



SENTINELAG

Optimizing Nitrogen for Profit & Stewardship

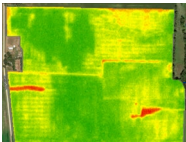
Sentinel Software Platform

End the guesswork – Sentinel uses your crop to guide your nutrient and water management in-season.

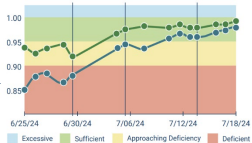


SENTINEL

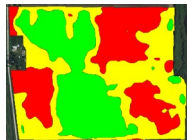
- + \$22/ac profit (243 bu/ac average)
- + 23% NUE (0.59 average)



Data



Insights



Recommendations

Key Advantages: No yield goals, soil samples, N credits, or labor; hybrid/variety specific; pre-visible demand detection.

Crops Served: Corn, Sorghum, Cereals, Potatoes, Beets, Cotton, and more.

Tiers: Irrigation, Standard, Advanced, Complete





How it Works

Implementing the Sentinel platform to make better in-season decisions.



How it Works: Home Dashboard

Sentinel's Field List and Home Dashboard help users quickly digest the nitrogen status of their fields.



< Fields Add Field

Q Search: AM

CSP Farms

160 Schind Farms Apply N Sufficient Auto Edge Agreements (James Herrick) Done

#1 Olson Farms Do Not Apply N Sufficient TM Ag. Inc. (James Herrick) Done

#1 CF Farms Apply N Approaching Deficiency TM Ag. Inc. (James Herrick) Done

#2 Olson Farms Do Not Apply N Sufficient TM Ag. Inc. (James Herrick) Done

#3 Olson Farms Do Not Apply N Sufficient TM Ag. Inc. (James Herrick) Done

#4 Olson Farms Do Not Apply N Sufficient TM Ag. Inc. (James Herrick) Done

#9 Olson Farms Do Not Apply N Sufficient TM Ag. Inc. (James Herrick) Done

#11 Carl Farms Image Gap Precision Agronomy (James Herrick) Done

#17 Carl Farms Apply N Approaching Deficiency Precision Agronomy (James Herrick) Done

#17 CK Farms Apply N Approaching Deficiency TM Ag. Inc. (James Herrick) Done

#23 Carl Farms Apply N Approaching Deficiency Precision Agronomy (James Herrick) Done



Dashboard Dashboard Imagery GA Bulk Export File Virtual 3D

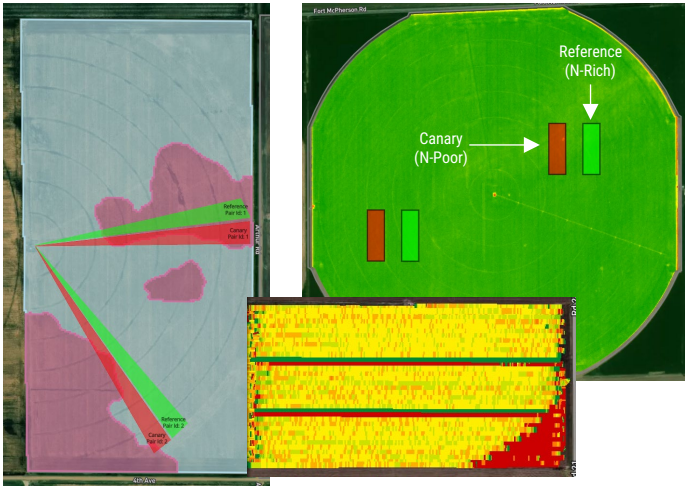
Q Search:

Share Download PDF

Account Manager	CSP	Farm	Field #	Latest Rec Date	Sufficiency	N Status	Recommendation
James Herrick	Precision Agronomy	Corntucker Farms	409	09/29/2025	83.8 %	Deficient	Apply N
James Herrick	Precision Agronomy	Corntucker Farms	407	09/29/2025	89.7 %	Deficient	Apply N
James Herrick	Precision Agronomy	Corntucker Farms	405	09/29/2025	88.2 %	Deficient	Apply N
James Herrick	Precision Agronomy	Corntucker Farms	404	09/29/2025	87.2 %	Deficient	Apply N
James Herrick	Precision Agronomy	Baker Farms	97L	09/24/2025	90.9 %	Sufficient	Do Not Apply N
James Herrick	Precision Agronomy	Corntucker Farms	6 Road	09/29/2025	83.7 %	Deficient	Apply N
James Herrick	Precision Agronomy	Corntucker Farms	37	09/29/2025	92.8 %	Deficient	Apply N
James Herrick	Precision Agronomy	Zimmatic 1	Zimmatic 1	09/24/2025	102.2 %	Approaching Deficiency	Apply N
James Herrick	Precision Agronomy	Cold-Rain Inc	Wilder	08/28/2025	100 %	Sufficient	Do Not Apply N
James Herrick	Precision Agronomy	Baker Farms	West Place	09/24/2025	100.4 %	Approaching Deficiency	Apply N
James Herrick	Precision Agronomy	Run Whitewater	West 114	09/29/2025	99.3 %	Approaching Deficiency	Apply N
James Herrick	Precision Agronomy	D&S Rainforth LLC	Waynes Quarter	09/29/2025	92.7 %	Deficient	Apply N
James Herrick	Precision Agronomy	Baker Farms	UPW TAPS North Platte - Team 35	09/29/2025	95.8 %	Deficient	Apply N
James Herrick	Precision Agronomy	Michael Knoll Farms	SRH	09/29/2025	91.2 %	Deficient	Apply N
James Herrick	Precision Agronomy	Corntucker Farms	South Quarter	09/24/2025	95.2 %	Deficient	Apply N
James Herrick	Precision Agronomy	D&S Rainforth LLC	South of Tees	09/29/2025	84.8 %	Deficient	Apply N
James Herrick	Precision Agronomy	Hobson Farms	South Field - Arnie Hobson Sentinel Trail	09/29/2025	88.9 %	Deficient	Apply N
James Herrick	Precision Agronomy	Bachart Farms	South Dora	09/24/2025	97.7 %	Approaching Deficiency	Apply N
James Herrick	Precision Agronomy	Corntucker Farms	South 80	09/24/2025	93.3 %	Deficient	Apply N
James Herrick	Precision Agronomy	Baker Farms	Smith 80	09/29/2025	101.9 %	Sufficient	Do Not Apply N
James Herrick	Precision Agronomy	Corntucker Farms	Schrock 80	09/29/2025	93.2 %	Deficient	Apply N
James Herrick	Precision Agronomy	KOHACH Farms	Ordberg Church	09/29/2025	101.4 %	Sufficient	Do Not Apply N
James Herrick	Precision Agronomy	D&S Rainforth LLC	North Flood	09/29/2025	86.4 %	Deficient	Apply N
James Herrick	Precision Agronomy	Corntucker Farms	North 80	09/24/2025	91.6 %	Deficient	Apply N
James Herrick	Precision Agronomy	Baker Farms	North 80	09/29/2025	98.8 %	Approaching Deficiency	Apply N

How it Works: Sentinel Plots

We isolate the impact of Nitrogen on crop yield potential and calibrate every image using paired N-rich (reference) and N-poor (canary) plots in the field.



Sentinel plots help you see:

1. The crop's potential with extra N
2. N demand before it occurs

Sentinel plots can be established in any operation using:

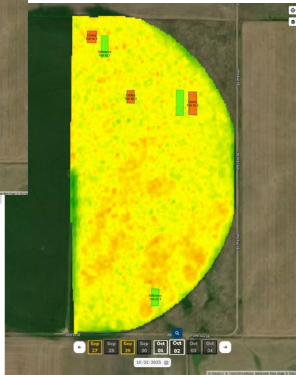
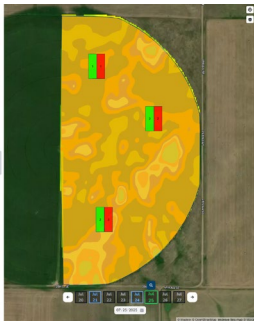
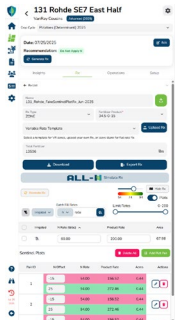
- Plots
- Slices
- Field-length Strips

Sentinel plots should be established prior to mid-vegetative growth:

- Lighter soils – at or after planting
- Heavier soils – any application

How it Works: Sentinel Plots

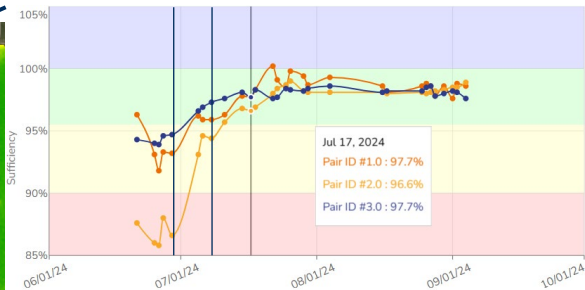
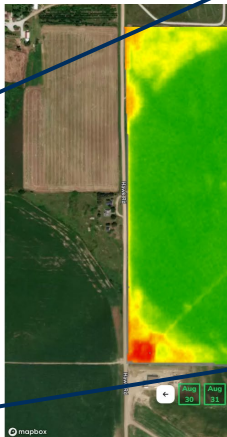
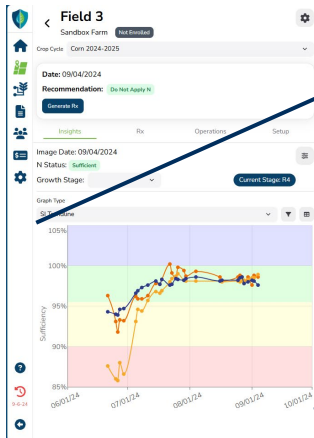
Sentinel creates prescriptions for ground or fertigation applied plots. It can also use plots created with an application executed without a Sentinel-originated Rx.



- Placed using best available zones.
 - Autoplace feature
 - Image-based zones
- Sentinel plots can be activated for insights with confirmation or upload.
- Sentinel offers multiple ways to validate plot locations if desired.
 - User editing of plots
 - Automated as-applied processing
 - Validation against virtual SI

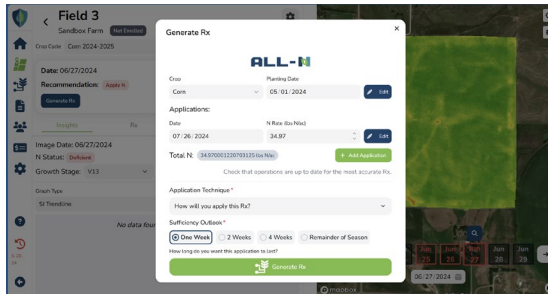
How it Works: N-Time[®] Sufficiency

Sentinel uses crop data and imagery to continuously monitor crop nitrogen status and detect when there is demand for additional nitrogen using the Sufficiency Index (SI).



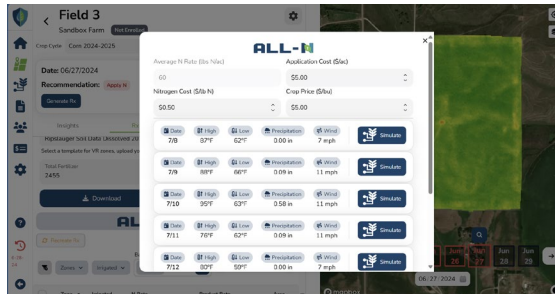
Recommendation	Application
6/21/24	6/29/24
7/5/24	7/5/24
7/11/24	7/14/24

How it Works: Application Advisor



Generate prescriptions to satisfy crop demand.

- Image-based dynamic zones
- Rates based on imagery and modeling

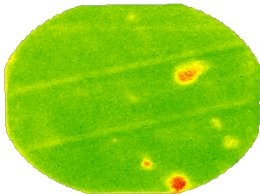


Compare the impact of timing on uptake and ROI.

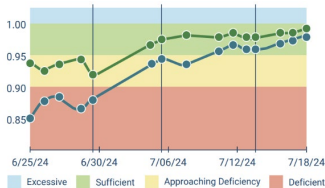
- See how precipitation impacts uptake.
- Assess potential ROI from the application.

Detailed product, timing, and rate comparisons coming soon.

How it Works: Sensor-Model Fusion



Capture

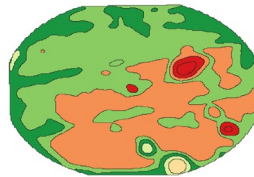


Calibrate

Detect

Algorithm

Measured N Demand



N Recommendation

SI Values

Weather

Crop & Soil

Applications

Preferences

Model

Forecasted N Demand

How it Works: Application



Source: Farm Equipment



Source: Successful Farming

Source: University of Nebraska - Lincoln



Uses and Benefits

How Sentinel empowers agile nitrogen stewardship.



Consistent Results



	2022	2023	2024
Yield (bu/ac)	241	246	242
NUE (lb-N/bu)	0.81	0.70	0.75
N Savings	+ \$40/ac	+ \$34/ac	+ \$27/ac
NUE Change	+ 23%	+ 26%	+ 20%
N Change	- 42 lb/ac	- 50 lb/ac	- 45 lb/ac
Sample Size	42	56	108



NATIONAL
CORN GROWERS
ASSOCIATION



THE 60TH ANNUAL

YIELD CONTEST

- Yield Contest Low N Champion in 2023 with 313 bu/ac on 178 lb-N/ac
- Five Top-6 finishes in two years



We benchmark!
Check out our on-farm trial results.

Deeper Data Insights



Category	% of Fields
20+ lb-N/ac Reduction	82%
30+ lb-N/ac Reduction	73%
40+ lb-N/ac Reduction	59%
Increase N	4%

Largest Reduction: 124 lb- N/ac

Largest Increase: 81 lb- N/ac

Change Range: 205 lb- N/ac

Benchmarking Results – 2021 to 2024 (36 sites)

Treatment	Yield (bu/ac)	N Applied (lb-N/ac)	NUE (lb-N/bu)	Profit* (\$/ac)
Sentinel	243	139	0.59	\$1,271.68
Grower	245	189	0.78	\$1,249.73
Difference	-2	-50	-0.19	\$21.95
Change	-1%	-24%	+23%	+2%

Ancillary Benefits to Optimal N

Academic literature and our private dataset is developing around optimal nitrogen management benefits for crop and soil health, both of which may lead to better attribute marketability for ag products.



Crop Health

Numerous crop health benefits are being associated with optimal nitrogen management.

- Reduced disease pressure
- Reduced insect pressure
- Improved standability*
- Enhanced root development
- Plant growth control

Soil Health

Soil health benefits of optimizing nitrogen applications are also being identified through groups like the Soil Health Institute and NE Soil Health Coalition.

- Microbe activity
- Soil pH consistency
- Leveraging mineralization

Attribute Marketability

As international agriculture continues to evolve, American products will increasingly need to gain value through better attributes.

- Crop quality
- Processability
- Digestability
- Carbon Intensity
- Water Intensity

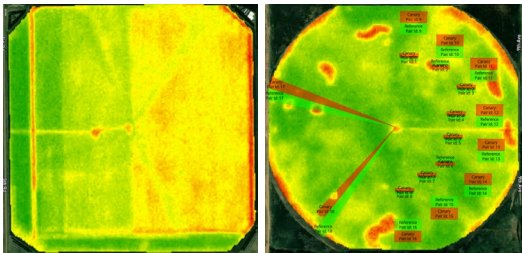
Sentinel is working with partners to gather data on disease incidence, stalk quality, soil health attributes, and grain quality under changes in N management.

Use Case: Products and Practices



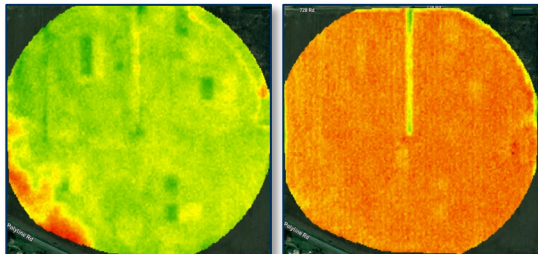
Biologicals, Stimulants, Alternatives

- Measure product impact on N uptake and N sufficiency
- Control risk with the information you need to intervene in-season



Regenerative Practices & Practice Changes

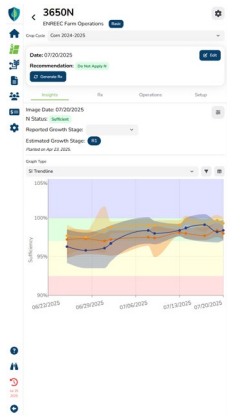
- Determine previous/cover crop residue N tie up and ensuing breakdown
- Tillage changes, interseeding, overwinter grazing impacts can be detected



Smarter Manure Management



- Detect and track N availability from base manure application
- Quantify impact of in-season manure applications
- Identify when synthetic/commercial N needs to be used
- Determine field(s) with most capacity when lagoon water must be pumped
- Opportunity for implementation with only manure N



Risk Management with In-Season N



- **Opportunities with Sentinel**

- Detect overapplication with up-front N
- Guide transition to in-season N
- Detect need for in-season N (rescue)
- Lowest tier built in-part to serve these situations

- **In-season application ancillary value**

- Reduce hail and wind risk exposure
- Adjust for pest and disease pressure
- Justify applications with SI value

- **Challenges with in-season N**

- Labor/timing
- Fertilizer procurement



Amplifying our Impact

Adding capabilities that are critical to our customers maximizing their N benefit.



Serving All N Applications



- Application strategies used
 - Sidedress
 - Fertigation
 - Aerial/Drone
 - Rescue
- Product types
 - Commercial fertilizer
 - Alternative fertilizers
 - Manure
- Systems served
 - Fertigated
 - Irrigated
 - Rainfed



Source: Farm Equipment



Source: University of Nebraska - Lincoln

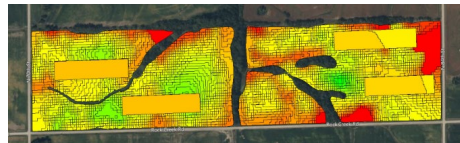


Source: Successful Farming

2025 Feedback



- N optimization leading to whole farm commitments
 - 3 first-year farms (so far) transitioning to 100% acres in year 2
 - Two new farms already going 100% in based on other results
- Trial results in non-fertigated management very encouraging
 - +5 bu/ac on 30 lb-N/ac reduction
 - +5 bu/ac on 10 lb-N/ac increase
 - “Before the application, I thought Sentinel’s rates would be too high. Making the application, I’m confident Sentinel’s are more accurate. We over accounted for our credits.”
 - “Zones are spot on.”
 - More data will be processed and put into Codex
- 100% of previous on-farm trial users used Sentinel commercially in 2025

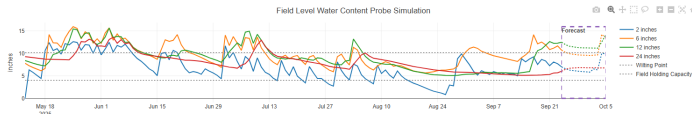
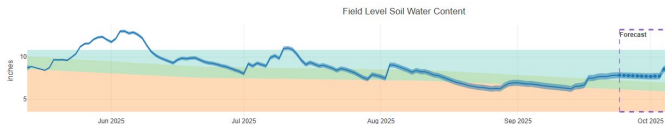


Serving Irrigation Decisions

Coming in 2026 – Sentinel Irrigation and Sentinel Complete will provide soil moisture and crop water use insights.



- Completely remote soil moisture and crop water use insights
- Captures spatial variability in crop and soil water metrics
- Guaranteed daily insights
- 93% alignment with soil moisture probes



SENTINEL
IRRIGATION



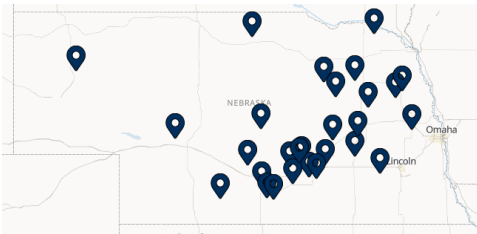
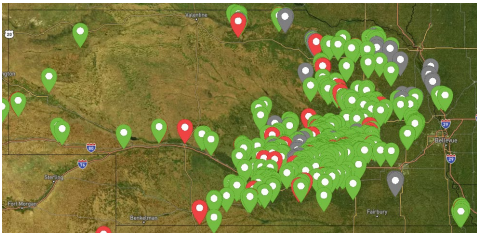
SENTINEL
COMPLETE

powered by



Serving Customers in Nebraska

Customers throughout Nebraska are benefitting from Sentinel and being served by our Sentry Network.



- Sentry Network of Certified Service Providers (CSPs)
 - 28/39 (72%) are in Nebraska
 - CSPs are trained in our platform
 - CSPs backed up by Sentinel RAM
- CSPs meet the following criteria:
 - Serve agronomy needs in-season
 - Leverage data for agronomic decisions
 - Focus on farm profitability
 - Align with natural resource stewardship

SENTINELAG

Stay in Touch



Contact Us

info@sentinelag.tech
(531) 324-0634
1071 County Road G
Ithaca, NE 68033



Sign up for
our Newsletter



Find us on
Social Media



Keep us on
your Calendar

Coming Soon



SENTRY NETWORK SUMMIT

January
22nd & 23rd
2026

**Scott
Conference
Center**

6450 Pine St,
Omaha, NE 68106

