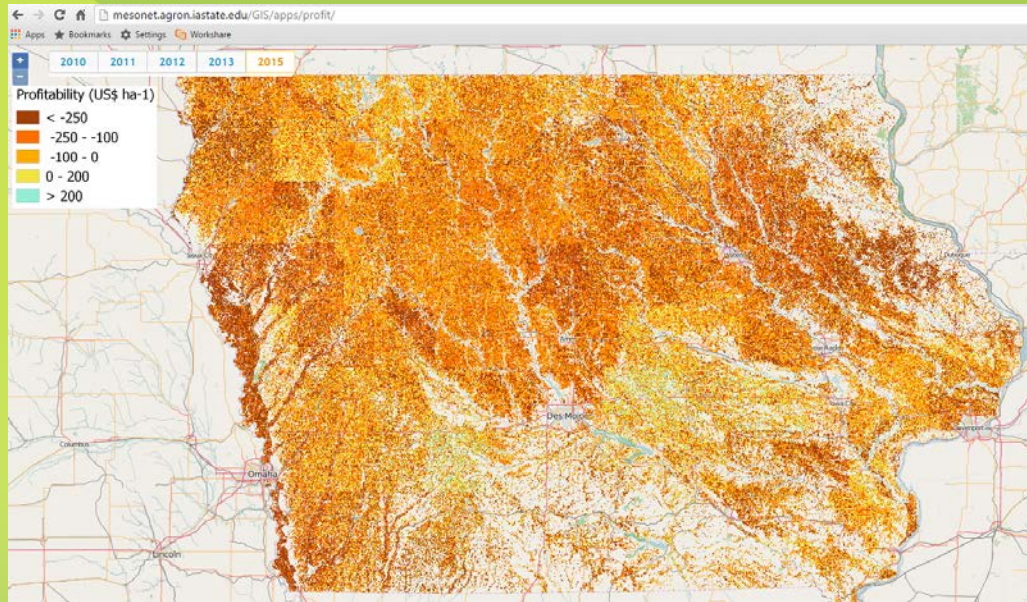


Farm Land Opportunities in 2017 and Beyond

July 20th 2017

David Muth Jr., PhD

Current Challenges



The Cash Flow Challenge

The majority of our 15+ million acres of leased row crop ground will be operated at breakeven or net loss in 2017

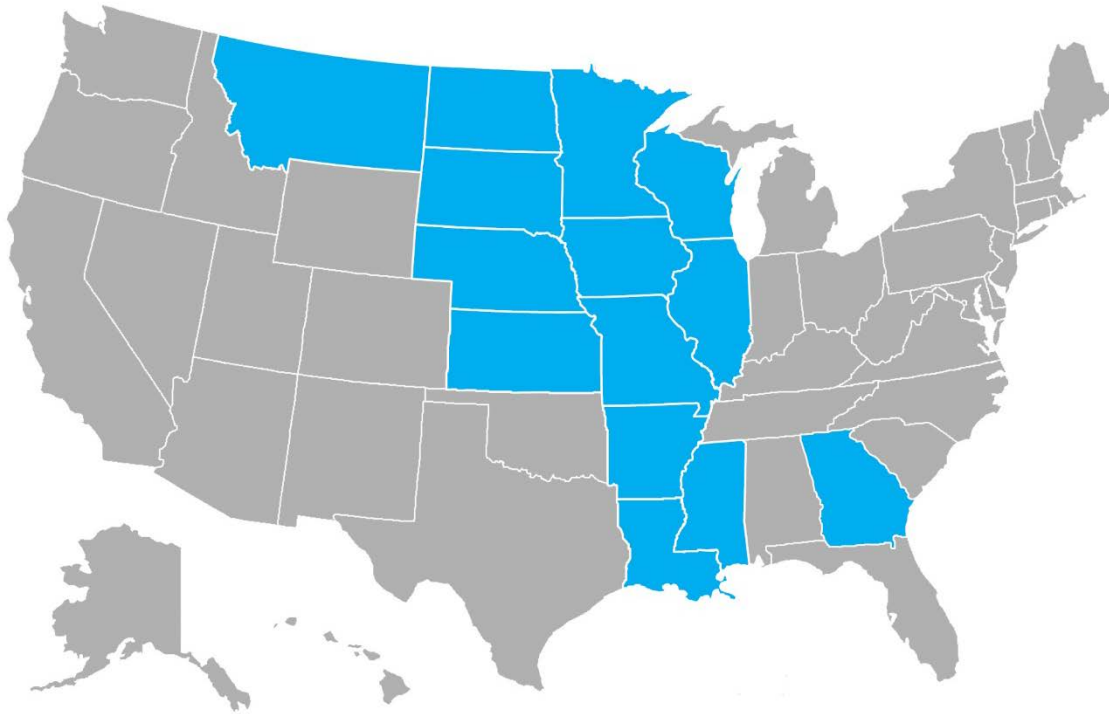
The Environmental Challenge

- Consumer Pressures
 - Regulatory Pressures
 - Nutrient Reduction Strategy
- Estimated Costs > \$4 billion



Trends and Outlook for Farmland Prices

Who We Are



- Land Brokerage
- Land Management
- Land Appraisals
- Land Investing

Trends and Outlook for Farmland Prices

Scope of Iowa Farmland

An Iowa Example:

\$220,518,100,000 – Total market cap of Iowa cropland
30.7 million acres x \$7,183 average price per acre
Iowa State University - December 2016



Trends and Outlook for Farmland Prices

What's been happening in Iowa

Quarter	Average Sale \$/CSR2
2015: Q3 &Q4	\$115
2016: Q1	\$101
2016: Q2	\$104
2016: Q3	\$108
2016: Q4	\$109
2017: Q1	\$115
2017: Q2	\$121



Trends and Outlook for Farmland Prices

Iowa State University Land Tenure

- 26% of owners are 65-74 years old
- 30% of owners are 75 and older
- 55% of all land in Iowa is rented
- In 2014 105,194 landlords rented out 16.33 million acres of farmland (cropland and pastureland) in Iowa, and account for more than half of Iowa's 30.6 million acres of agriculture
- \$117 billion of farmland rented out

(Required by legislature every 5 years. Next study in 2017 with numbers released in 2018.)



Trends and Outlook for Farmland Prices

Land Values - Corn Price

YEAR	AVG IOWA CORN PRICE CALENDAR YR	10 YR TREASURY RATE	AVG IOWA FARMLAND VALUE
2000	\$1.78	6.03	\$1,857
2001	\$1.81	5.02	\$1,926
2002	\$2.05	4.61	\$2,083
2003	\$2.18	4.01	\$2,275
2004	\$2.41	4.27	\$2,629
2005	\$1.90	4.29	\$2,914
2006	\$2.22	4.80	\$3,204
2007	\$3.37	4.63	\$3,908

2008	\$4.78	3.66	\$4,468
2009	\$3.81	3.26	\$4,371
2010	\$3.86	3.22	\$5,064
2011	\$5.96	2.78	\$6,708
2012	\$6.67	1.80	\$8,296
2013	\$6.22	2.35	\$8,716
2014	\$4.13	2.54	\$7,943
2015	\$3.67	2.11	\$7,633
2016	\$3.41	2.40	\$7,183

Trends and Outlook for Farmland Prices

Land Values - Corn-Cap Rate Matrix

180 Bushel Per Acre Corn Yield		CORN PRICE (DOLLARS PER BUSHEL)				
33.33% Landlord Share		\$3.00	\$4.00	\$5.00	\$6.00	\$7.00
CAPITALIZATION RATE	2%	\$9,000	\$12,000	\$15,000	\$18,000	\$21,000
	3%	\$6,000	\$8,000	\$10,000	\$12,000	\$14,000
	4%	\$4,500	\$6,000	\$7,500	\$9,000	\$10,500
	5%	\$3,600	\$4,800	\$6,000	\$7,200	\$8,400
	6%	\$3,000	\$4,000	\$5,000	\$6,000	\$7,000
	7%	\$2,570	\$3,430	\$4,285	\$5,140	\$6,000

Trends and Outlook for Farmland Prices

Land Values - Interest Rate Impact

\$10,000	Per Acre Price
4.50%	10 Year Loan Rate (10 Yr Treasury 2.25%)
20	Loan Term - Years
60%	Loan-to-Value
\$461	Principal + Interest Per Acre

		TO KEEP \$461 PER ACRE PAYMENT	
		Land Value Per Acre	Change in Land Value
LOAN RATE	4.50%	\$10,000	
	5.50%	\$9,175	-8.25%
	6.50%	\$8,450	-15.50%
	7.50%	\$7,825	-21.75%

Trends and Outlook for Farmland Prices

Land Values - Total Impact

	SCENARIO 1	SCENARIO 2	CHANGE
Corn Price/Bushel	\$5.00	\$4.00	\$(1.00)
Corn Yield/Acre	180	180	
Total Income/Acre	\$900	\$720	
Landowner Share	33.33%	33.33%	
Landowner Rent/ Acre	\$300	\$240	
Cap Rate	3.00%	4.50%	1.50%
Land Value/Acre	\$10,000	\$5,333	
Loan Rate (10 year)	4.50%	5.50%	1.00%
Land Value/Acre		\$4,900	

Trends and Outlook for Farmland Prices

Keeping a Pulse on the Market

RESEARCH

We track more than 213 websites throughout Iowa on weekly basis.

CURRENTLY

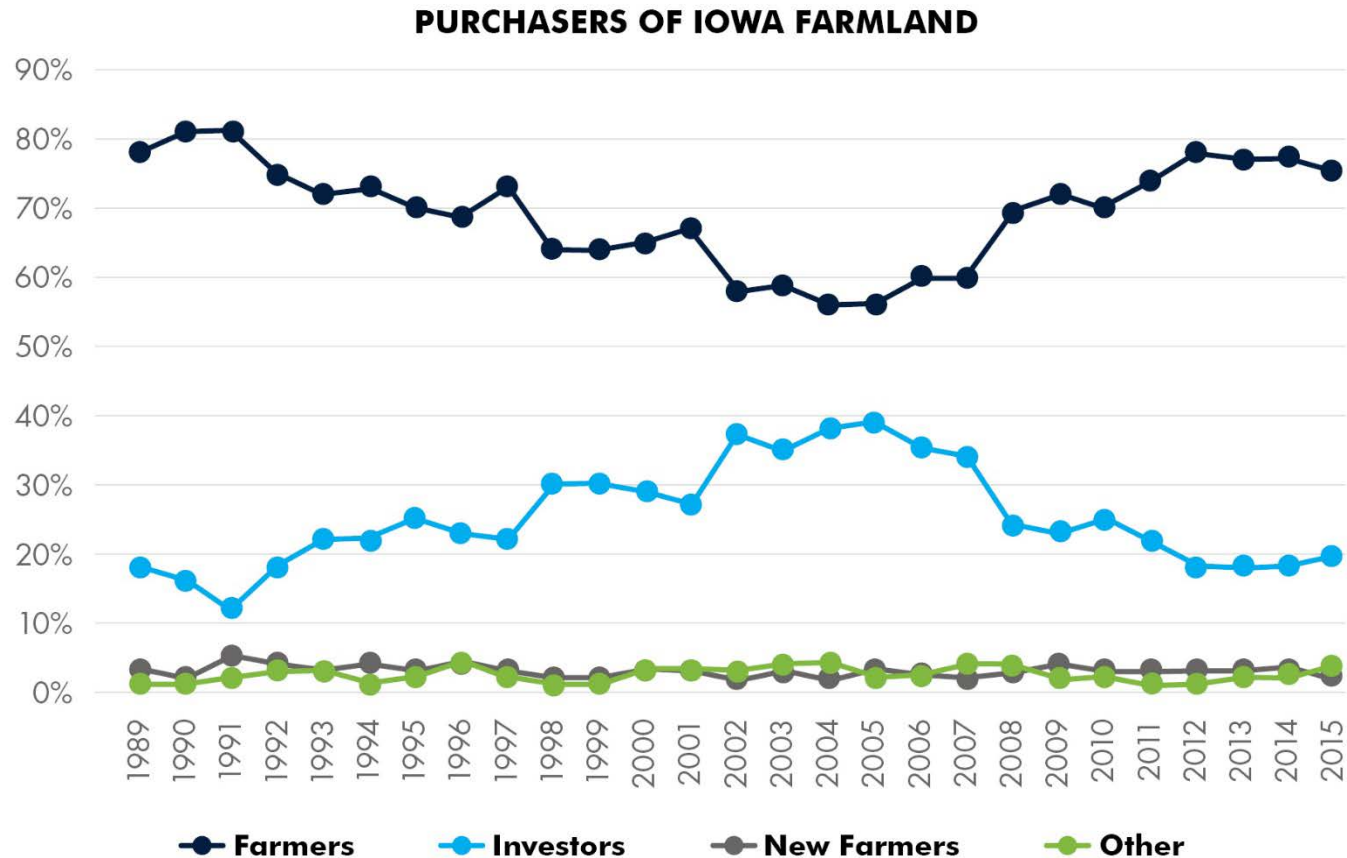
- 419 land listings and/or auctions
- 98 are 85% tillable or greater
 - Less than 1 farm per county
- 130 tracts auctioned in 2017
 - 83 were 85%+ tillable
 - Average price per CSR2 point was \$118

The image displays four overlapping reports from Peoples Company, illustrating the data tracked for farmland prices in Iowa. The reports include:

- AUGUST**: A table showing land listings and auction results for the month of August.
- STATEWIDE STATUS REPORT**: A table providing a comprehensive overview of land listings and auction results across the state.
- ACTIVE LISTINGS: 85%+**: A table highlighting land listings that are 85% or more tillable.
- UPCOMING AUCTIONS**: A table listing upcoming auctions, including details such as the date, time, location, and the name of the auctioneer.

Trends and Outlook for Farmland Prices

Land Values - Purchasers



Trends and Outlook for Farmland Prices

Who's Responsible

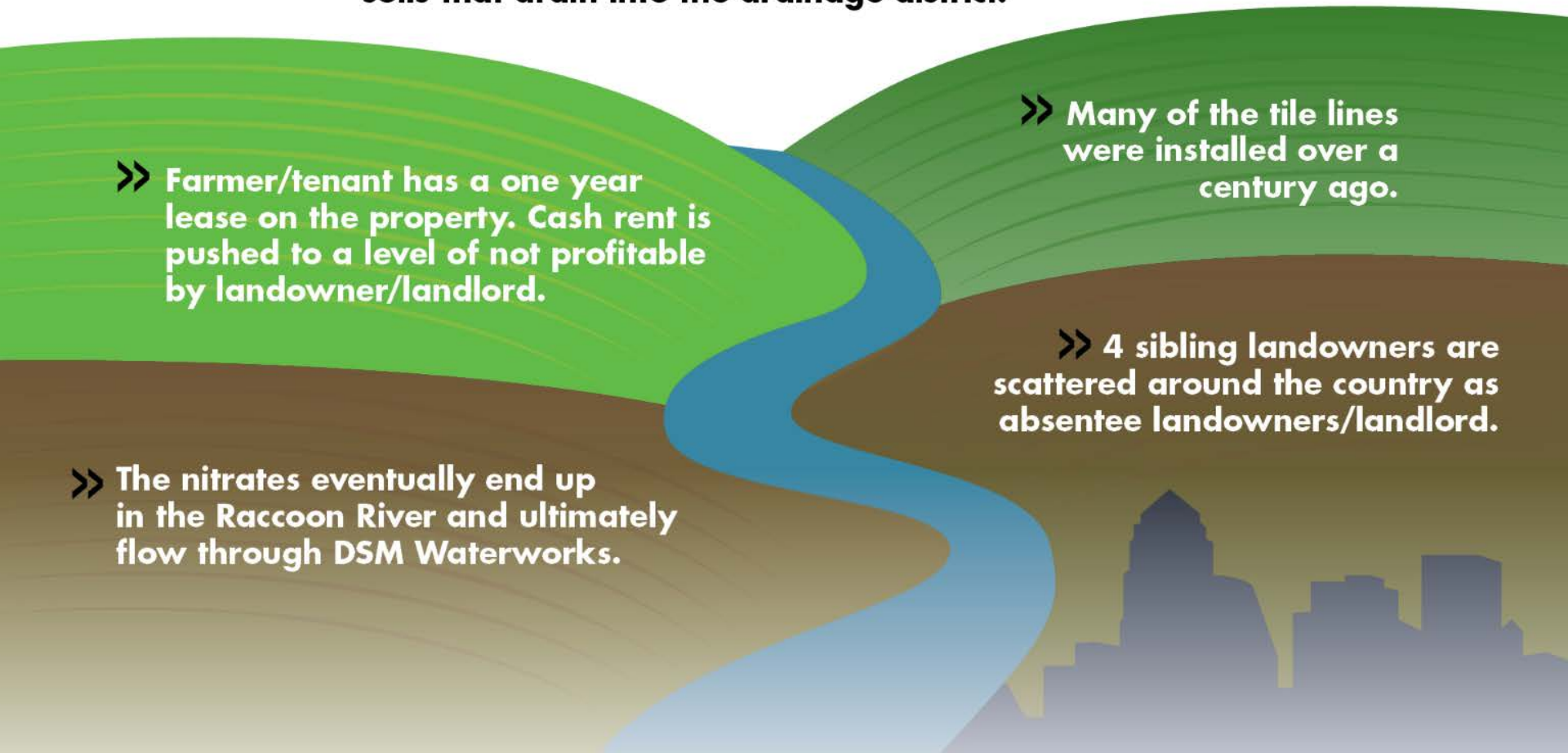
» Each 160 acre farm has 10,000 pounds of naturally occurring nitrogen in the soils that drain into the drainage district.

» Farmer/tenant has a one year lease on the property. Cash rent is pushed to a level of not profitable by landowner/landlord.

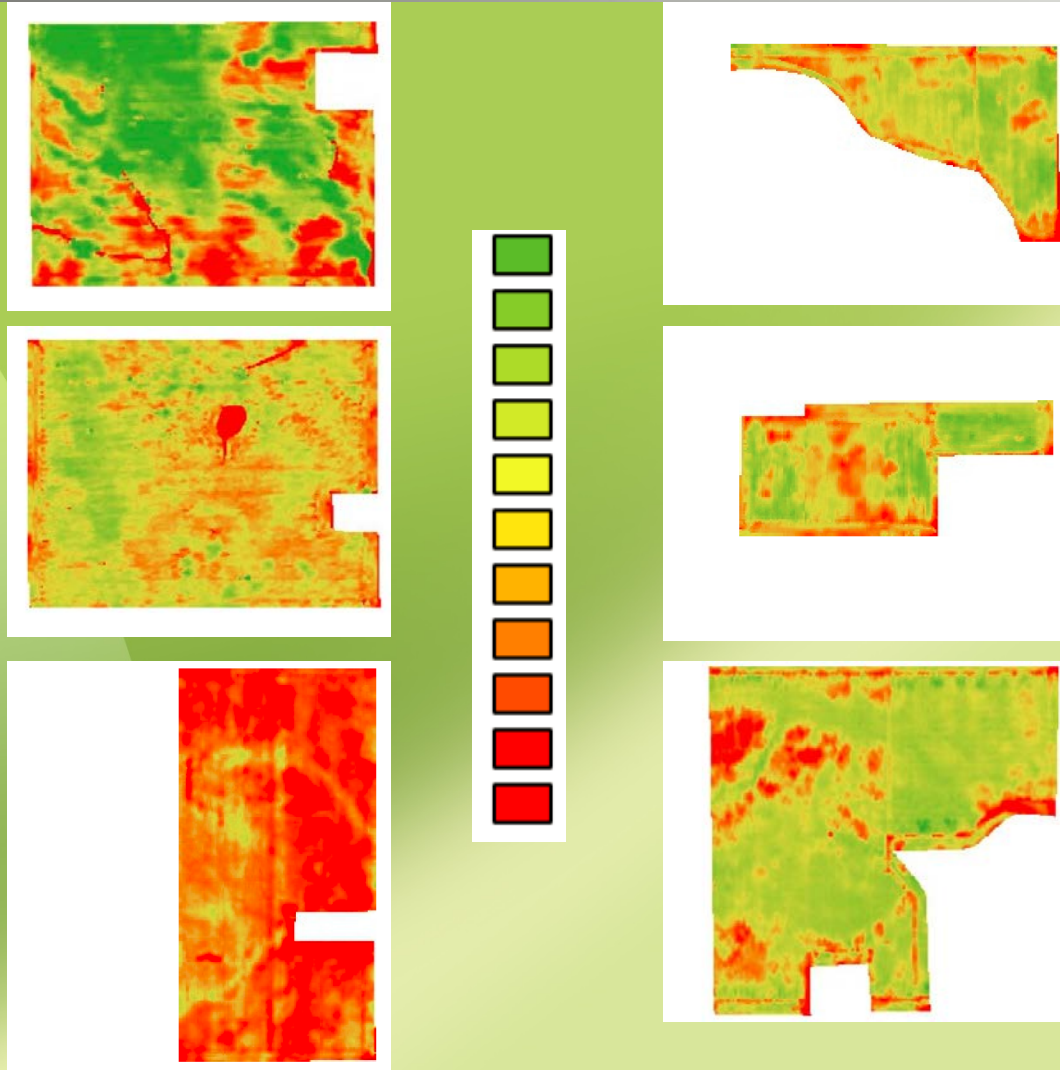
» Many of the tile lines were installed over a century ago.

» The nitrates eventually end up in the Raccoon River and ultimately flow through DSM Waterworks.

» 4 sibling landowners are scattered around the country as absentee landowners/landlord.



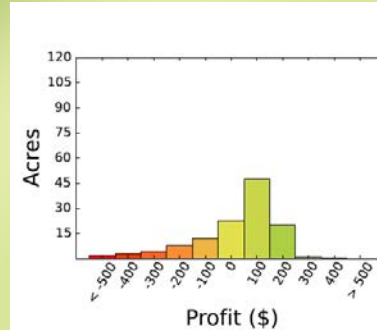
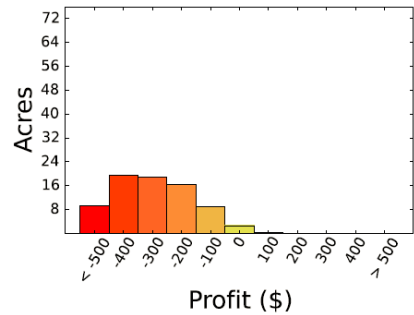
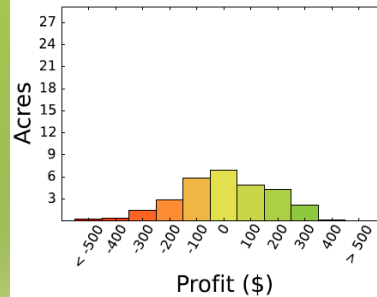
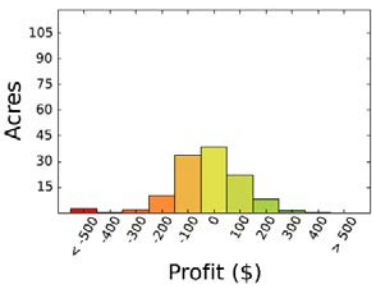
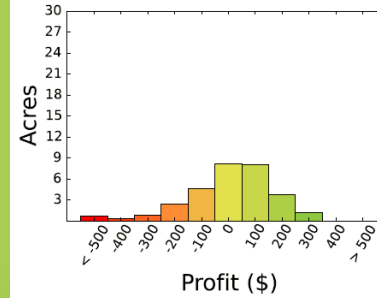
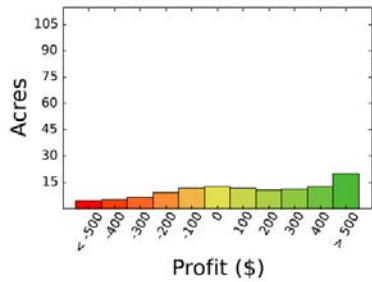
Subfield Variability



Understanding Subfield Profit and ROI



Profit (\$/ac)



Key Message

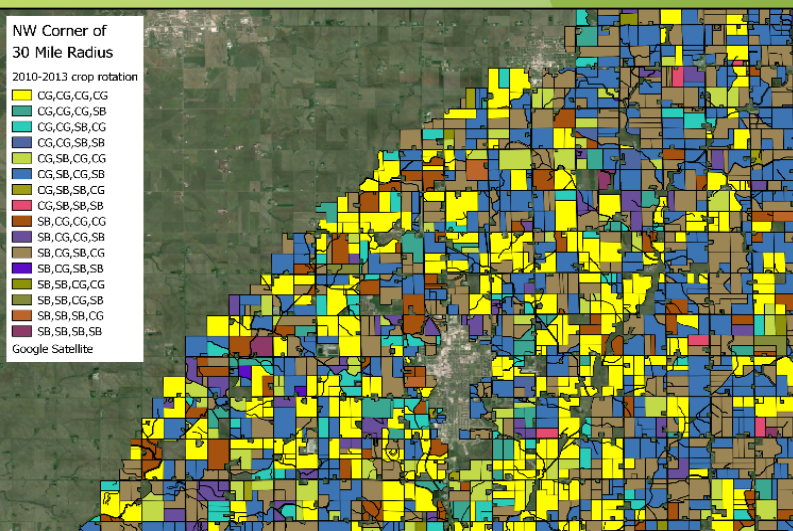
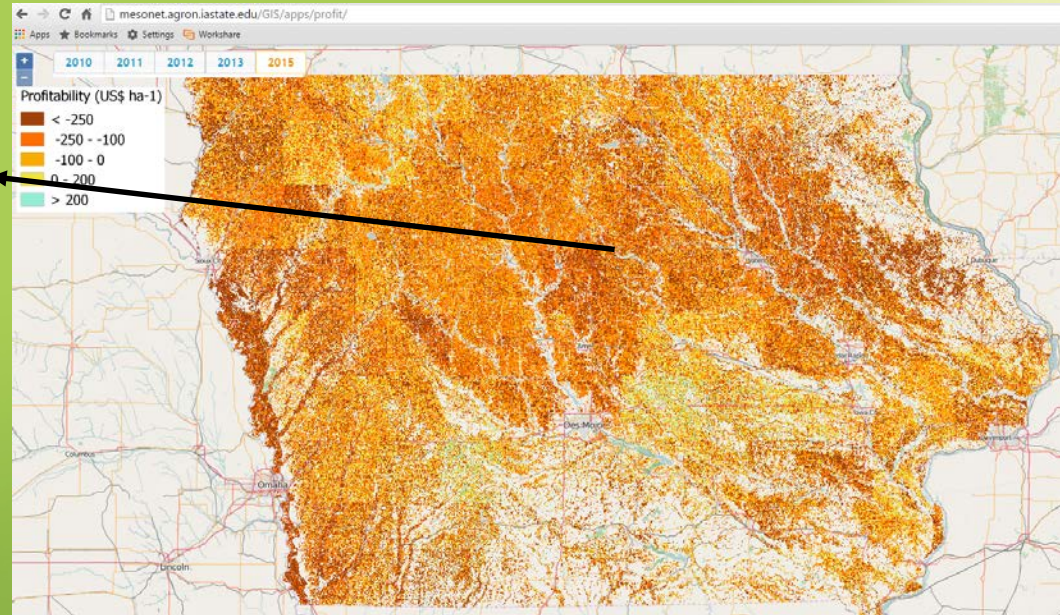
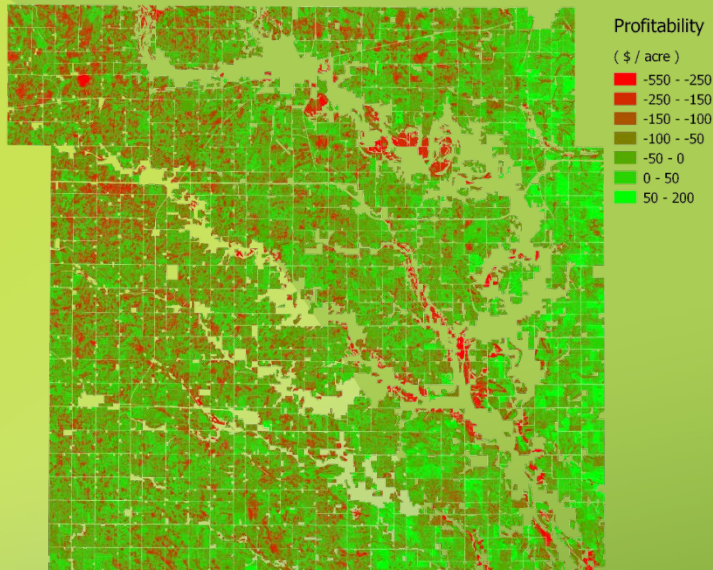


Environmental Performance and Economic Performance are driven by the same goal:

Maximize the output per unit of input



Identifying the Opportunities



- Between 2-3 million acres annually at an expected loss
- Over \$1B annually in misallocated working capital

Recent Multi-state Program

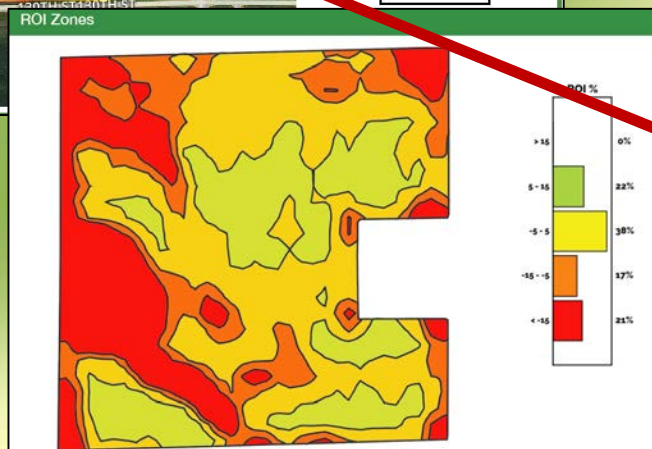
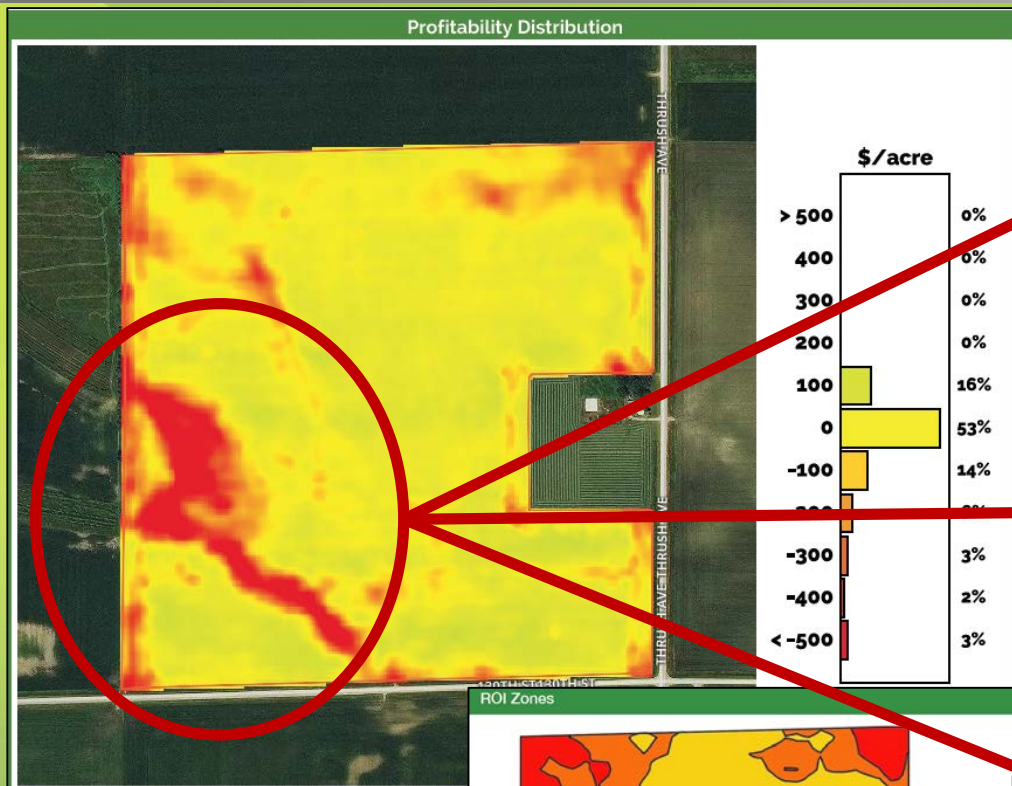
What is the economic story?



Parameter	Total
number of fields	3,796
total acres	207,937
total acre-years analyzed	641,998
average years of data per field	3.1
average acres per field	54.8
total profit	\$ 5,703,472
per field total profit (all years)	\$ 1,502
average per acre profit (all years)	\$ 27.43
average max annual per acre profit	\$ 128.23
average min annual per acre profit	\$ (147.78)
total revenue	\$ 405,192,182
total expenses	\$ 399,488,710
total annualized ROI	0.46%



Technical Review – ROI Zones and Resource Concerns



90.4% of fields in the project had multi-year zones with economic losses

51.8% of the acres analyzed are in a multi-year zone with negative ROI

53.2% of the negative return zones have potential resource concerns

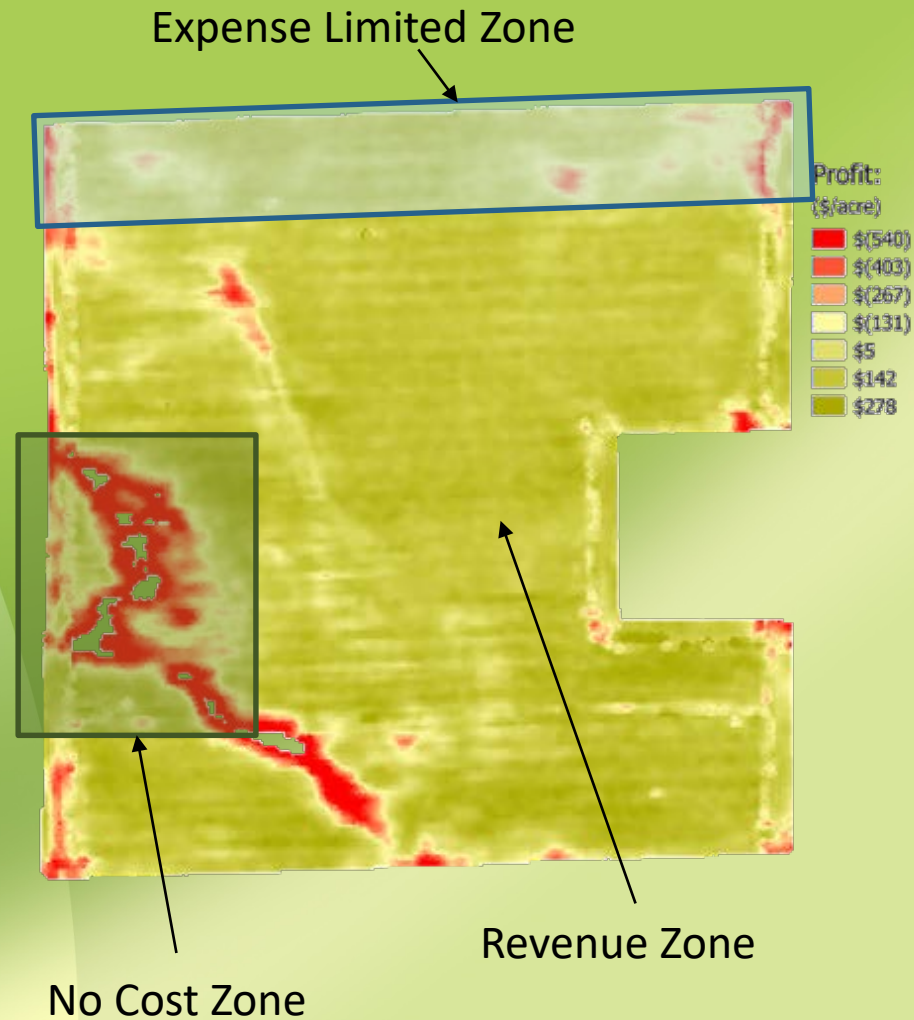
National Scale Dataset – Economic and Resource Concerns



ROI Zone	Total Erosion (tons/ac/yr)	SOC Change (lbs/ac/yr)	SCI	NO ₃ Leaching (lbs N/ac/yr)	GHG Flux (tons CO ₂ e/ac/yr)
< -15%	9.6	-158.8	-0.69	46.1	0.50
-5% to -15%	8.2	-115.2	-0.57	42.1	0.44
5% to -5%	5.9	-109.6	-0.41	43.3	0.42
15% to 5%	4.2	-85.0	-0.39	40.2	0.42
> 15%	5.4	-35.8	-0.33	34.9	0.34

- Average for each of the environmental metrics across each category of ROI Zone

ROI Focused Agronomic Management



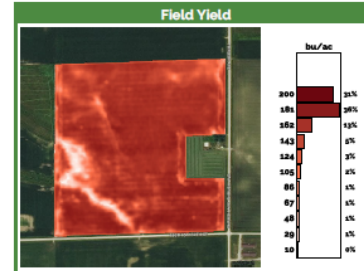
The Business Case for Conservation and Sustainability



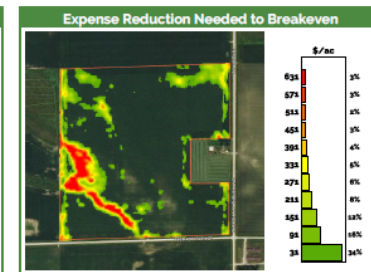
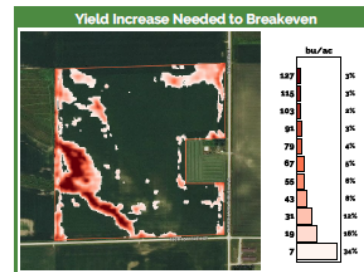
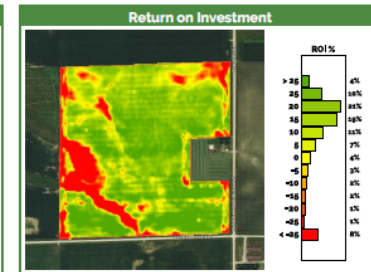
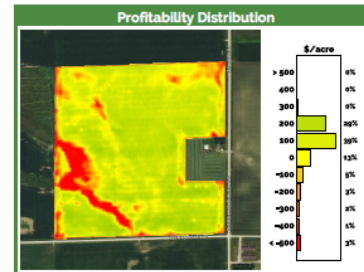
- Improving annual cash flow
- Utilizing alternative and diversified revenue
- Improving asset value
- Building new and more valuable commodity market access



Field Report Card



Parameter	Value
Field Acreage	143.3 ac
Average Yield	170.5 bu/ac
ROI	6.4 %
Production Efficiency	212.8 bu/\$1,000
Acreage Opportunity Ratio	22 %
Working Capital Opportunity	\$25,635.23
Total Expenses	\$114,800.50
Total Revenue	\$122,137.83
Total Profit	\$7,337.33
Profit	\$51.20/ac



Prepared by AgSolver, Inc.



2016-12-15

Annual Cash Flow and Asset Value



CSR2 whole field: 76.93

CSR2 low ROI area: 46.41

New managed CSR2: 80.26

Net impact at \$110/CSR2 point: \$366/ac

Net impact of \$45/ac profit at 3.5% cap rate: \$1286/ac

Commonly find 3%+ additional return...

Scenario: Actual Production

Scenario: Conservation-Final

Parameter	Value
Field Acreage	143.3 ac
Average Yield	170.2 bu/ac
Profit	\$49.63/acre
ROI	6.2 %
Production Efficiency	212.4 bu/\$1000
Acreage Opportunity Ratio	23 %
Working Capital Opportunity	\$25,973.83
Total Field Expenses	\$114,800.50
Total Field Revenue	\$121,912.06
Total Field Profit	\$7,111.56

Parameter	Value
Field Acreage	143.3 ac
Average Yield	179.2 bu/ac
Profit	\$93.85/acre
ROI	12.6 %
Production Efficiency	239.7 bu/\$1000
Acreage Opportunity Ratio	22 %
Working Capital Opportunity	\$19,494.23
Total Field Expenses	\$107,085.95
Total Field Revenue	\$120,534.99
Total Field Profit	\$13,449.04

Adding Context to Environmental Performance Impacts

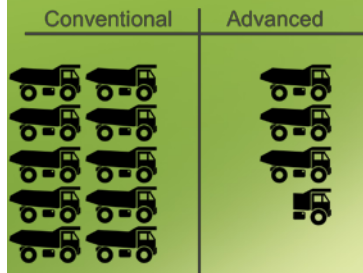


Scenario: Conservation-Final

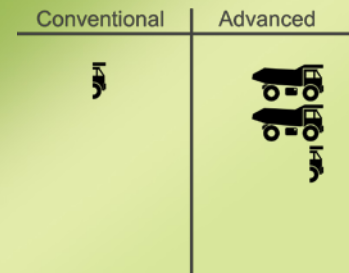
Parameter	Value
Field Acreage	143.3 ac
Average Yield	179.2 bu/ac
Profit	\$93.85/acre
ROI	12.6 %
Production Efficiency	239.7 bu/\$1000
Acreage Opportunity Ratio	22 %
Working Capital Opportunity	\$19,494.23
Total Field Expenses	\$107,085.95
Total Field Revenue	\$120,534.99
Total Field Profit	\$13,449.04

	Conventional Management	Advanced Management
Annual Soil Loss (tons of soil)	204	69
Annual Soil Carbon Change (lbs C)	8,137	44,341
Annual Nitrate Loss (lbs NO3)	7,779	3,442
Annual CO2 Loss (lbs CO2)	751,311	717,169

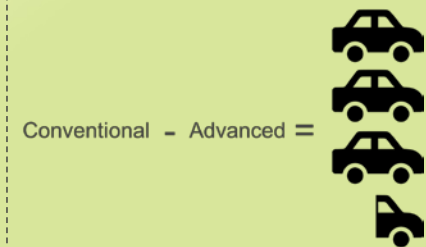
Soil Erosion



Soil Carbon



CO₂ Gas Flux



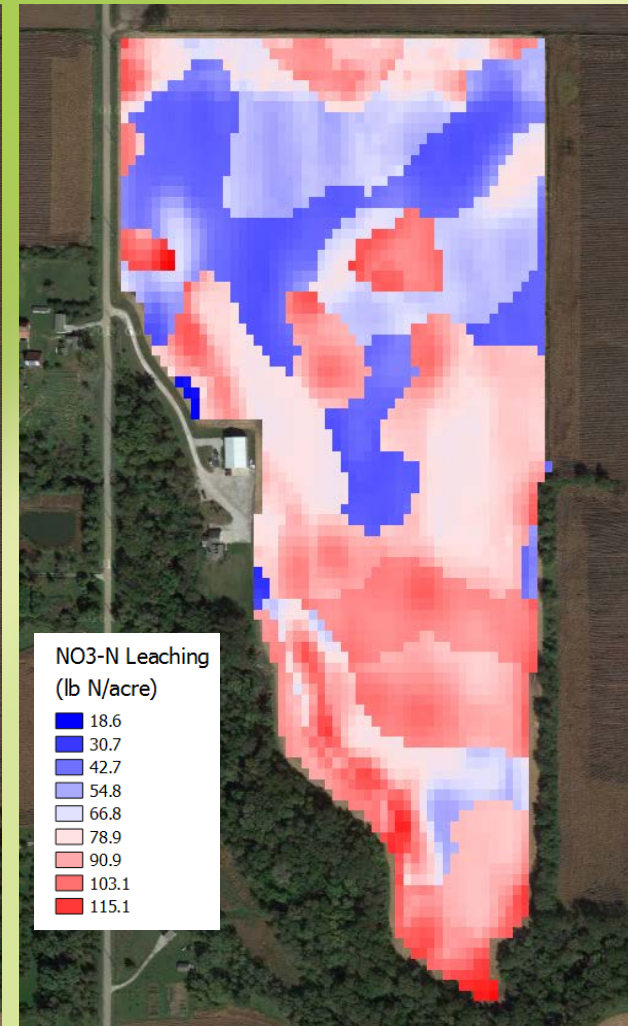
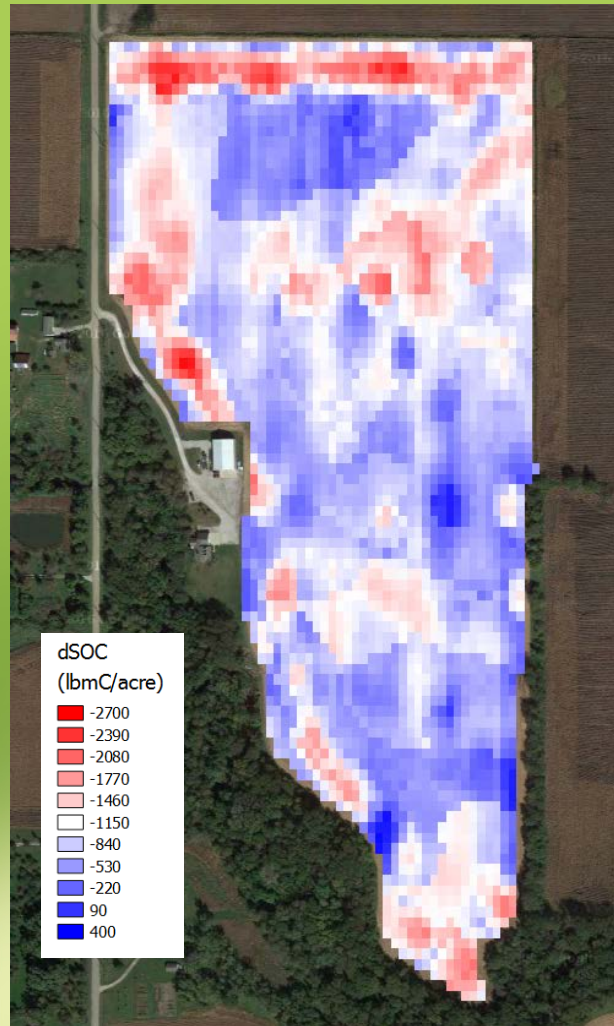
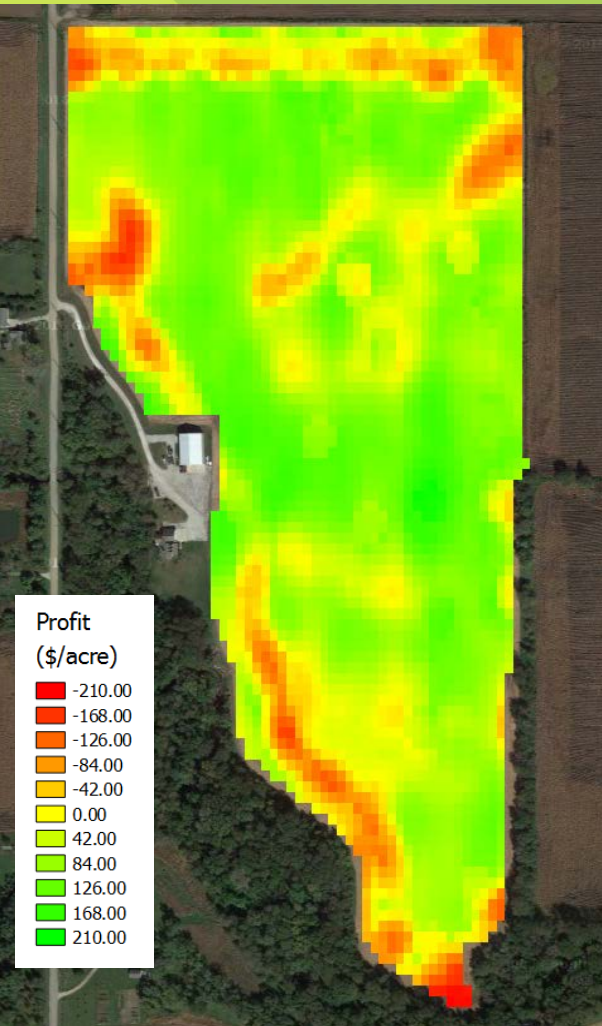
Environmental and Business Performance Analysis



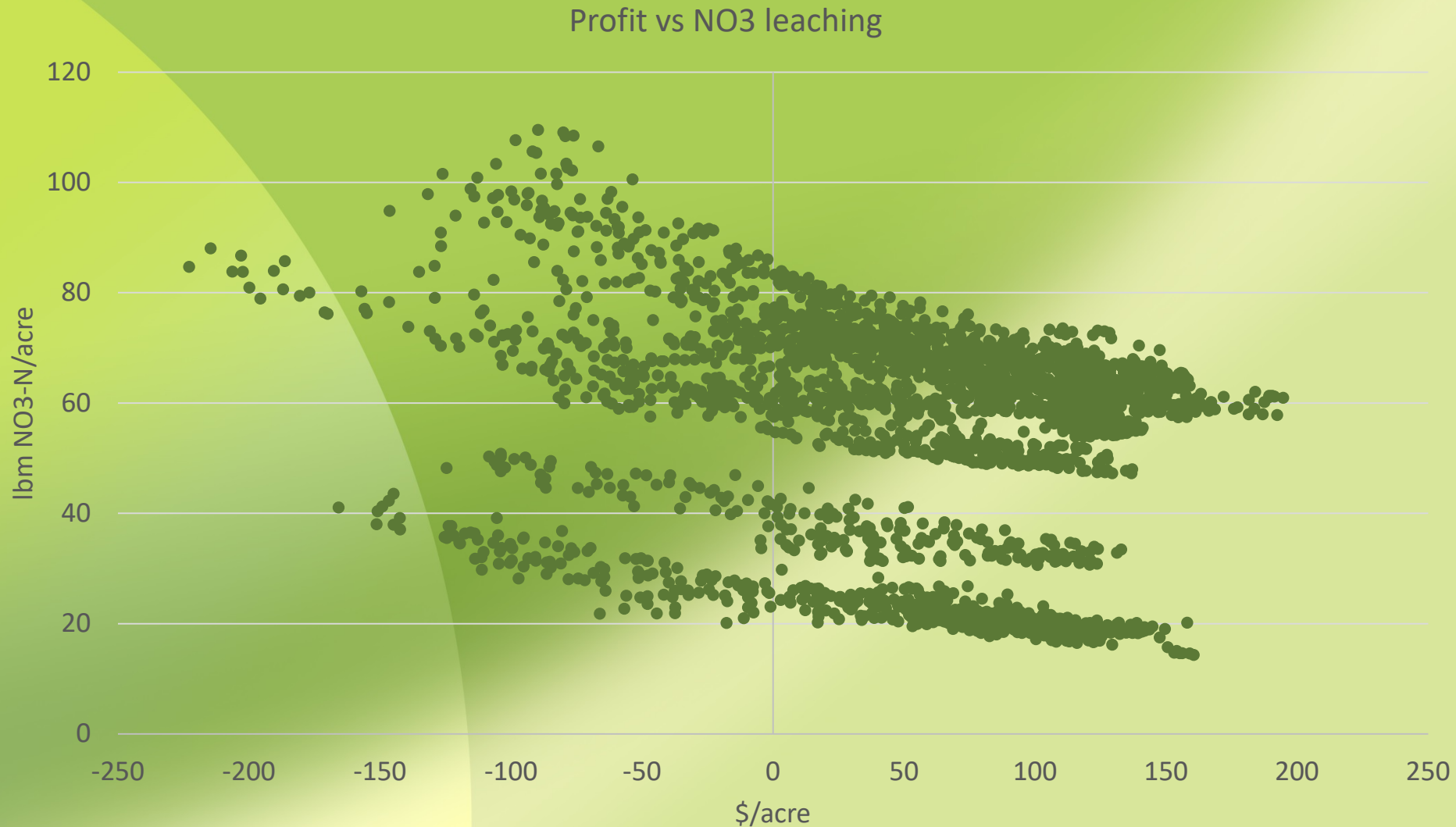
Subfield Profit

SOC change

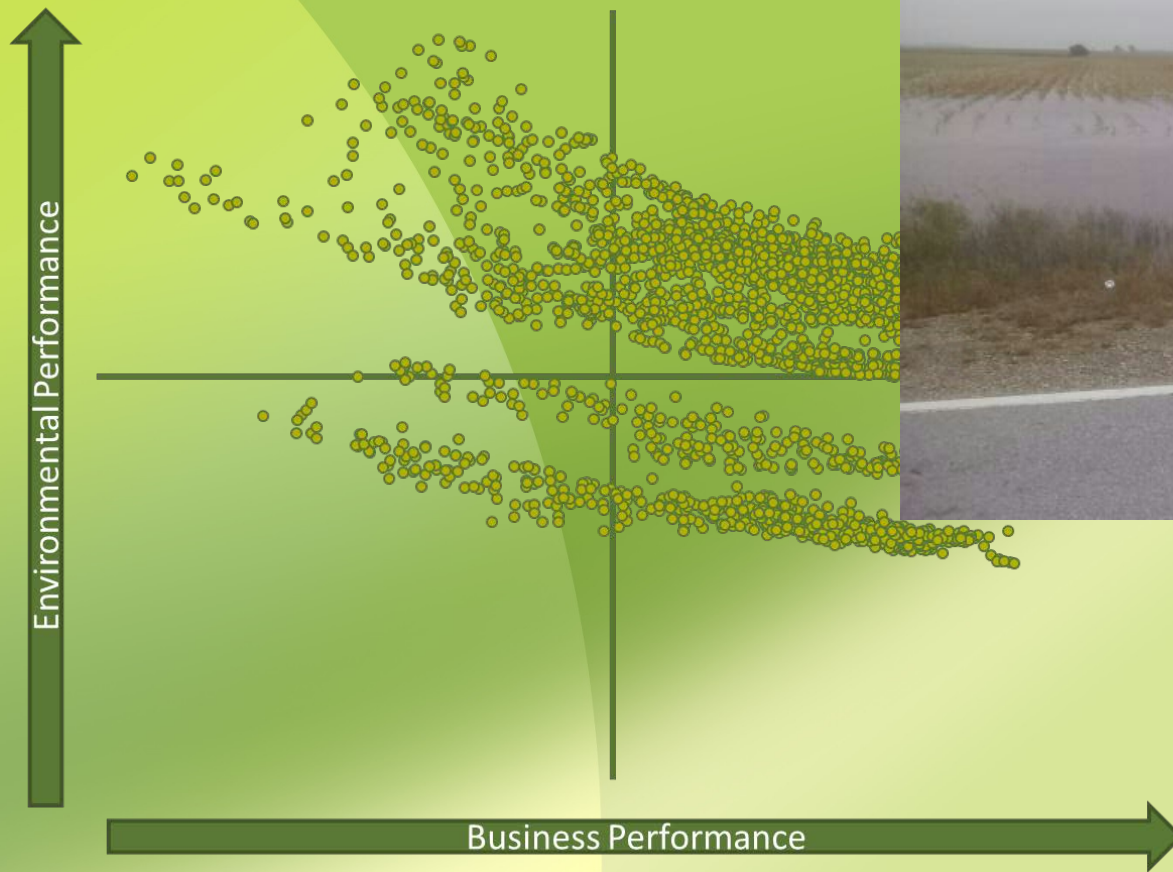
NO₃ leaching (lb N/acre)



How Does Soil Health Focused Management Pay?



Quantifying the Business Case for Soil Health Focused Management



Questions?