

# **2014 Crop Management Diagnostic Clinics – Precision Ag**

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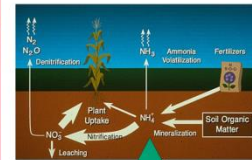
## Crop Canopy Sensors for In-Season Nitrogen Management



COLPONT  
PIONEER

2014CMDCPrecisionAg-SHANAHAN (1)

## Why is Nitrogen Management So Challenging?

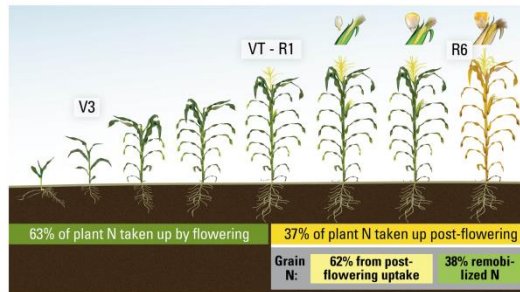


"The soil is a lousy place to store N."  
Prof. Robert Olson  
(University of Nebraska)

Courtesy of Dr. Peter Scharf, Univ. of Missouri

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## Nitrogen Uptake in Newer Corn Genetics



- Post flowering N uptake is often undervalued but increasingly important
- Newer hybrids take up **29% more N post-flowering** compared to older hybrids<sup>1</sup>

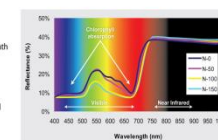
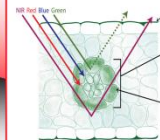
<sup>1</sup>Ciampitti and Vyn (2012)

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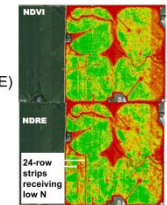
## Using Canopy Sensors to Assess Crop N status



- OptRx Reflectance Bands:
  - Red (670 nm)
  - Red Edge (720 nm)
  - Near Infrared or NIR (760 nm)
- NDVI = (NIR - Red)/(NIR + Red)
- Normalized Difference Red Edge (NDRE)
  - Substitute Red Edge for Red in equation



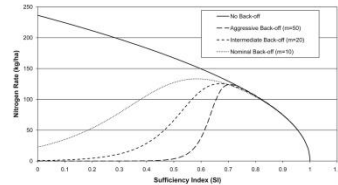
RapidEye Satellite Images  
July 12, 2013



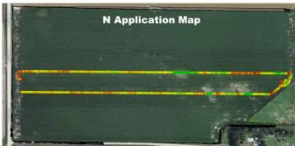
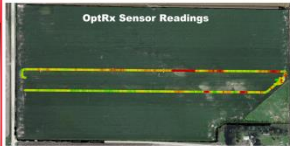
Courtesy of Dr. Peter Scharf, Univ. of Missouri

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## Converting Sensors Reading to N Recommendations



Holland And Schepers (2010) N Recommendations Algorithm



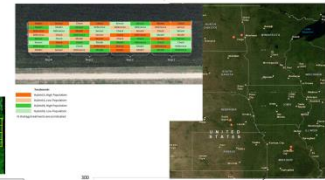
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## Research Trial Results

2011-2012 Trials  
Central Nebraska

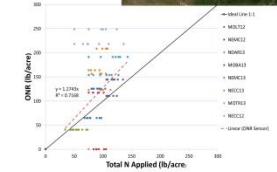
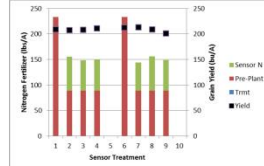


2012-2013  
Missouri, Nebraska, North Dakota



Year	Hybrid	Color
2011	P0902a (HX), LL, RR	Dark
	P1395a (HX), LL, RR	Light
2012	33D49 (HX), LL, RR	Dark
	P1498a (HX), LL, RR	Light

Current year 2012 plot 1, 4  
Color green 2012 plot 1, 4  
Color green 2012 plot 1, 4



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