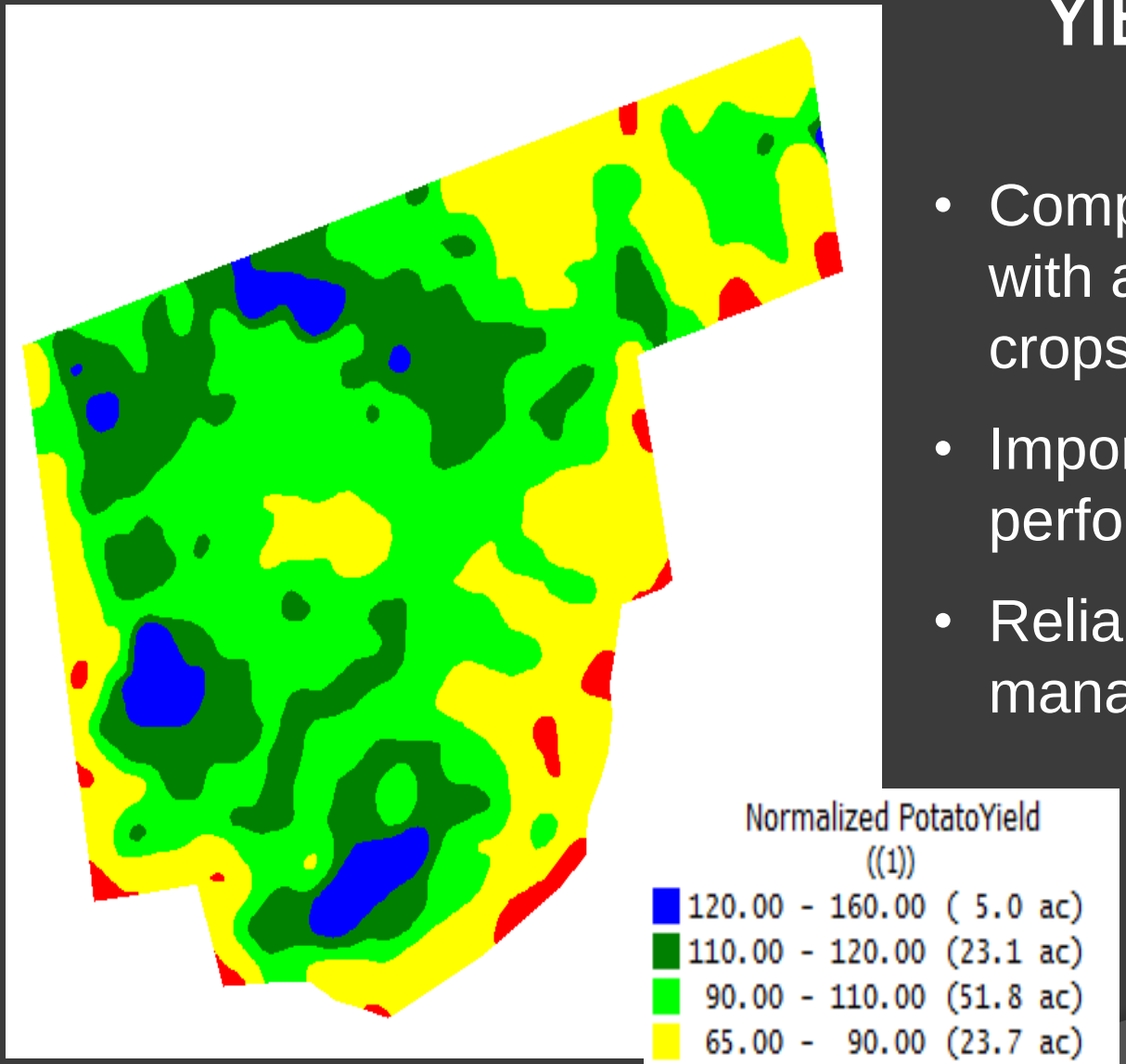
AgTech GIS

YIELD AS % OF AVERAGE



- Compare performance with all other monitored crops, other years
- Importance is stability of performance
- Reliability for making management zones

SMS ADVANCED

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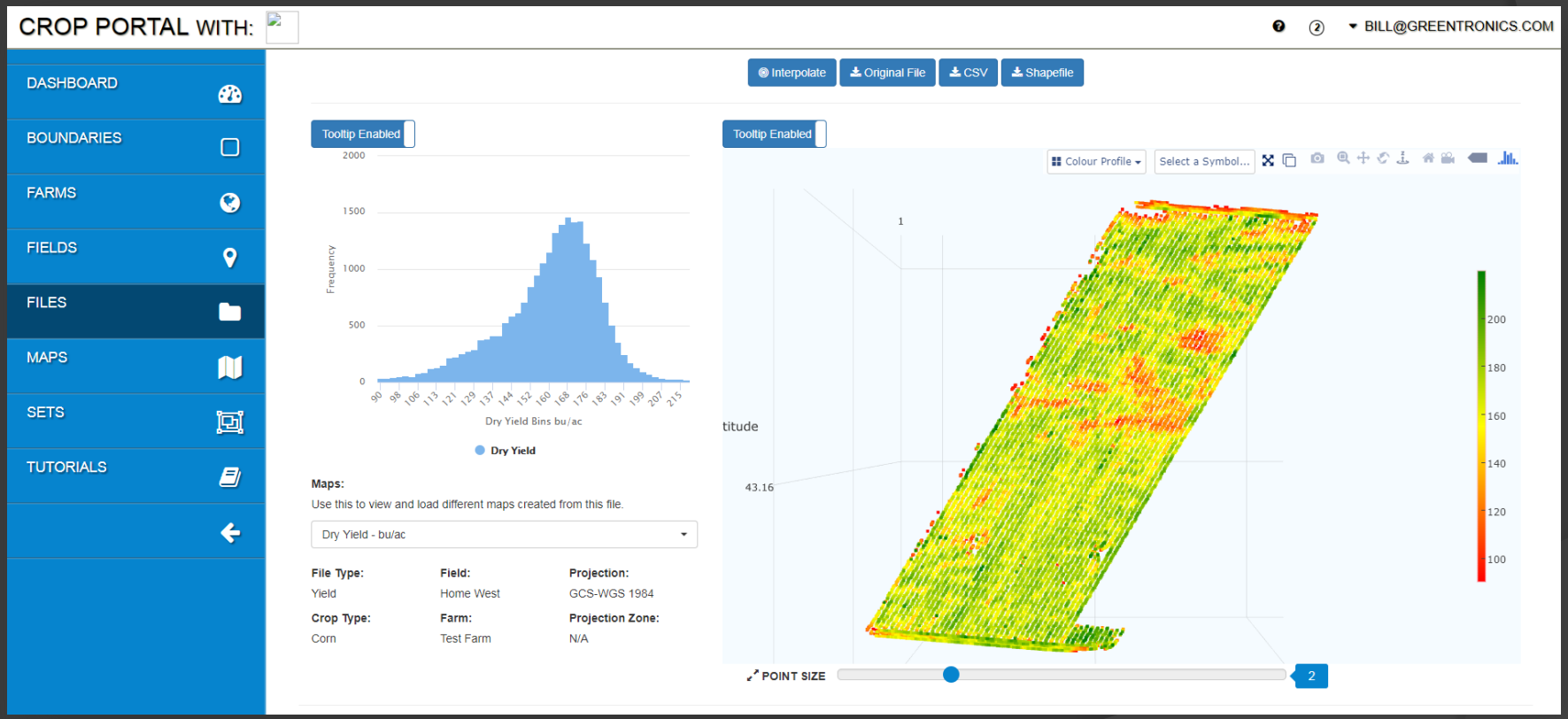
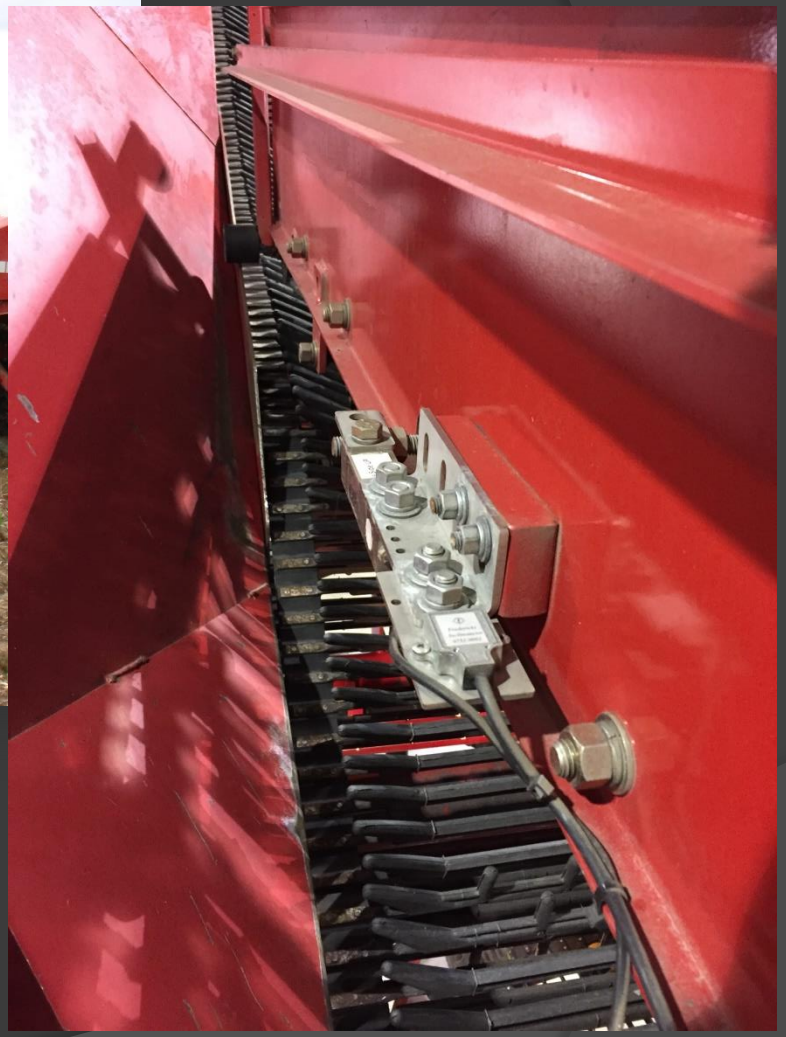
MAPPING SOFTWARE OPTIONS

Crop Portal – Niagara College



YIELD MONITOR HARDWARE



The heart of the yield monitor is a weighing system designed for installation in nearly any harvester with a conveyor belt.

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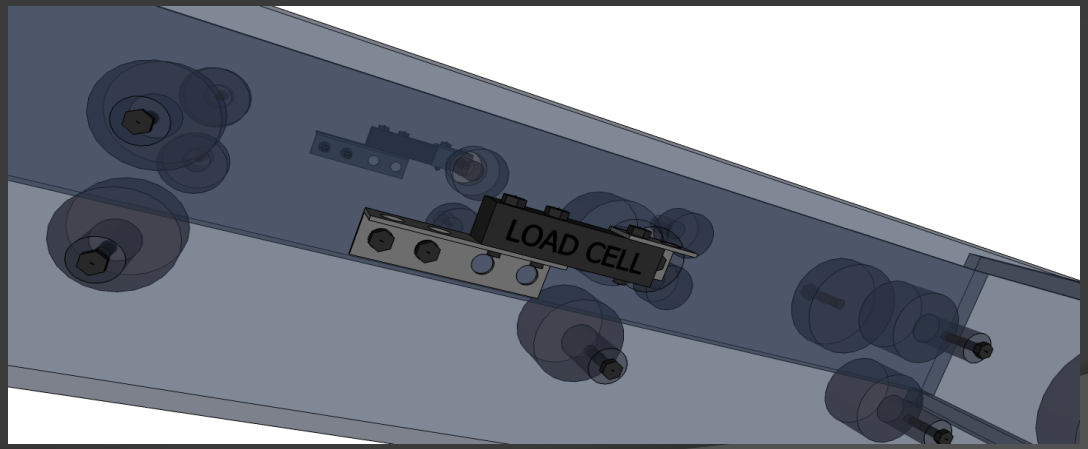
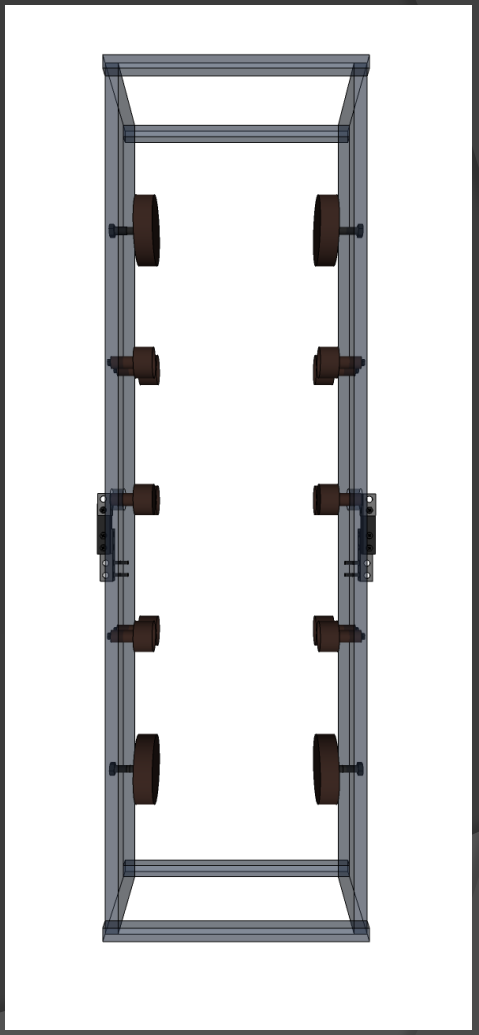
YIELD MONITOR HARDWARE





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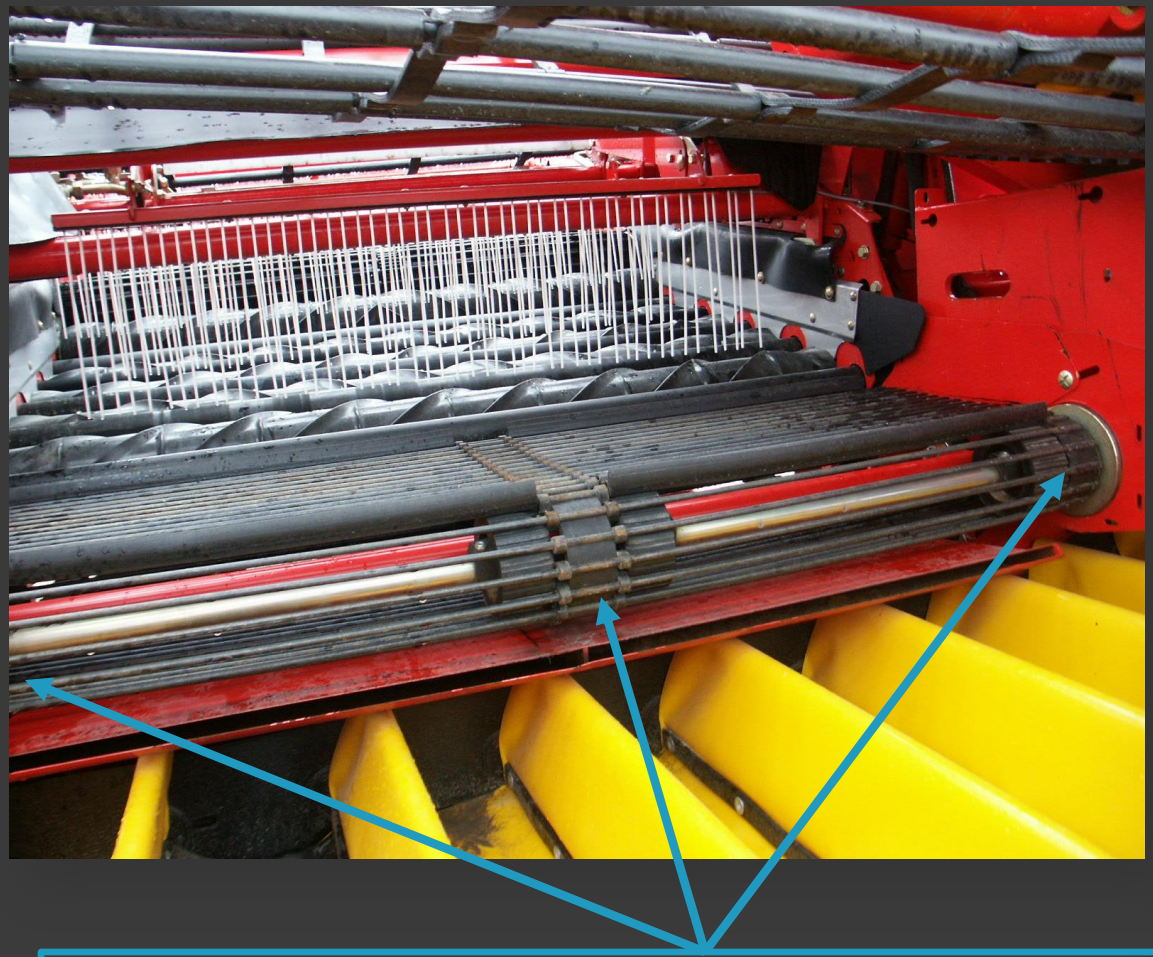
YIELD MONITOR HARDWARE



2-, 3-, and 4-load cell systems are available to suit belted chain conveyors with 2, 3, and 4 traction belts; or even dual conveyors, each with 2 traction belts.

Conveyor with three traction belts. Requires three load cells.

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YIELD MONITOR HARDWARE

Yield data is combined with GPS data to create a complete data file in csv format which is stored internally and copied to ruggedized USB flash drive.

The file is easily imported into common mapping software.

Stand-alone RiteYield system.

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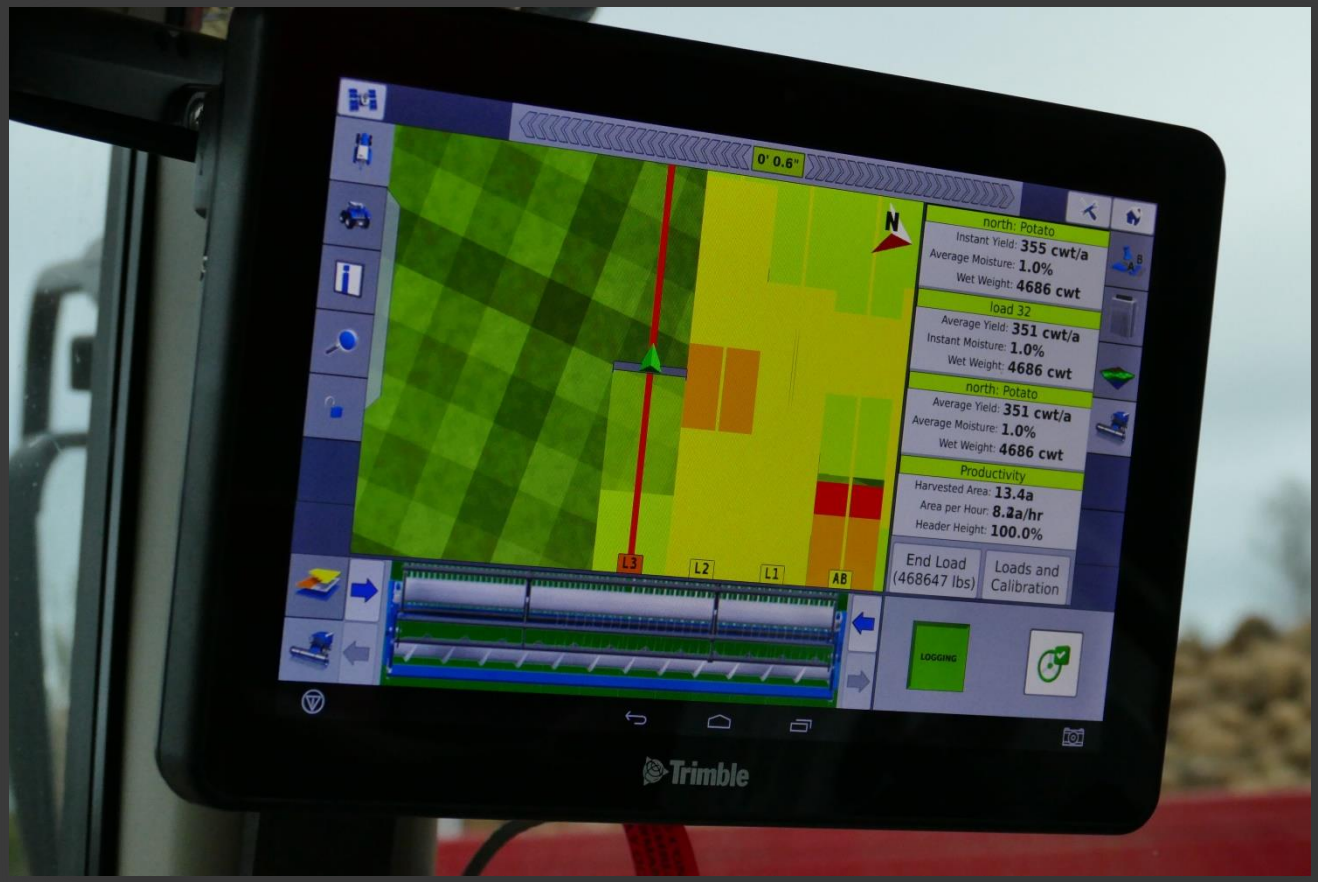
DATA INTEGRATION



Allows viewing yield maps in real time.

Yield data are stored.

Trimble FMx and TMx and John Deere 2630 displays can upload data to your office or to cloud storage.

RiteYield system running on a Trimble TM2050

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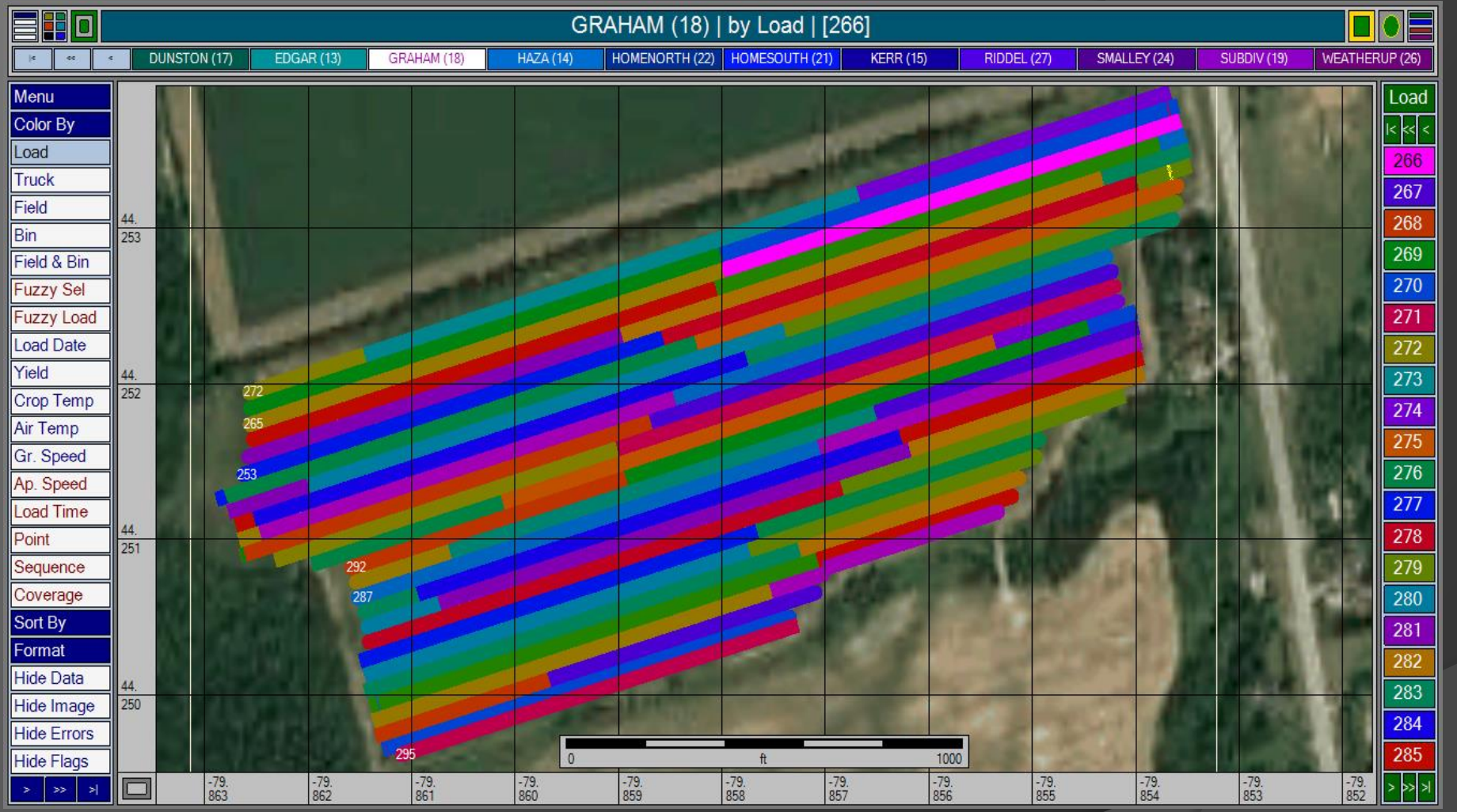
DATA INTEGRATION

RiteTrace MAPS



Field Map: selected load is highlighted in pink

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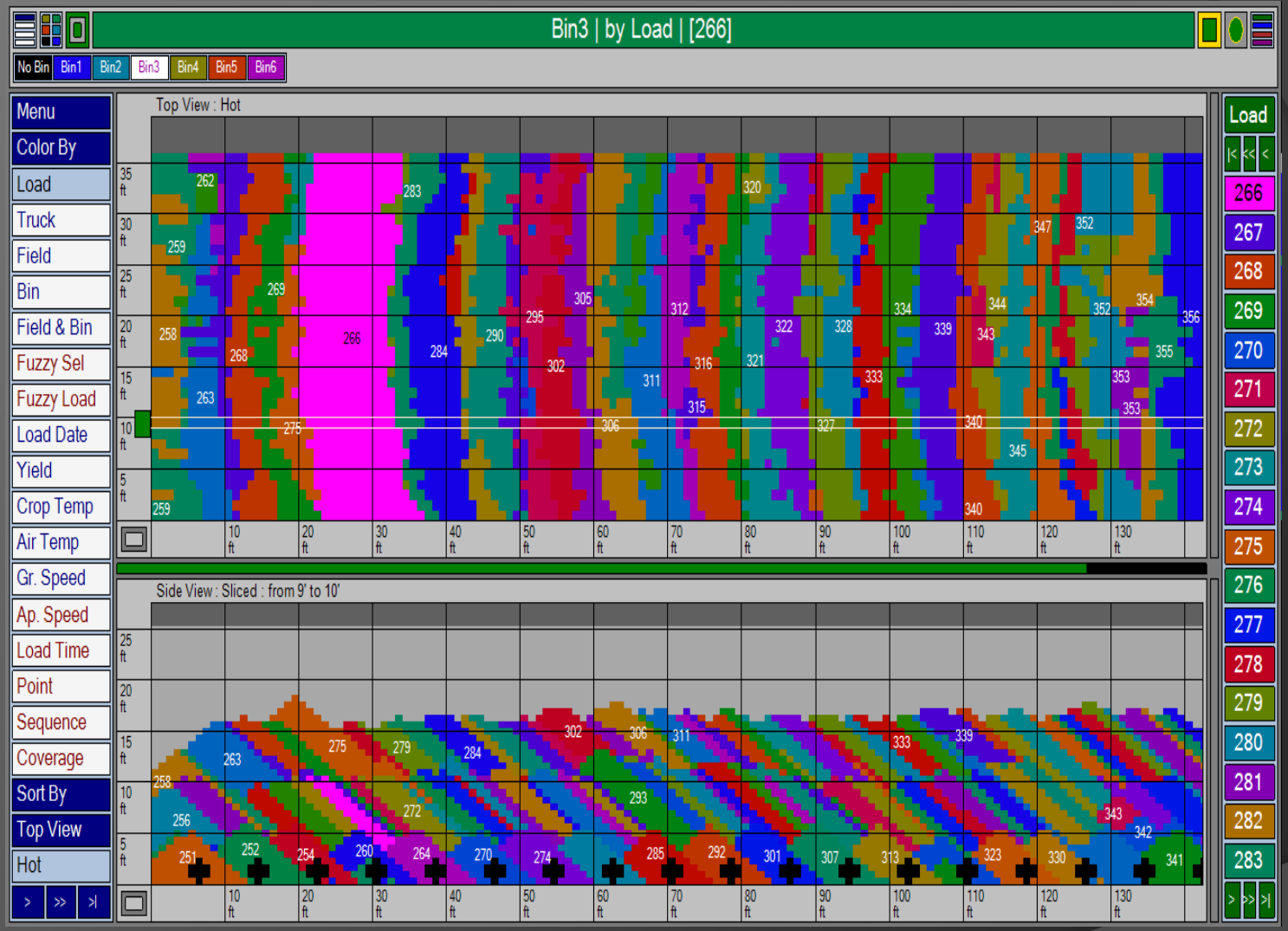
RiteTrace MAPS



Bin Map

Top View

Side View

Selected load is highlighted in pink.

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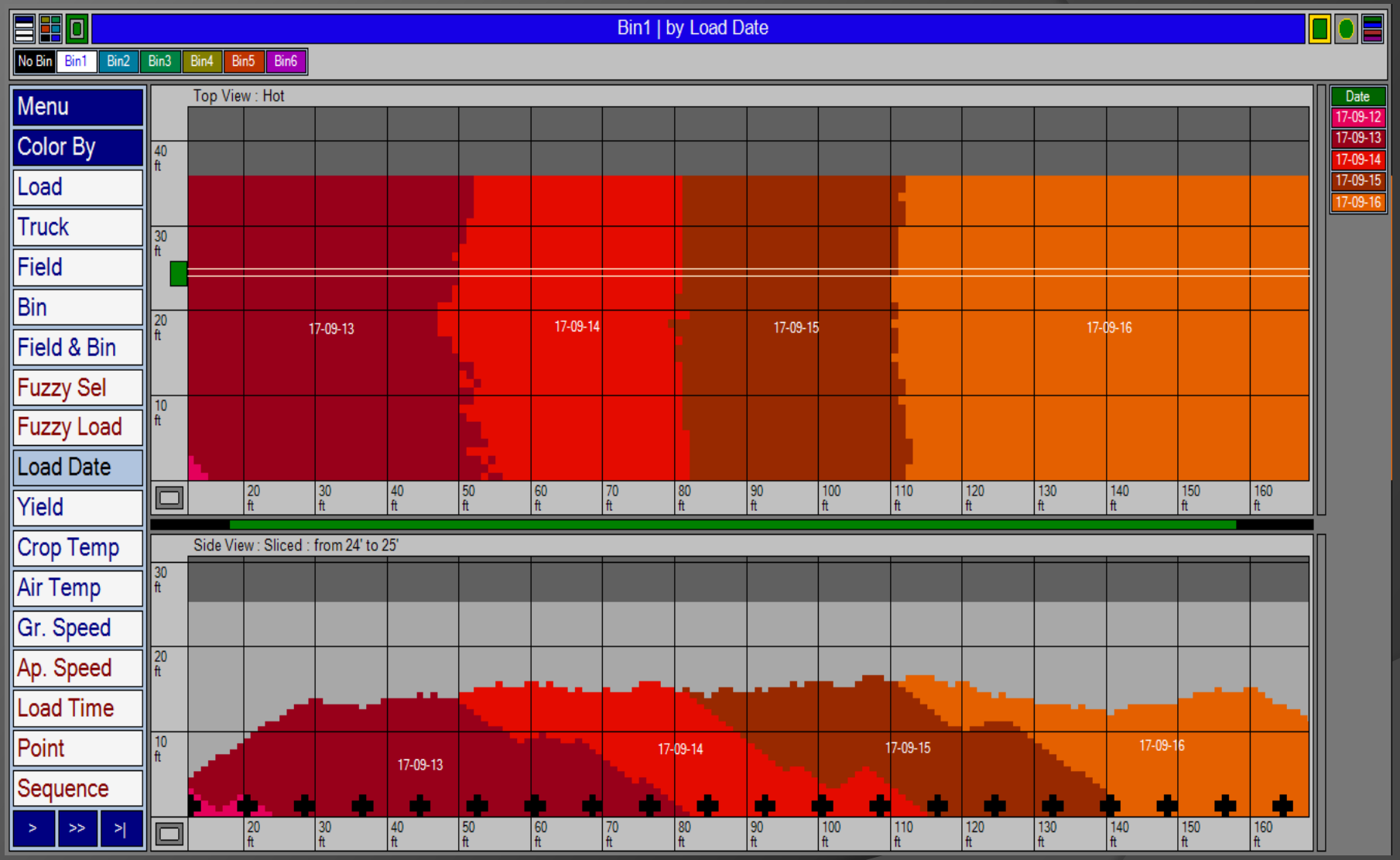
RiteTrace MAPS



Bin Map: sorted by harvest date

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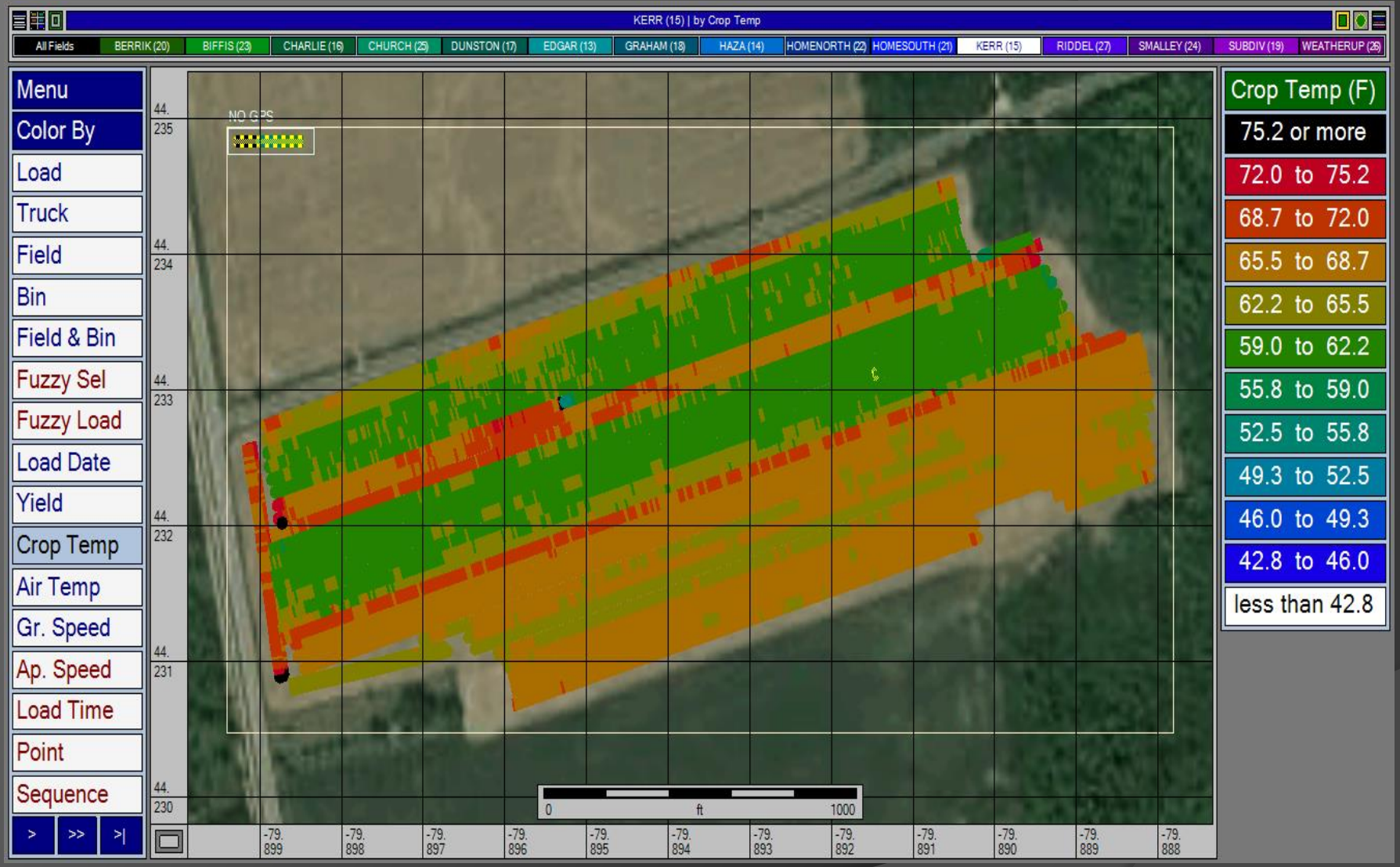
RiteTrace MAPS



Field Map: sorted by product temperature

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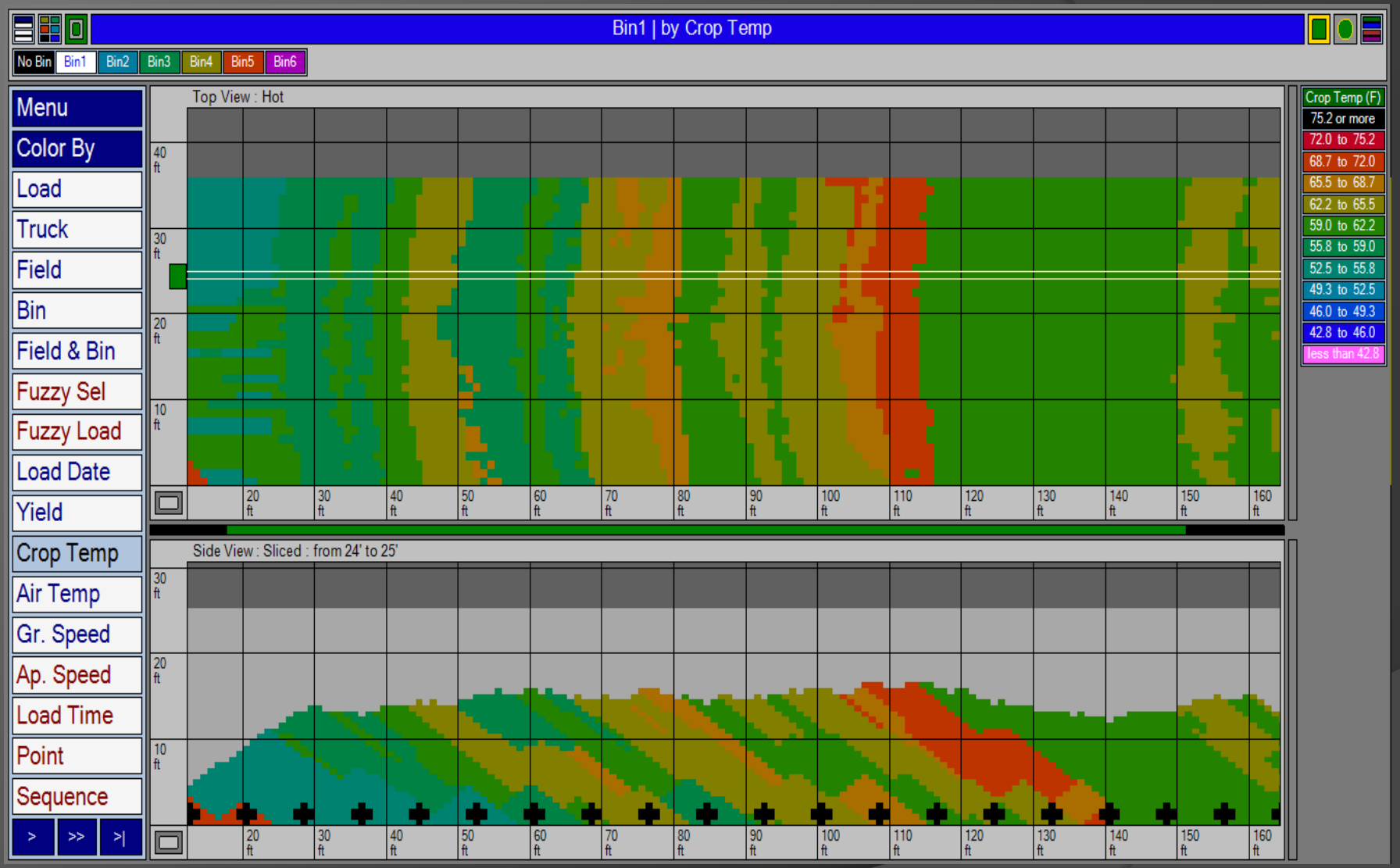
RiteTrace MAPS



Bin Map: sorted by product temperature

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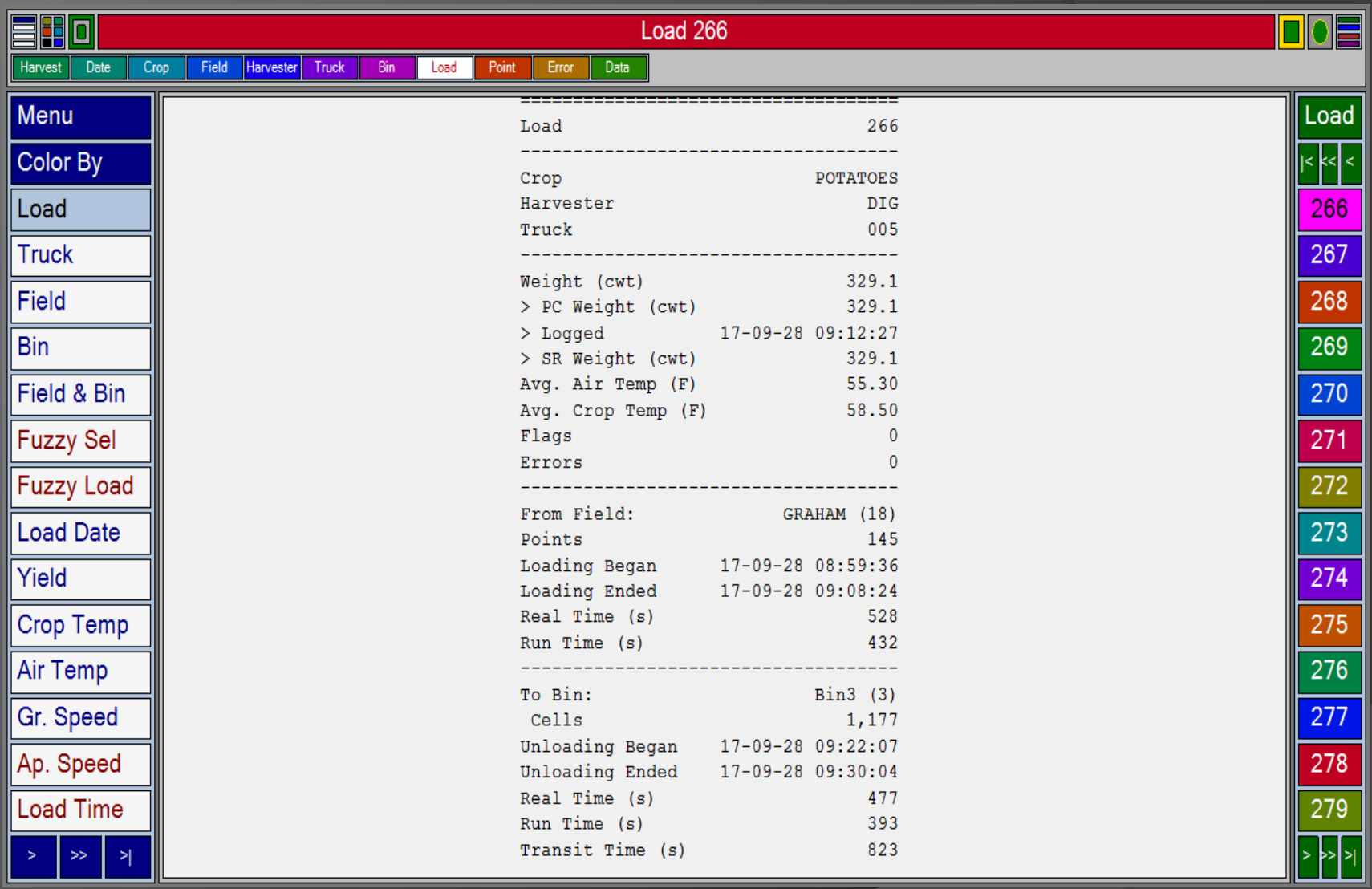
REPORTS



Load Report

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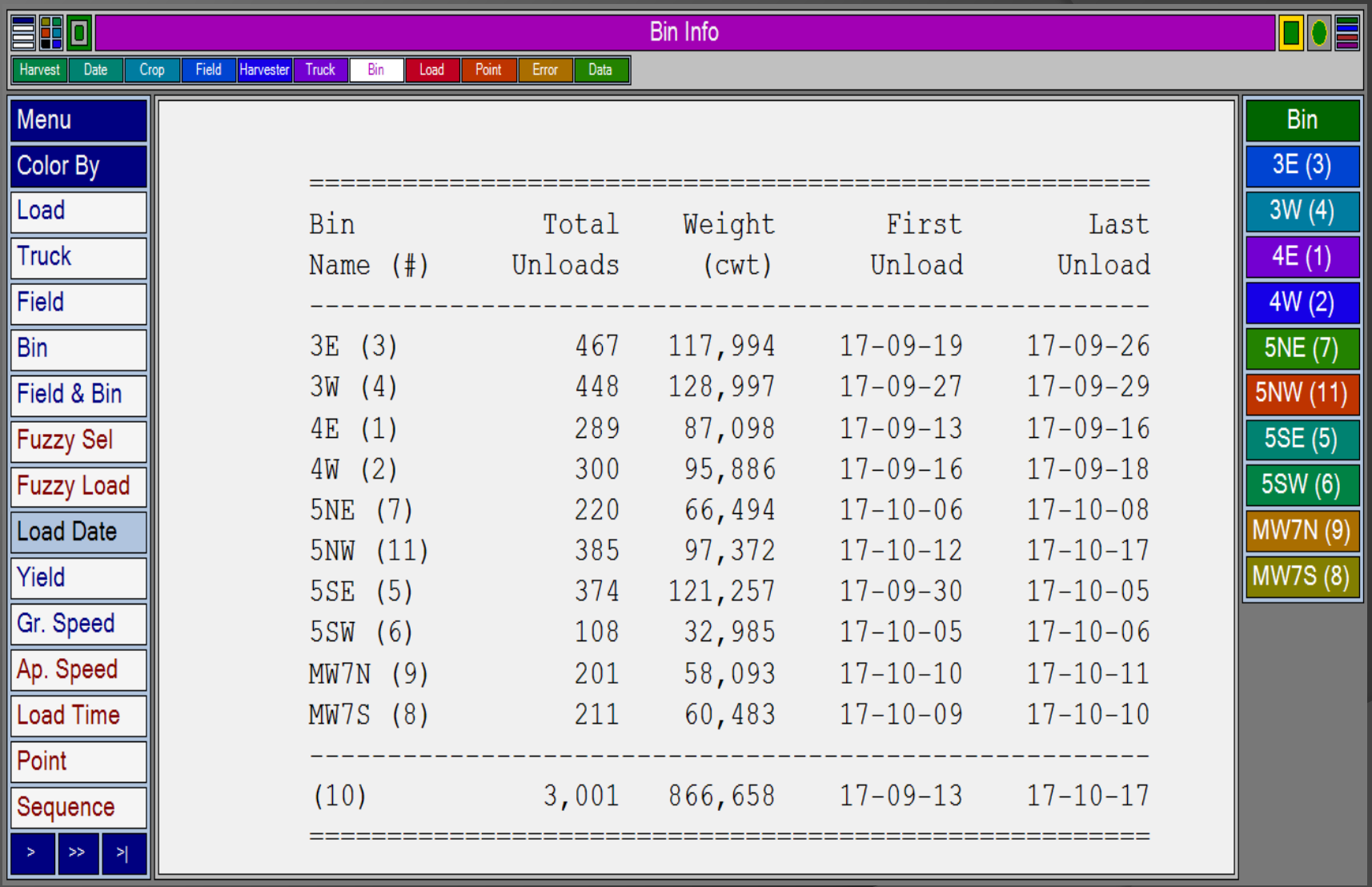
REPORTS



Bin Name (#)	Total Unloads	Weight (cwt)	First Unload	Last Unload
3E (3)	467	117,994	17-09-19	17-09-26
3W (4)	448	128,997	17-09-27	17-09-29
4E (1)	289	87,098	17-09-13	17-09-16
4W (2)	300	95,886	17-09-16	17-09-18
5NE (7)	220	66,494	17-10-06	17-10-08
5NW (11)	385	97,372	17-10-12	17-10-17
5SE (5)	374	121,257	17-09-30	17-10-05
5SW (6)	108	32,985	17-10-05	17-10-06
MW7N (9)	201	58,093	17-10-10	17-10-11
MW7S (8)	211	60,483	17-10-09	17-10-10
(10)	3,001	866,658	17-09-13	17-10-17

Load Report

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RiteTrace HARDWARE

Scanner – Transponder

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RiteTrace HARDWARE

Scanner – Transponder

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RiteTrace HARDWARE

Piler – equipped with sensors to precisely track the head of the piler.

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Thank you!

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WHAT'S THE VALUE IN DETAILED TRACKING?

Many growers see maintaining traceability records as a burden and do not see this as adding much value to their business. How does a traceability system add value?

1. Manual records are not always accurate and do not offer much detail. RiteTrace collects data in great detail both in the field, at unloading, and in the bin. This adds real value to the traceability records.
2. Positive and negative aspects of crop quality in storage are easily linked to locations in fields, to harvest dates, and to harvest and weather conditions.
3. Provides transparency and clear information which will support and strengthen relationships between growers, packers, processors and buyers

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VALUE (cont'd)**:**

4. Knowledge can be used to improve management strategies in the field and in storage.
5. Required by Good Agricultural Practice (GAP) regulations in Canada, USA and elsewhere
6. Required by some processors, packers, and buyers.
7. Automating traceability record keeping avoids the tedious jobs related to maintaining manual records in the field and at the storage.

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References:

- https://www.ncinnovation.ca/specializations/agriculture-environmental-technologies-innovation-centre

- https://twitter.com/thechadcolby/status/960549303214313474?refsrc=email&s=11

- *Sequential Adoption and Cost Savings from Precision Agriculture and Farm Profits and Adoption of Precision Agriculture by David Schimmelpfennig, USDA, 2016*

- ***Technology options for feeding 10 billion people*** http://www.europarl.europa.eu/stoa/webdav/shared/STOA%20State%20of%20the%20art%20report%20'Options%20for%20sustainable%20food%20processing'.pdf

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