



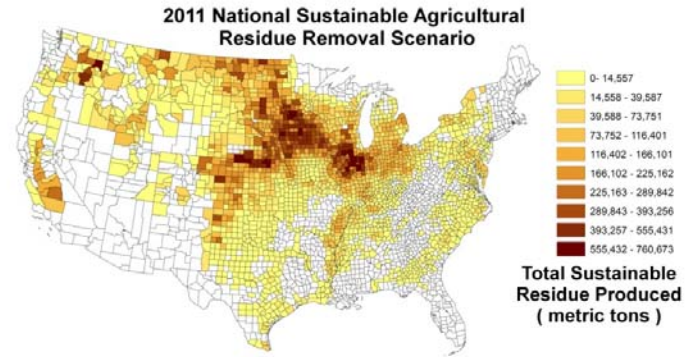
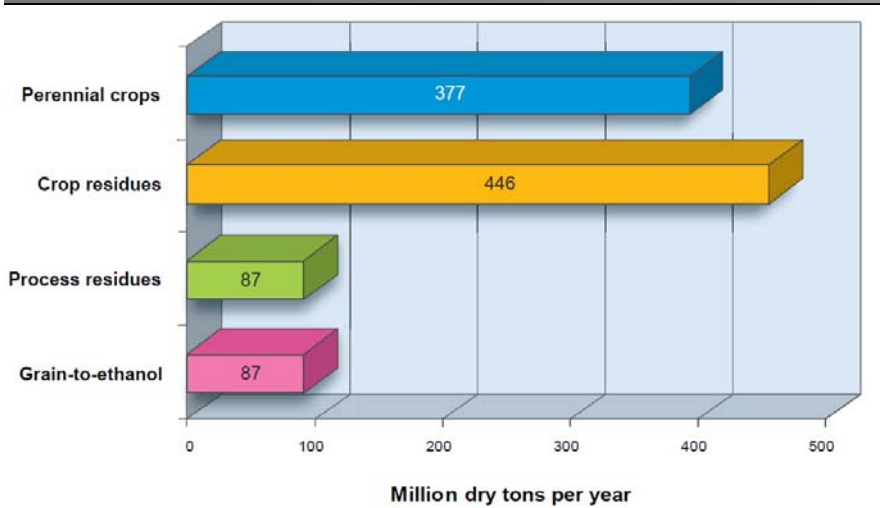
Integrated Agricultural Landscapes through Precision Business Planning

ERS – Economics of Soil Health
Sept 22nd, 2015

David Muth Jr., PhD
AgSolver, Inc

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History



Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply

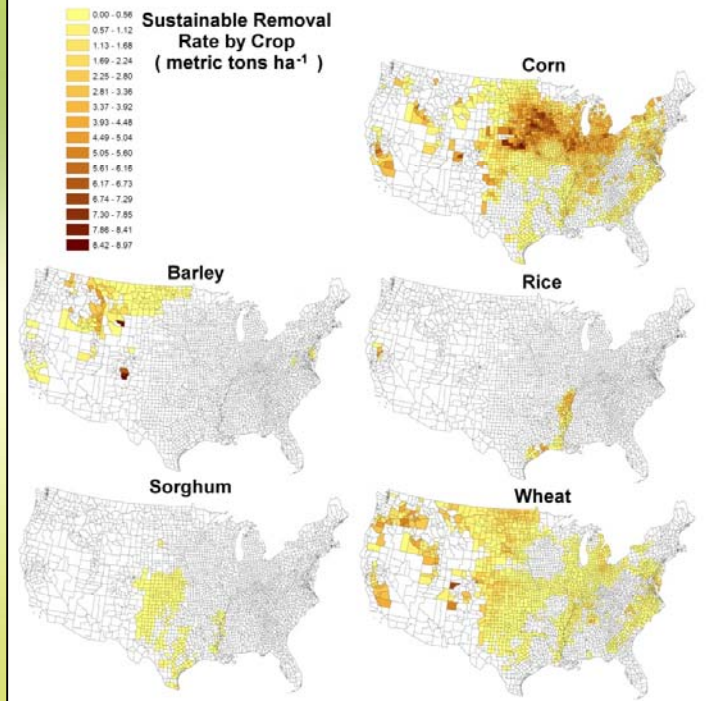
April 2005

U.S. Department of Energy
U.S. Department of Agriculture

Feedstocks

- OSP
- Energycane
- Core Residue
- Miscanthus
- Sorghum
- Wheat
- Cereal Residues
- Sweetgrass
- Poplar

U.S. DEPARTMENT OF ENERGY
SunGrant INITIATIVE
USDA Agricultural Research Service
MONSANTO

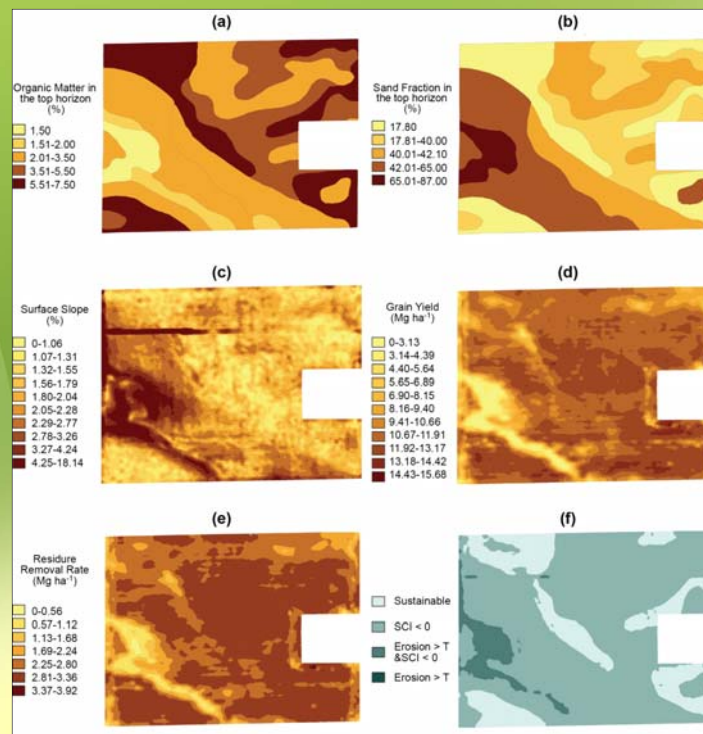


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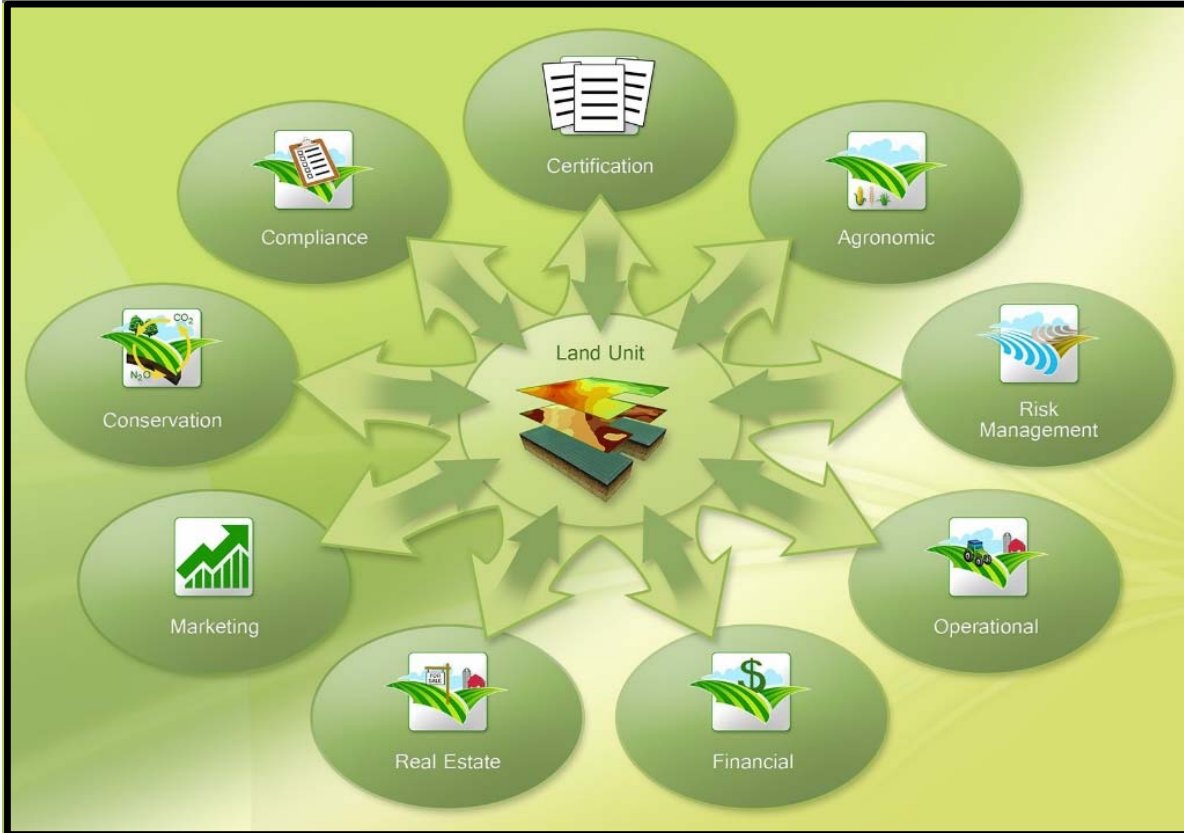
History: Agronomic Strategies



Rake and Bale Removal	No Cover Crop			Rye Cover Crop		
	Total Annual Sustainable Residue (short tons)	Percentage of Field Managed Sustainably	Annual Soil Loss (short tons)	Total Annual Sustainable Residue (short tons)	Percentage of Field Managed Sustainably	Annual Soil Loss (short tons)
Red. Tillage	39	21%	336	297	83%	194



Emerging Ag Information Services



Components



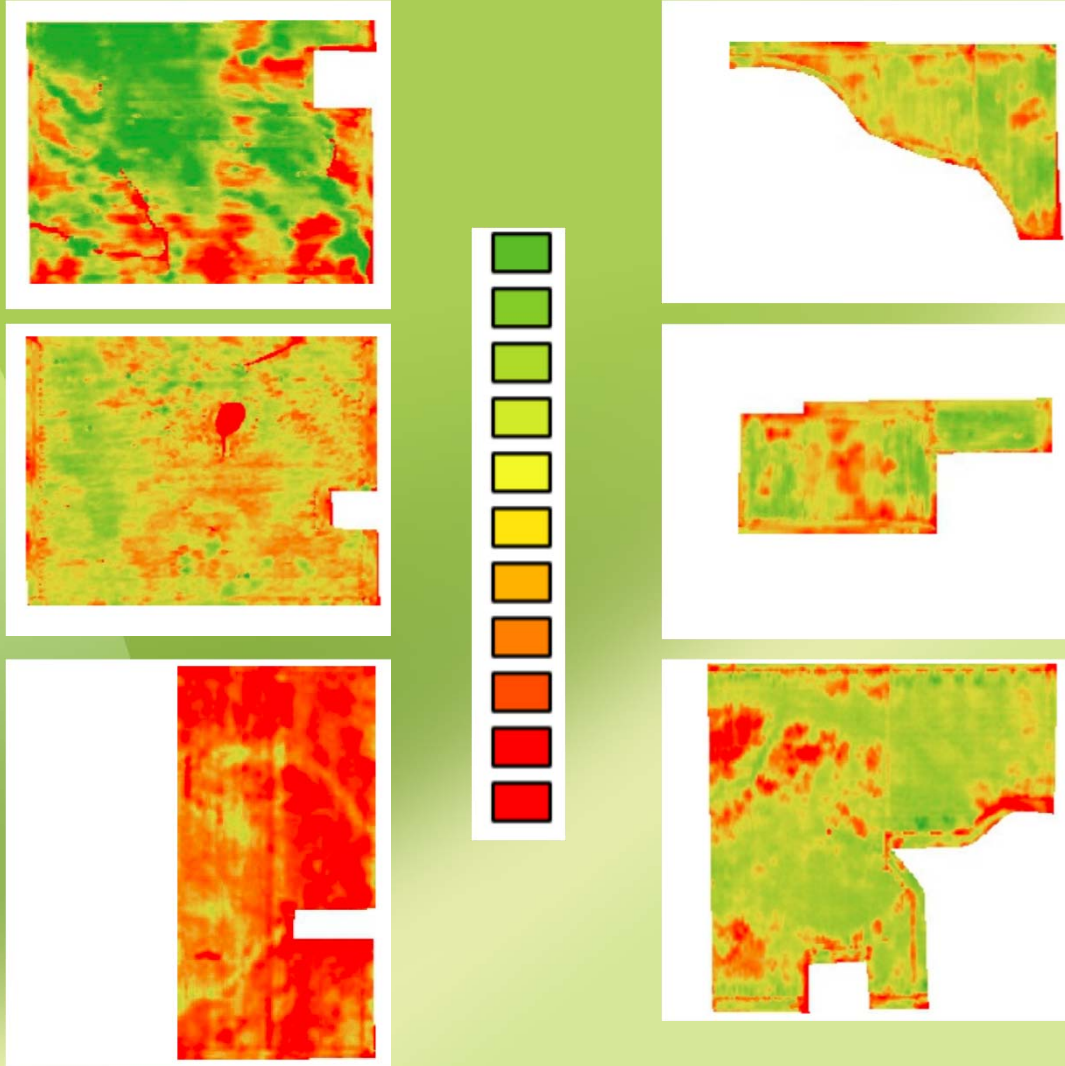
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Profit Zone Concept

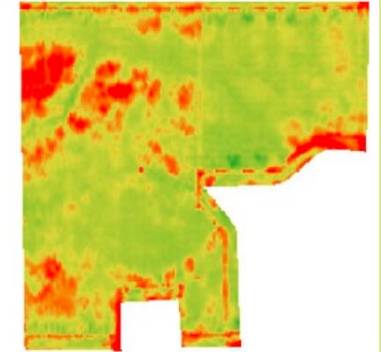
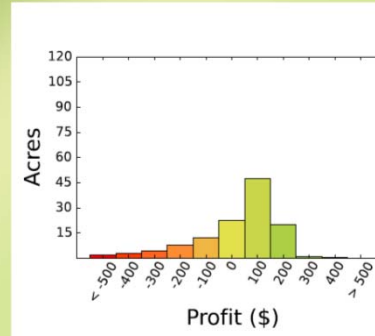
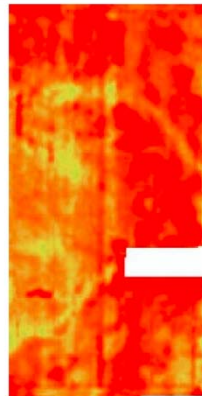
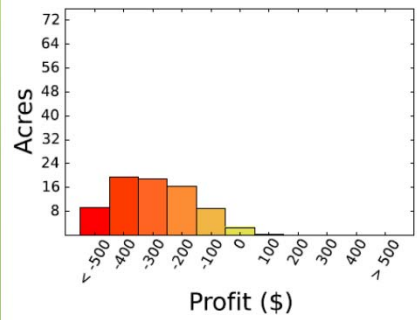
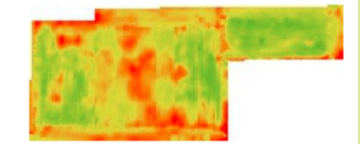
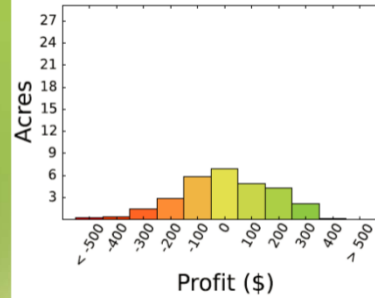
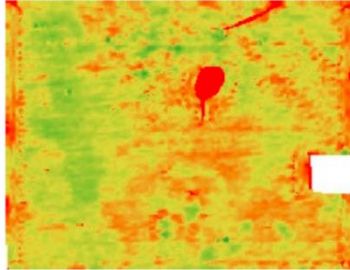
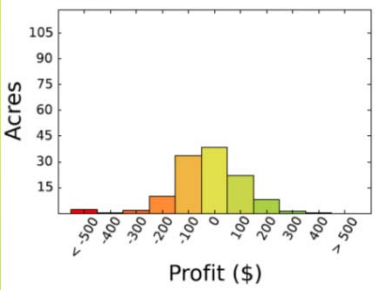
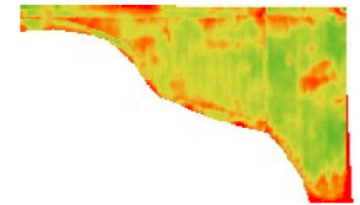
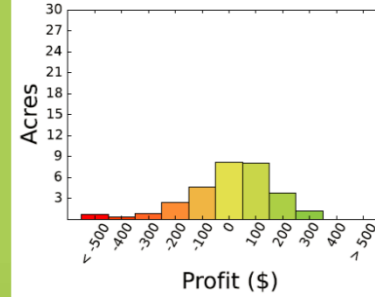
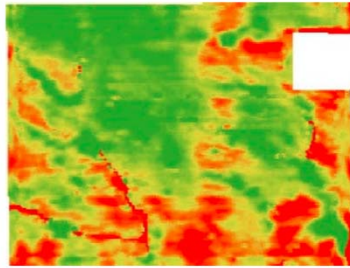
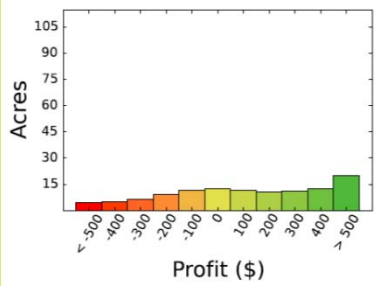


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Subfield Variability



Understanding Subfield Profit and ROI



Primary Message

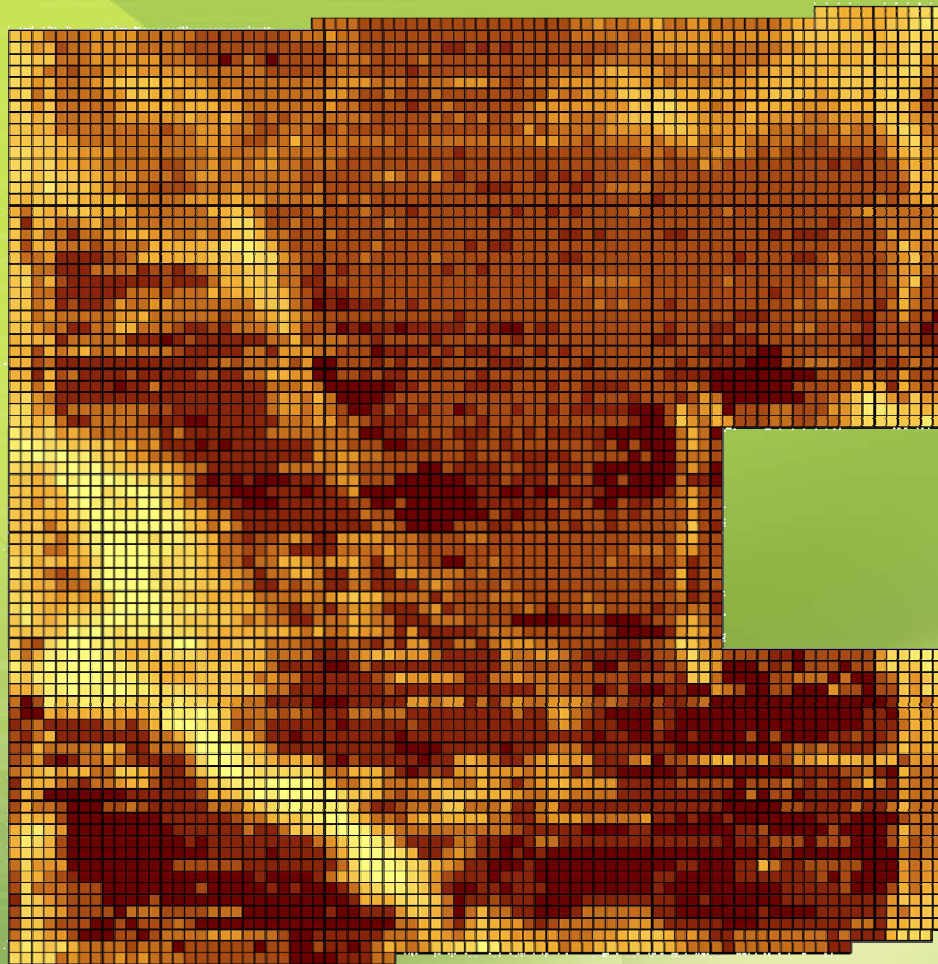


Environmental Performance and Economic Performance are driven by the same goal:

Maximize the output per unit of input



Subfield Financial Product Design: Current Practices

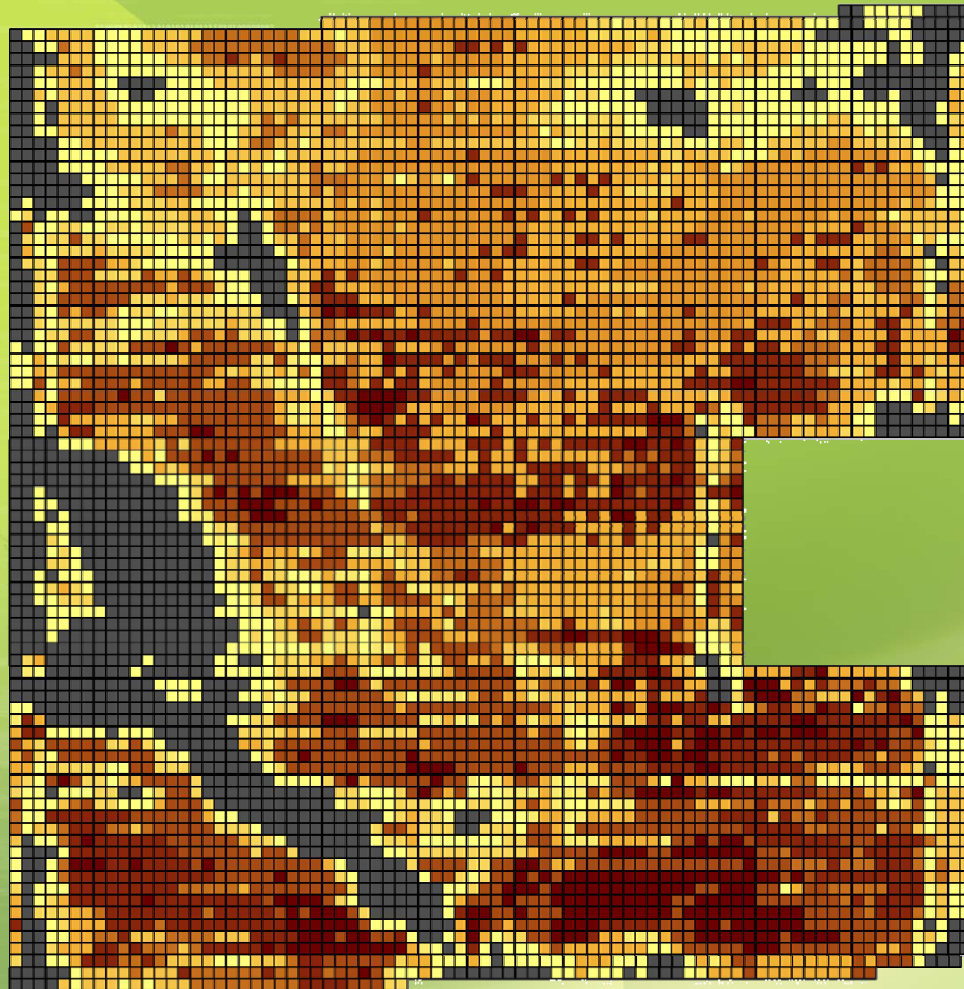


50 Year Profit Average
(\$/acre)

Lightest Yellow	(933) - (784)
Light Yellow	(784) - (576)
Yellow	(576) - (404)
Light Orange	(404) - (195)
Orange	(195) - (76)
Dark Orange	(76) - 11
Brown	11 - 101
Dark Brown	101 - 168
Very Dark Brown	168 - 223
Darkest Brown	223 - 611

Summary		
50 Year Yld Ave:	170	bu/acre
50 Year Yld STD:	38	bu/acre
Profit Average:	\$47	\$/acre
Profit STD:	\$235	\$/acre
Years Profitable Ave:	31	
Years Profitable STD:	14	
Percentage of Field Profitable:	74%	

Subfield Financial Product Design: Release Acres



50 Year Profit Average
Adjusted Ins Prem-Int Rates
Release Acres Below (250)
(\$/acre)

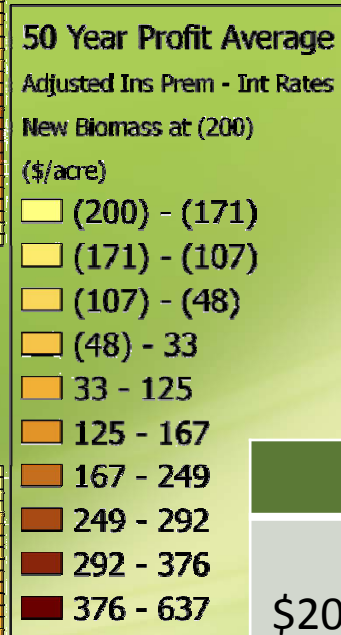
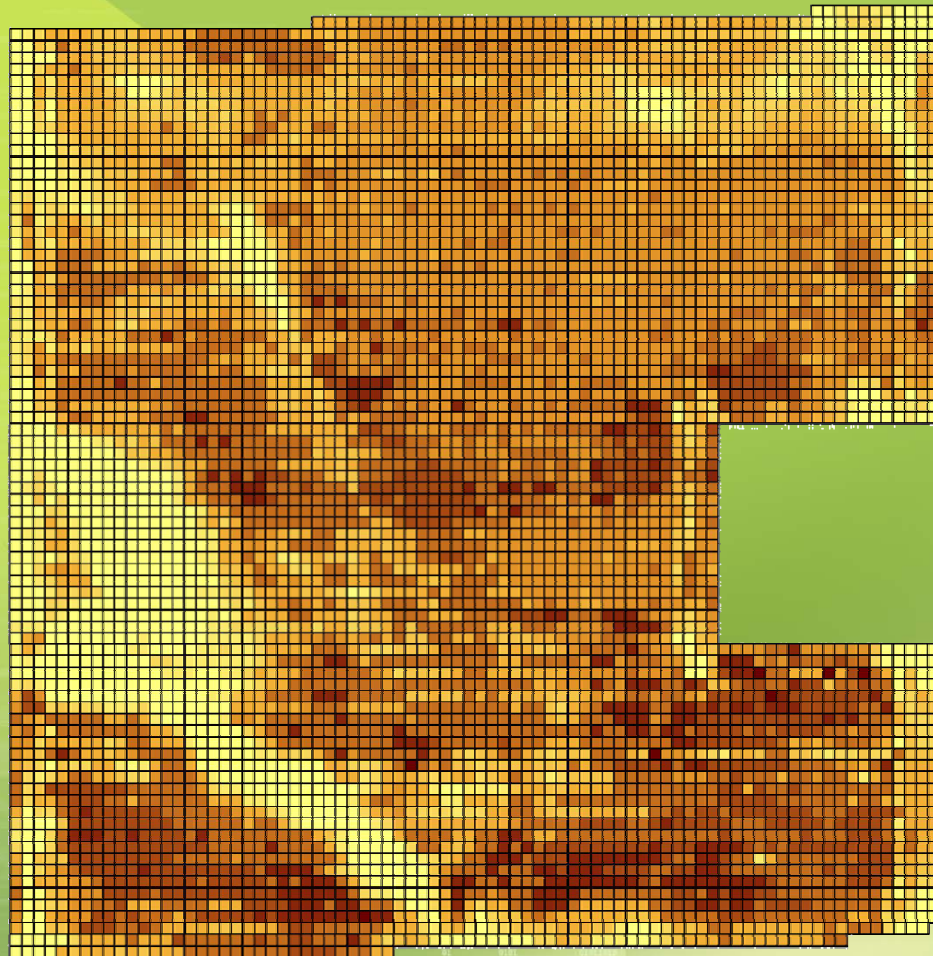
- No Row Crop
- (239) - (58)
- (58) - 0
- 0 - 16
- 16 - 42
- 42 - 101
- 101 - 107
- 107 - 134
- 134 - 158
- 158 - 224
- 224 - 577

Summary

Discontinue ops on areas with ave loss > \$250/acre with risk adjusted ins prem's and int rates

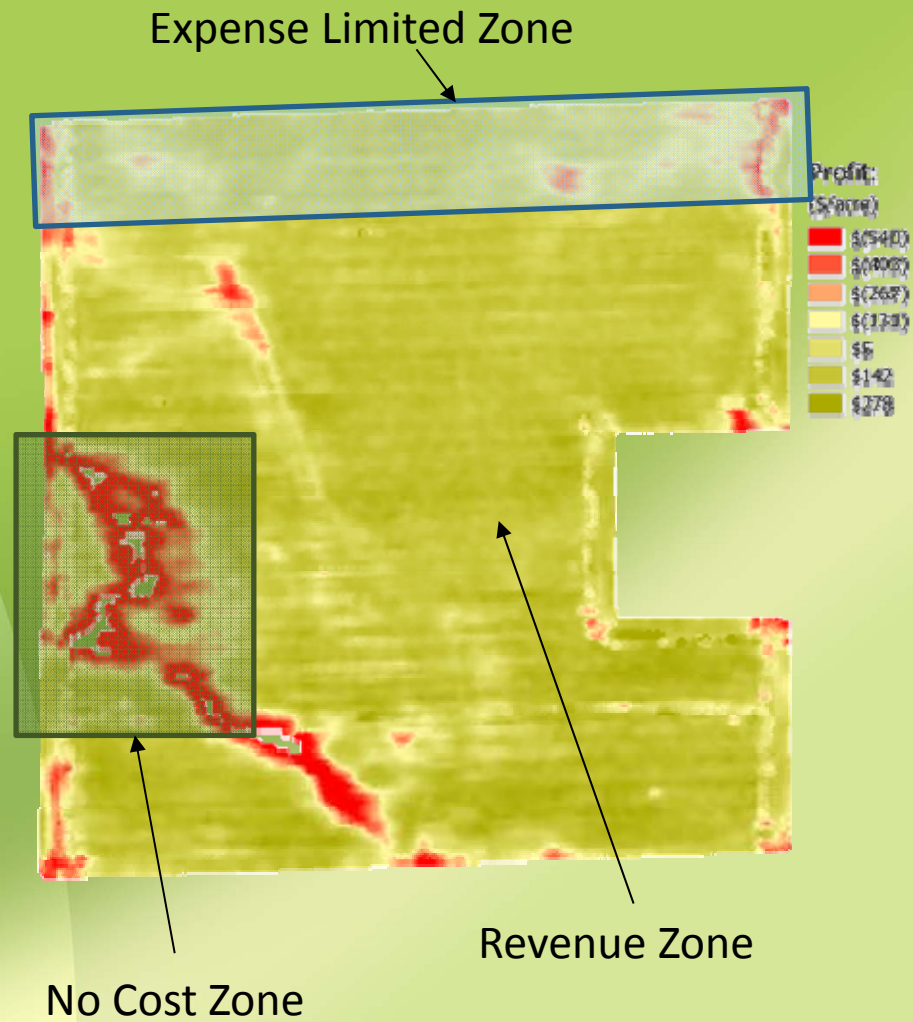
Profit Average:	\$76	\$/acre
Profit STD:	\$124	\$/acre
Percentage of Field Profitable:	72%	
Percentage of Field Used Profitable:	81%	

Subfield Financial Product Design: Risk Management Through Agronomy

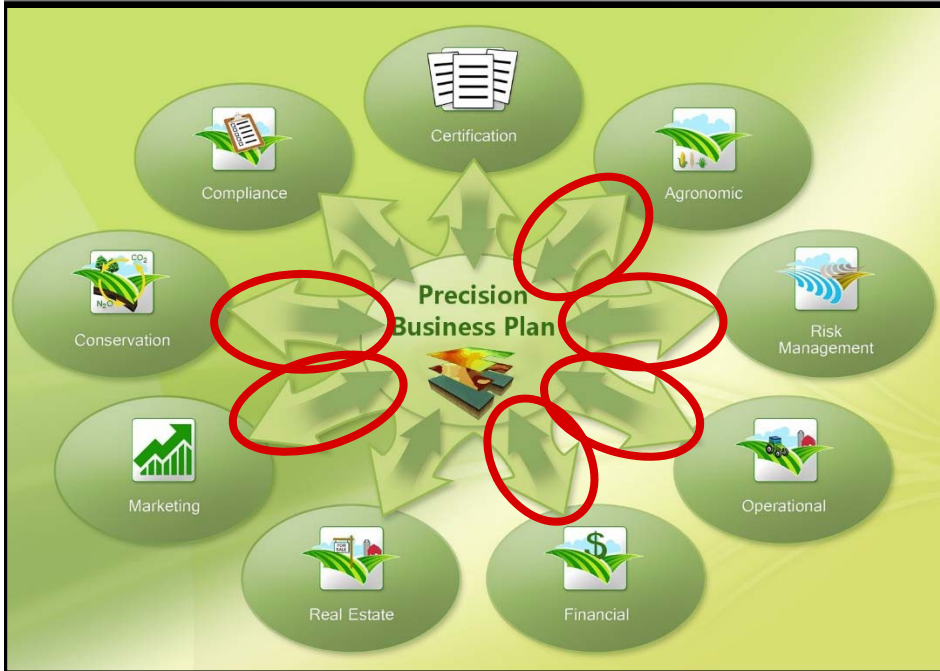


Summary		
New production at loss > \$200/acre with adjusted ins prem's and int rates		
Profit Average:	\$105	\$/acre
Profit STD:	\$149	\$/acre
Percentage of Field Profitable:	79%	

ROI Focused Agronomic Management



Profit Zone Manager



PROFIT ZONE
MANAGER™

- 10 ft resolution ROI
- Four Steps
 1. Define field boundaries
 2. Upload machine data
 3. Set crop budget – 5 min or less
 4. Develop scenarios
- Limited trial

Parameter	Value
Acreage	44.14 acres
Field Average Yield	130.87 bu/acre
Profit	\$19.69/acre
ROI	2.33 %
Total Field Expenses	\$37,286.62
Total Field Revenue	\$36,155.82
Total Field Profit	\$669.19

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Profit Zone Planning Process

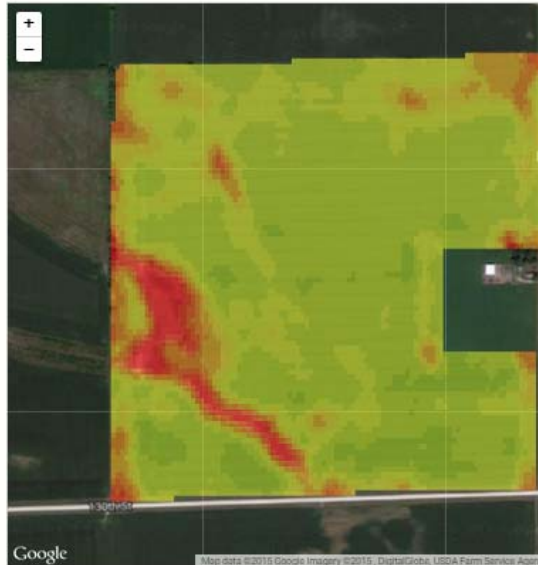


MENU ACCOUNT LOG OUT

MUTH STOCK FARMS

CREATE REPORT Download Report

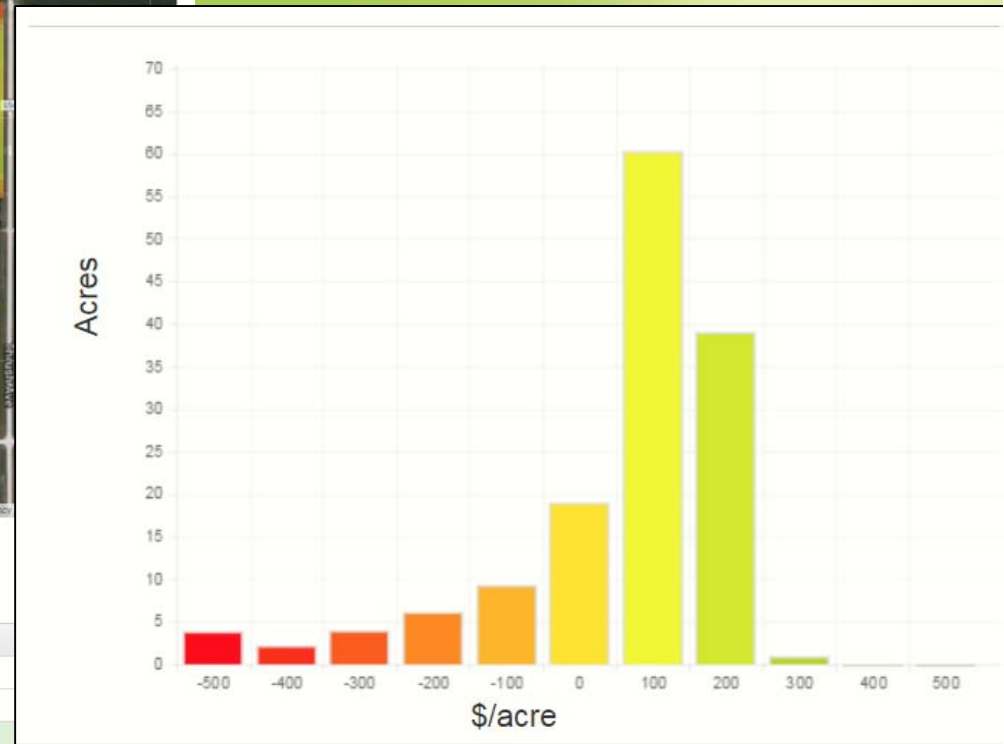
- BRANDT EAST
 - BRANDT WEST
 - BUILDING SITE
 - FREVERTS
 - HAMLIN NORTH
 - HAMLIN SOUTH
 - HOME 35
 - LAKIN AIKEN
 - LAKIN BEED
 - LAKIN FOX EAST
 - LAKIN FOX WEST
 - LAKIN PETERSON
 - PRESTON 40
 - PRESTON 60
 - PRESTON HOG BUILDING
 - PRESTON HOME
 - PRESTON PORTERFIELD
 - PRESTON WRIGHT 80
 - SYPILS EAST
 - SYPILS NORTH
 - SYPILS SOUTH
 - WEBSTER
- Actual Production - 2010



Zone Finder

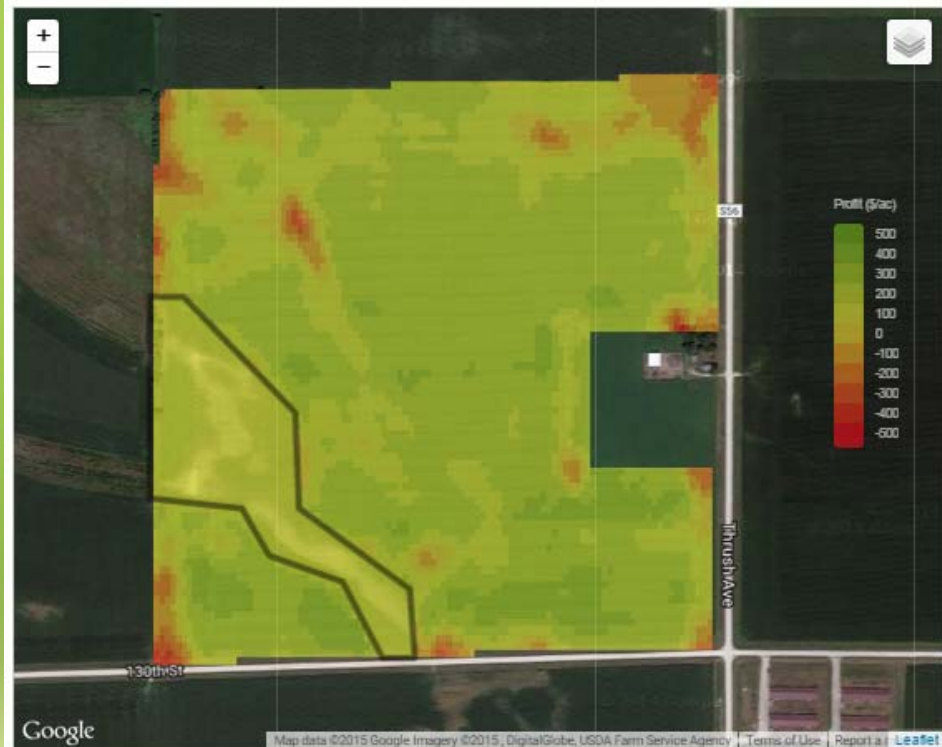
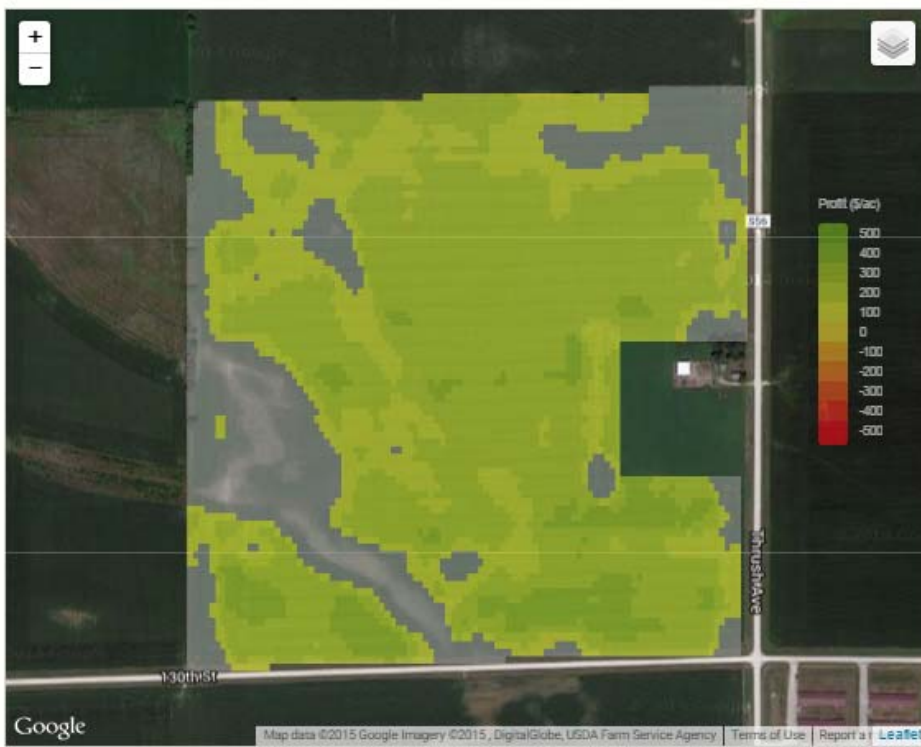
Scenario: Actual Production - 2010

Parameter	Value
Acreage	143.28 acres
Field Average Yield	170.93 bu/ac
Profit	\$53.53/acre
ROI	6.88 %
Total Field Expenses	\$114,768.44
Total Field Revenue	\$122,435.02
Total Field Profit	\$7,666.57



AgS 2 files

Profit Zone Planning Process



Zone Finder

Highlight the Return on Investment for Your Field Average

0 %

-100% -50% 0 50% 100%

Zone Finder

Highlight the Return on Investment for Your Field Average

0 %

-100% -50% 0 50% 100%

Profit Zone Planning Process



Field Scenarios Comparison

Choose a Scenario

Actual Production - 2010



Scenario: Actual Production - 2010

Parameter	Value
Acreage	143.26 acres
Field Average Yield	170.93 bu/ac
Profit	\$53.53/acre
ROI	6.68 %
Total Field Expenses	\$114,766.44
Total Field Revenue	\$122,435.02
Total Field Profit	\$7,668.57

Choose a Scenario

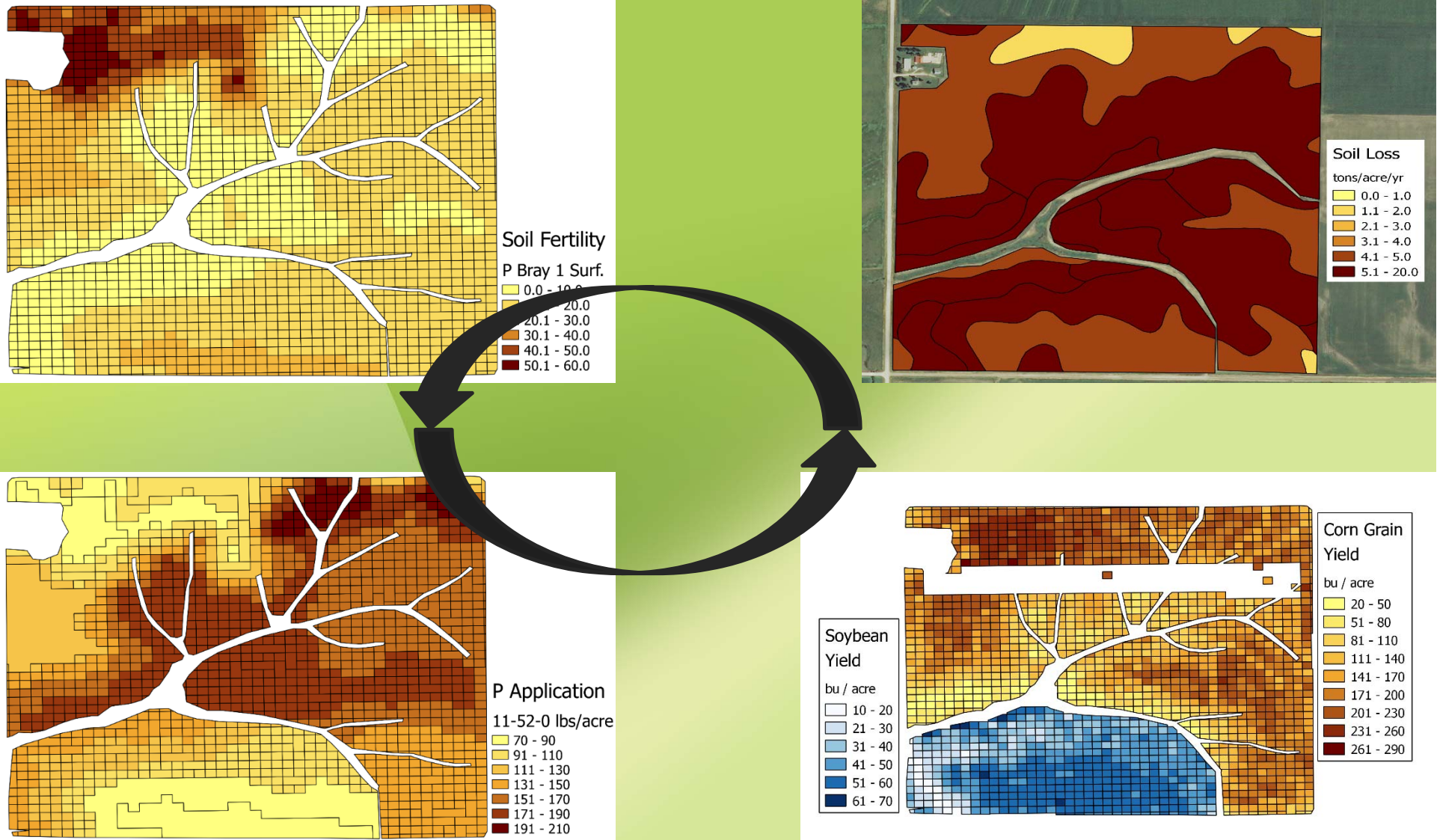
Conservation Test - 2010



Scenario: Conservation Test - 2010

Parameter	Value
Acreage	143.26 acres
Field Average Yield	179.24 bu/ac
Profit	\$88.05/acre
ROI	11.80 %
Total Field Expenses	\$106,907.73
Total Field Revenue	\$119,520.91
Total Field Profit	\$12,613.18

Precision Data Solutions: Nutrient Management



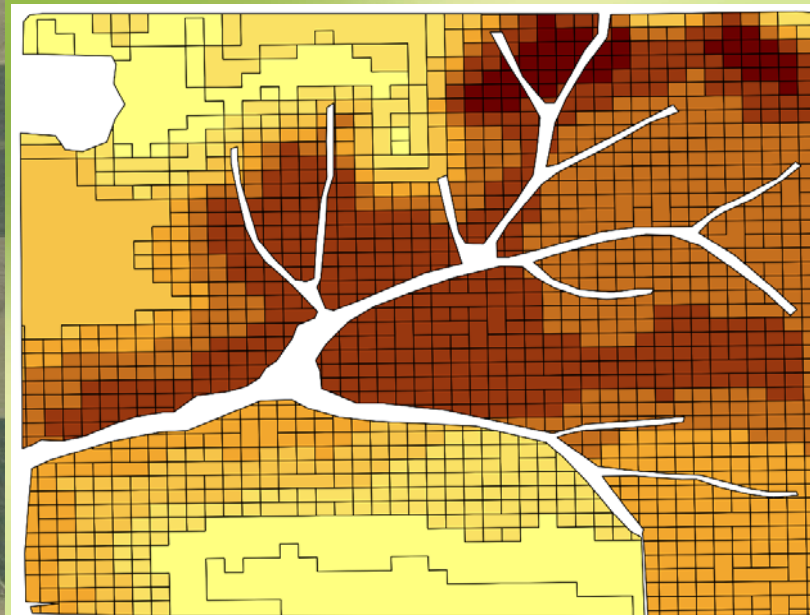
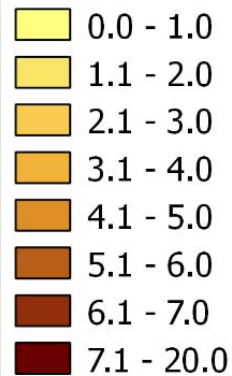
Precision Data Solutions: Nutrient Management



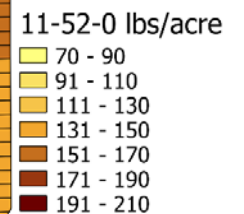
- Agronomic management to address key performance metrics
- Cover Crop
 - Select Acres
 - \$30 / acre Cost
 - On select acres >\$50 / acre N, P & K savings
 - Potential Yield Increase

Iowa Phosphorus Index

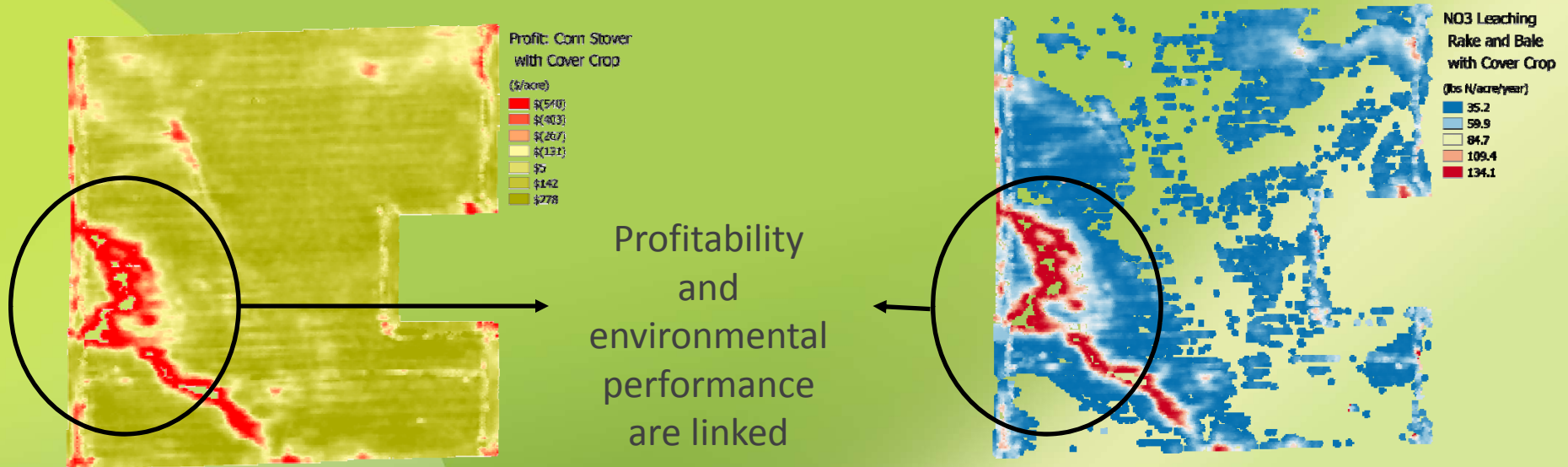
P runoff risk



P Application



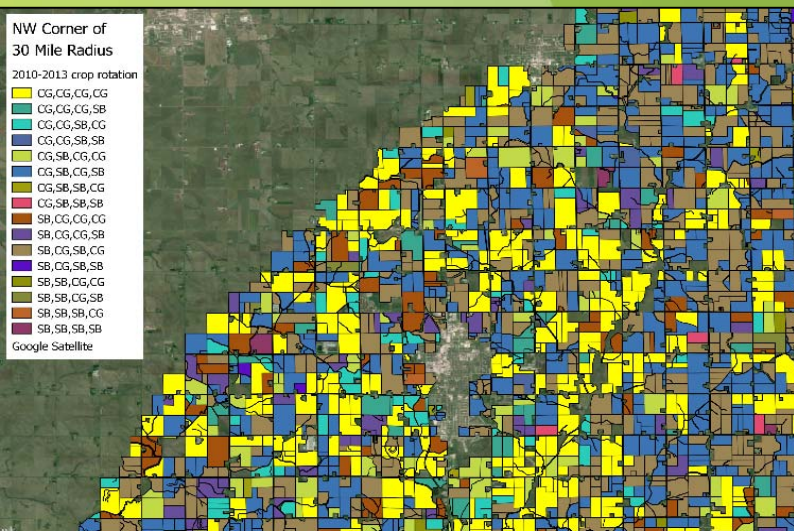
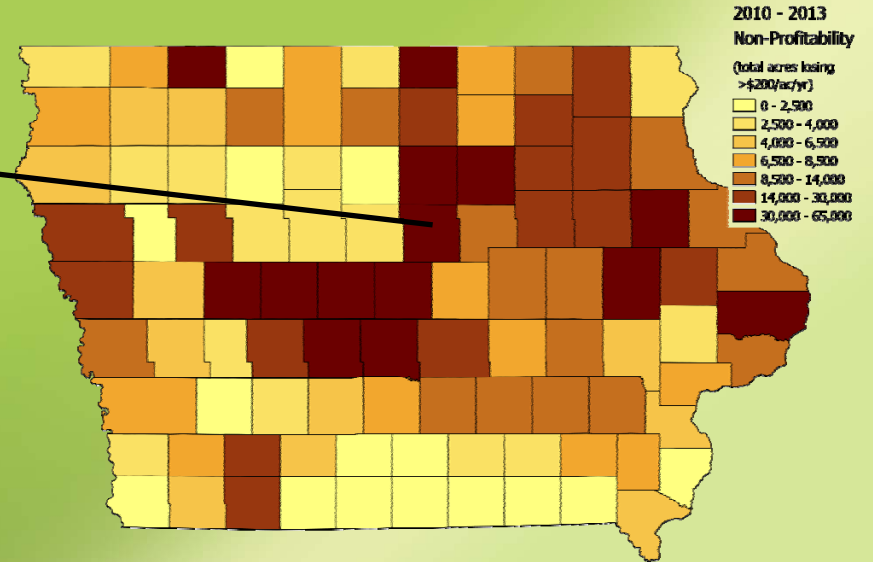
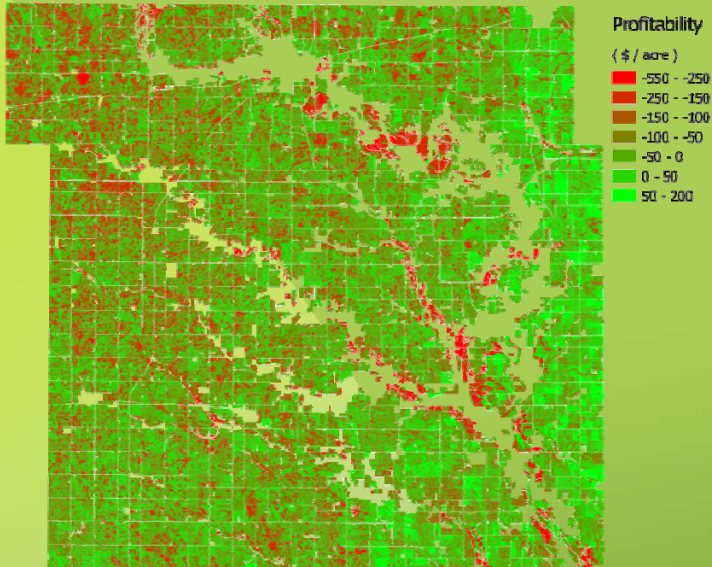
Conservation Planning: Financial and Environmental Benefits



Nutrient Reduction Strategy Implications

- First set of improvements through improved business performance
- Fast actions to slow down regulation
- Buffered production systems

Identifying the Opportunities



Year	Acres with loss >\$200/acre
2010	1,999,639
2011	1,564,059
2012	3,476,371
2013	1,821,062
All 4 Years	1,259,901