

ENCIRCASM SERVICES

EXPLORE. EVOLVE. EXCEL.

EncircaSM Yield Nitrogen Management Service

- Justin Welch – DuPont Pioneer
- Encirca Regional Manager
- July 28th, 2015



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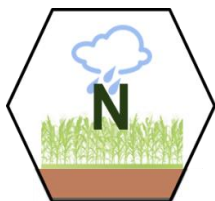




EncircaSM Yield *Nitrogen Management Service*



Analytics: The EncircaSM Yield *Nitrogen Management Service* is based on a dynamic cropping systems model developed by Pioneer researchers



Soils and Weather: The Encirca Yield *Nitrogen Management Service* is based on best-in-class soil and weather information



Agronomy: The Encirca Yield nitrogen model directly accounts for how G x E x M interactions affect crop growth and soil nitrogen



Integrated Services: The Encirca Yield *Nitrogen Management Service* links to other management services within the EncircaSM Yield platform



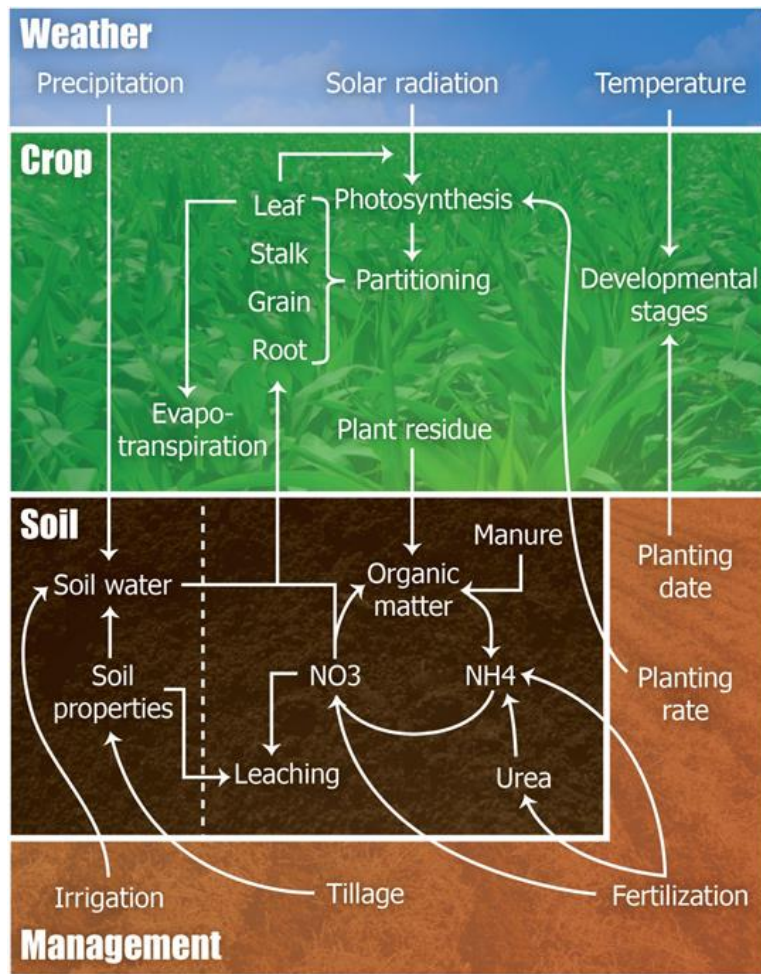
Custom Solutions: EncircaSM services customers work directly with a Pioneer representative to develop plans and make decisions that are customized to the needs of the operation

EncircaSM services provide estimates and management suggestions based on statistical and agronomic models. Encirca services are not a substitute for sound agronomic and management practices. Individual results may vary and are subject to a variety of factors, including weather, disease and pest pressure, soil type, and management practices.





FOUR KEY INPUTS HELP ADVANTAGE THE ENCIRCA SERVICES NITROGEN MODEL

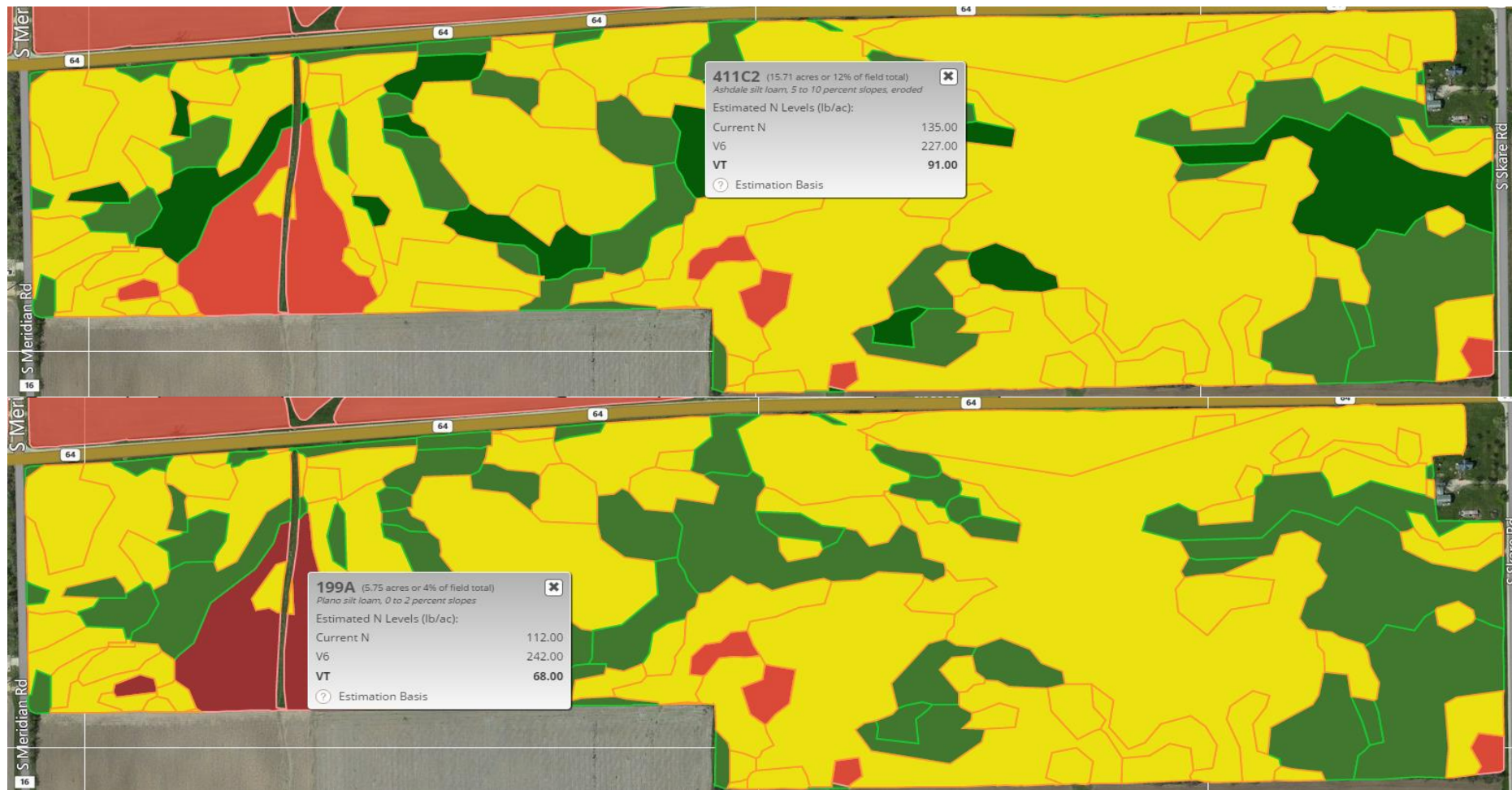


EVOLVE.

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Estimated Profit Loss from Nitrogen Management



**Estimates are based on Monte Carlo simulations of economically optimum nitrogen rate response distributions from 1,168 University nitrogen response trials conducted in MN, IA, IL, IN and OH*

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EncircaSM services Soil Data

Soils information is a critical model input that determines how nitrogen reacts to weather and management in different field areas. The nitrogen model is only as good as its soils data.

Industry Standard



- ☐ Generally use NRCS soils
- ☐ Fields are often represented by a single soil type
- ☐ Grower data generally not incorporated into soil zones

EncircaSM services Today



- ☐ ERUs defined by field topography
- ☐ High resolution representation of soil variability
- ☐ Historical yield data used to define soil productivity potential

EncircaSM services Tomorrow



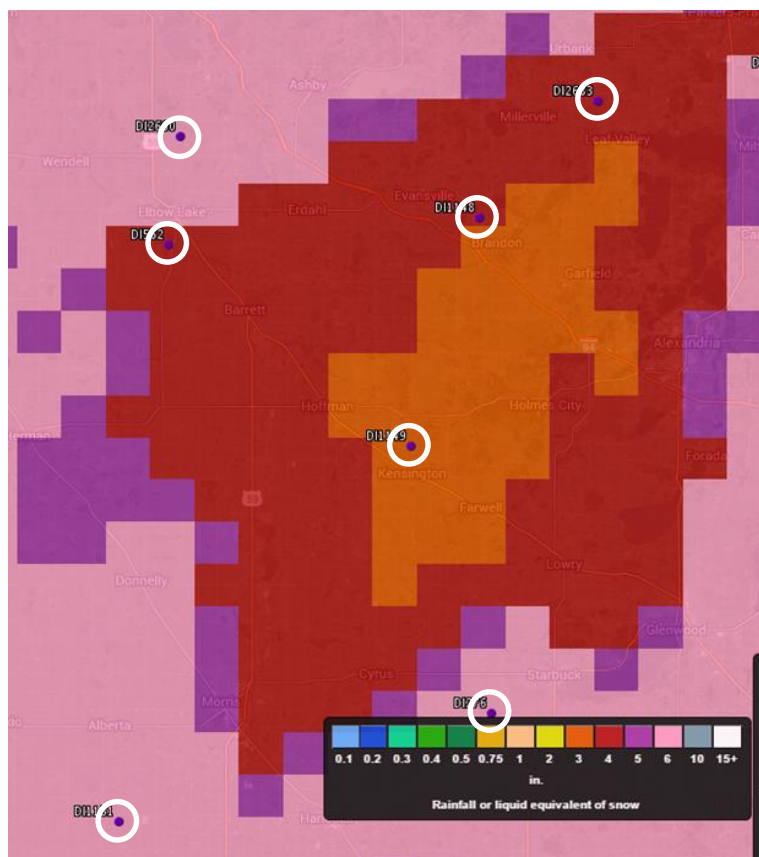
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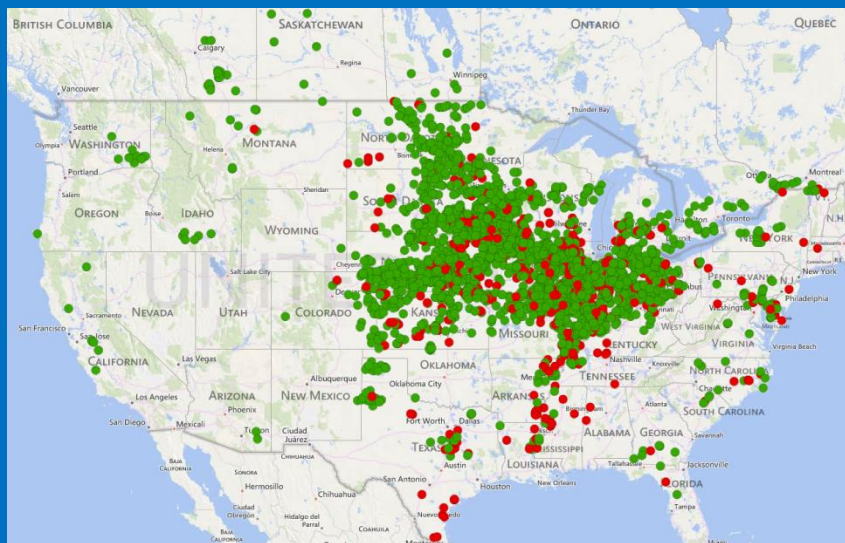


EncircaSM View - Weather

- 30,000 public locations are less important than nearly 3,000 DTN ***on-farm*** locations
- Locations within 0.3 miles of a DTN weather station report station data to N model
- Beyond 0.3 miles, weather is reported to the N model on a 1.25 mile interpolated grid
- The EncircaSM Services N model updates weather daily



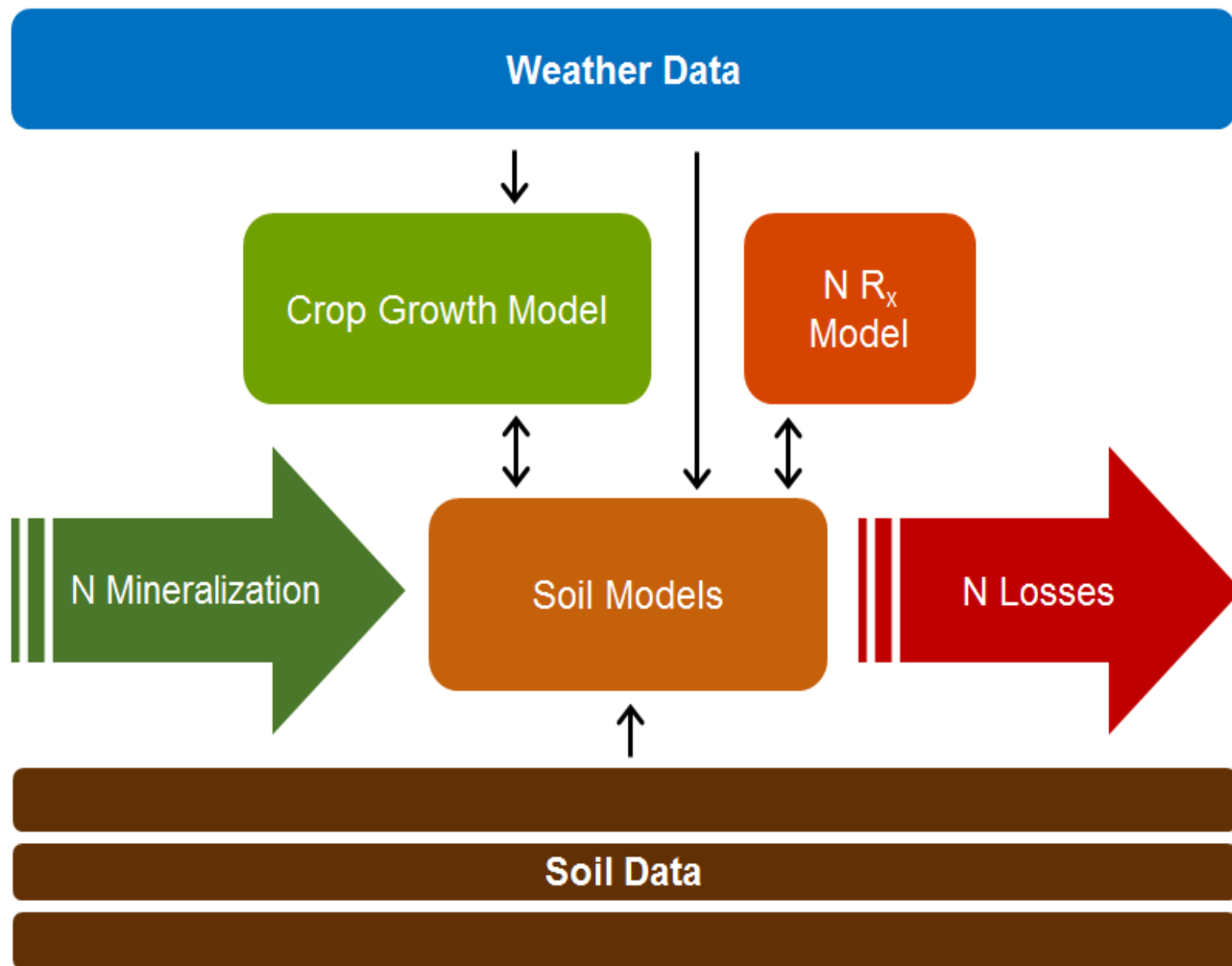
DTN Weather Network 30,000 Public Weather Stations 2700+ DTN Rural Weather Stations



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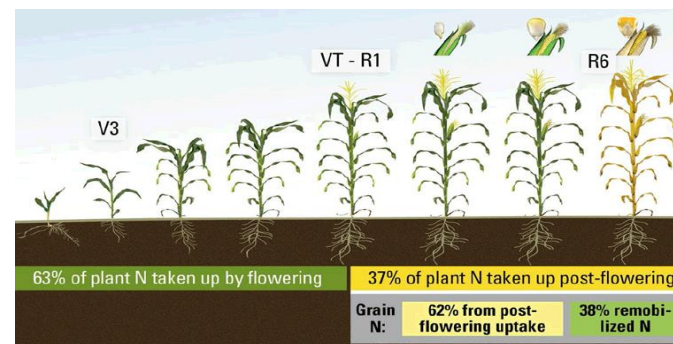
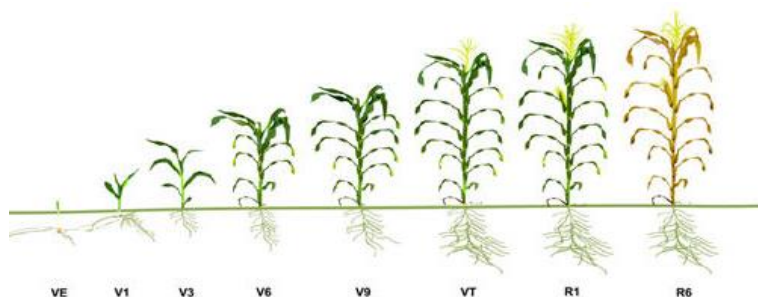
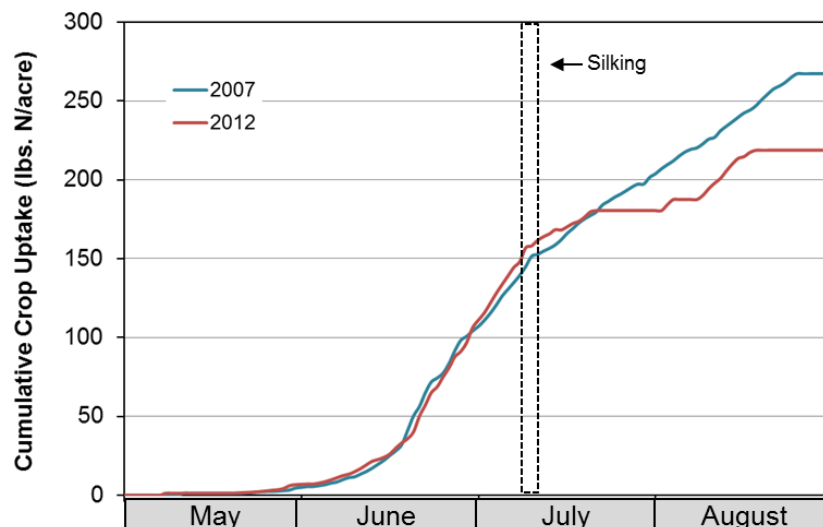
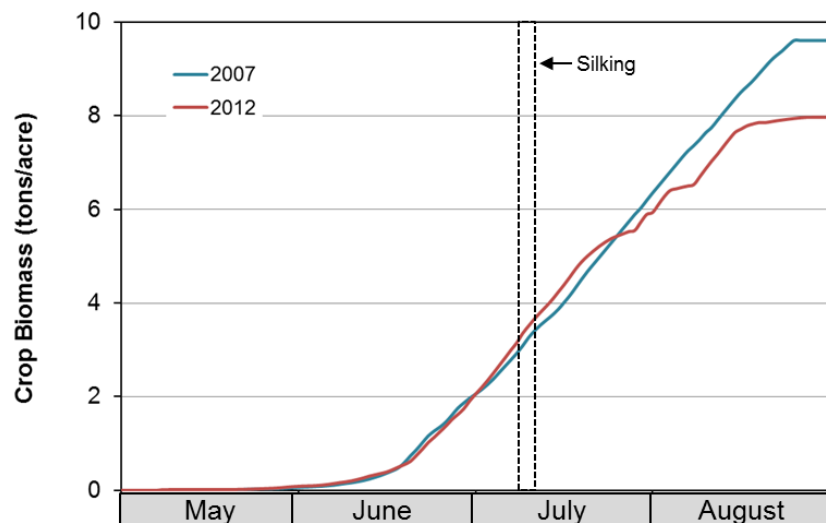


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Crop Growth and Nitrogen Uptake



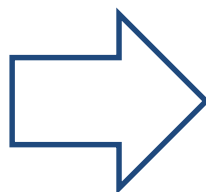
Story Co., IA (2007 & 2012); Webster Clay Loam

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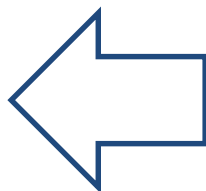


Crop Growth and Nitrogen Uptake

Field Measurements



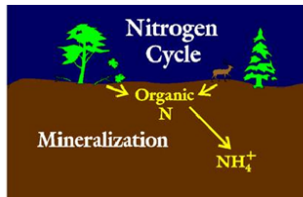
Crop Growth Model



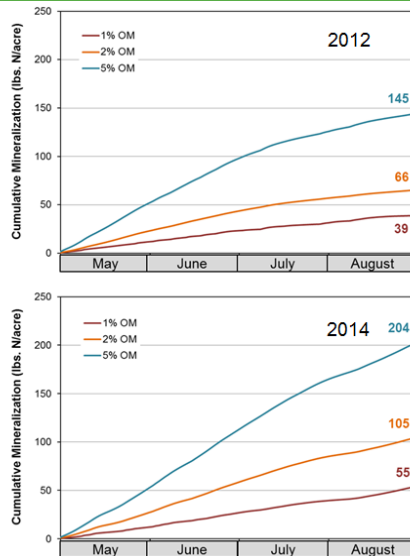
EXAMPLES	GENETIC COEFFICIENT			
CRM	1	2	3	4
CRM 101	185	0.44	51.9	790
CRM 105	181	0.43	51.7	791
CRM 108	181	0.43	51.7	790
CRM 111	196	0.49	52.4	798
CRM 115	190	0.46	52.2	797

Nitrogen Net Gain / Loss Contributions

N Mineralization



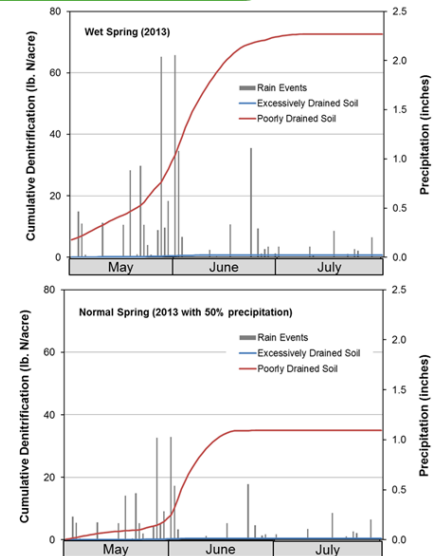
Clay Co., NE
Fine Loamy Sand (1% OM)
Silt Loam (2% and 5% OM)



Denitrification



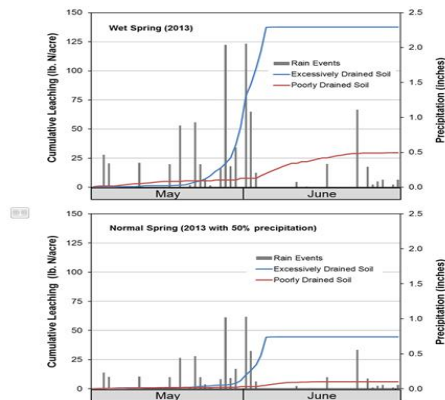
Poorly Drained Soil: (Clay)
Excessively Drained Soil: (Sand)



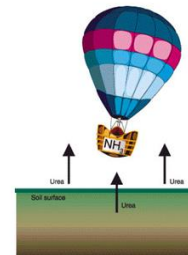
Leaching



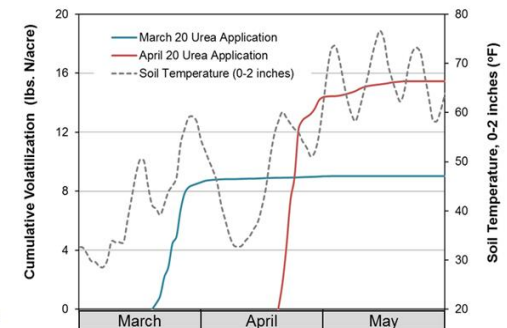
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Ammonia Volatilization



Putman Co., OH (2007); Toledo Silty Clay



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EncircaSM Yield Nitrogen Management Service Prescriptions



Alerts Reports Export

2015
shop south 79.17 acres



Estimated Current N Level: 11 lb/ac
Growth Stage: Not Planted
Precipitation since planting: N/A
Accumulated GDU: N/A

Monitoring

Your Nitrogen Bottom Line

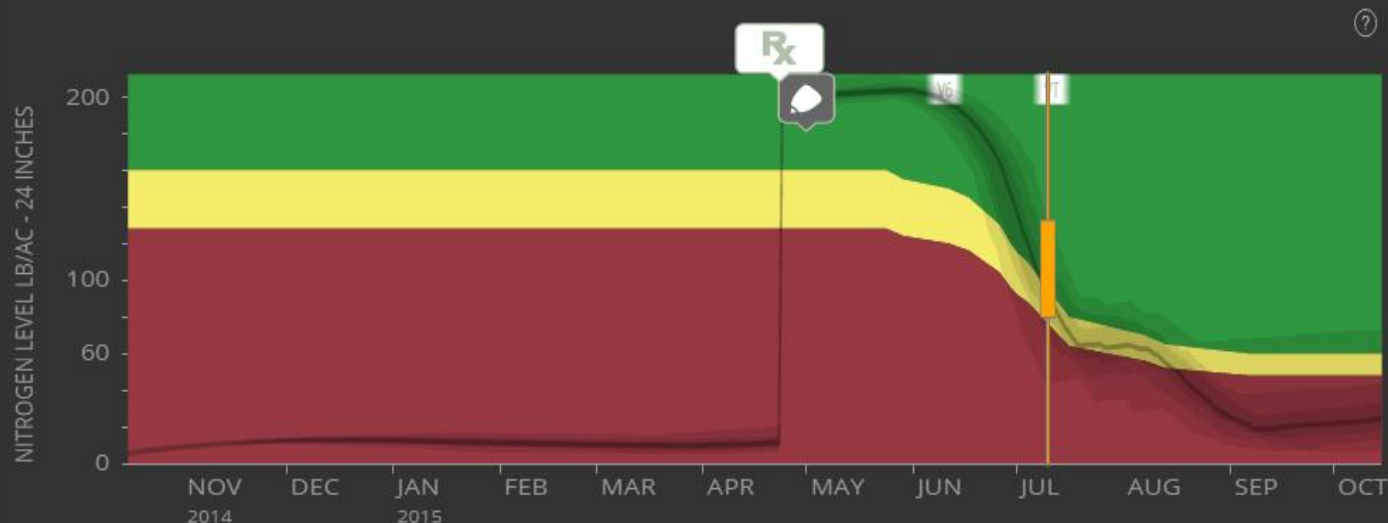
\$69.00
Nitrogen Cost Per Acre

Planning & Prescription

Primary Plan Alternate Plan

Irrigation Compare Plans

Add Application Update Chart



Nitrogen Estimate

Jul 10, 2015

Risk Estimate



56% Full
30% Moderate
14% Low

Median Estimated Nitrogen Level

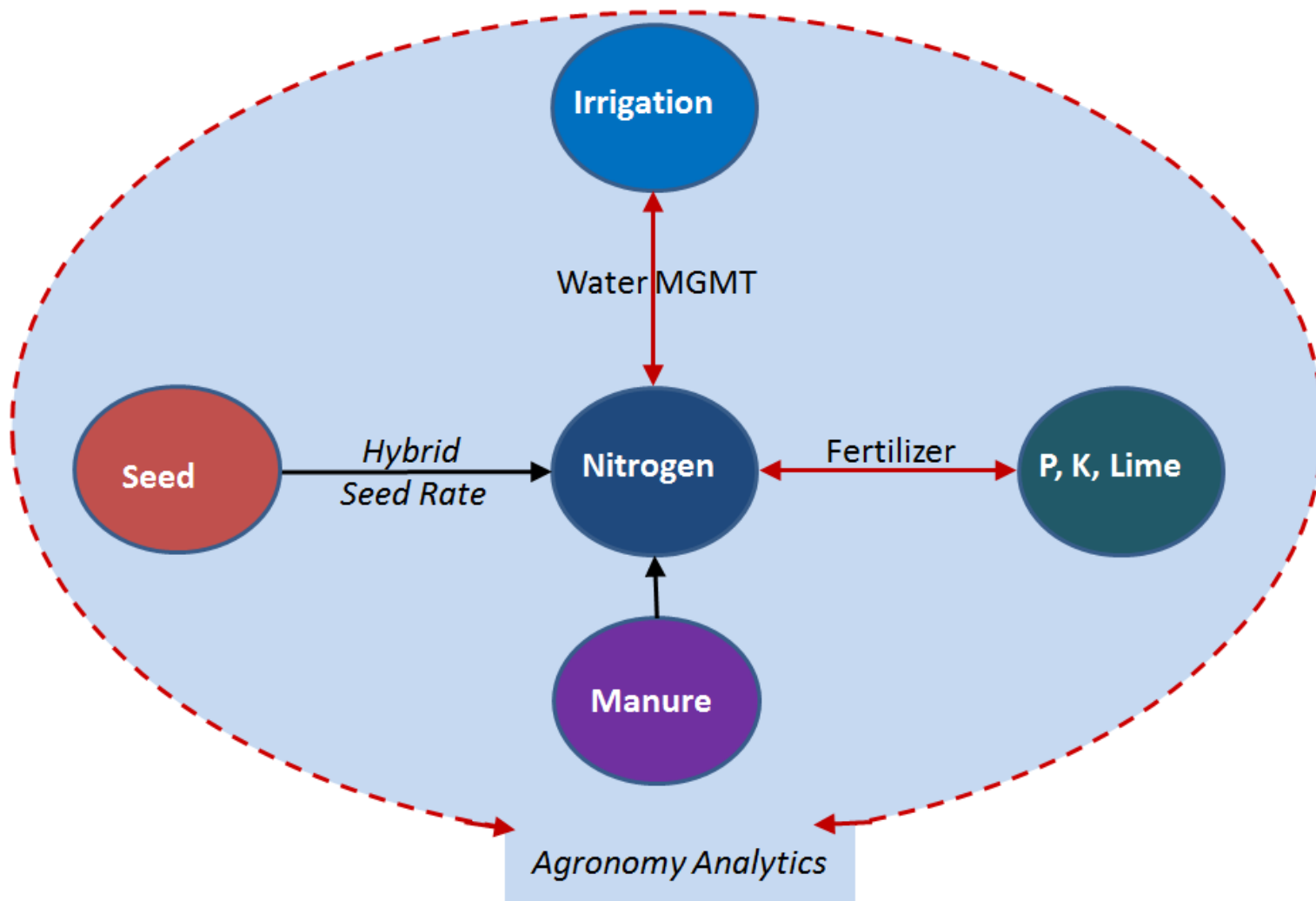
91 lb/ac

Estimated Growth Stage

V18



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