

Performance Results Enables Stewardship Ethic and Systems Approach to Environmental Protection

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Agricultural-Environmental Performance Issues

- Ninety percent of Iowa water contaminants have been attributed to agriculture.
- Farm operators have never been asked to organize and collectively address water quality.
- Watershed residents have demonstrated aggressive local leadership for water improvement.
- Farm operators will change to practices that yield higher water quality.
- Participants find the performance program structure to be practical and profitable, and to have a positive effect on the environment.

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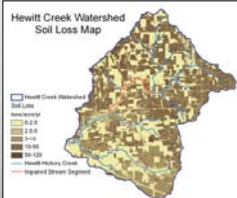
Residents work together as a watershed community on environmental goals.



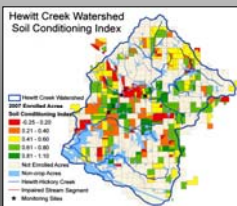
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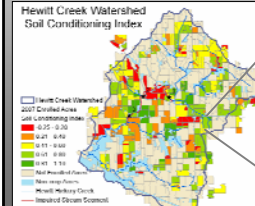
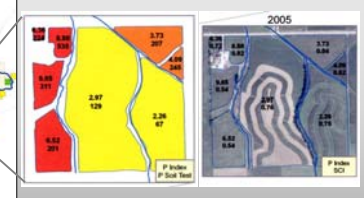
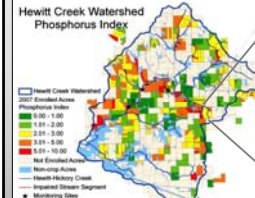
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Field by field variables
Phosphorus soil test – application
Manure rates – method – timing
Tillage – timing – management
Cover crops – residue cover
Crop rotation – row direction
Nitrogen rates – timing – method



Performance Measures
Phosphorus Index – Risk of P loss
Soil Conditioning Index – Organic matter
Cornstalk Nitrate – Sufficient/Excess N



**Coldwater-Palmer Watershed
Phosphorus Index and Soil Conditioning Index Examples**

1 Corn/Soybean Rotation				5 Continuous Corn w/buffer			
Acres	Index	SD	Weight	Acres	Index	SD	Weight
1 1700 Pull2	1.00	0.00	0.14	1 1700 Pull2	1.00	0.00	0.14
2 1900 Pull2	1.37	1.00	0.45	2 1900 Pull2	1.37	0.75	0.14
3 2100 Pull2	0.83	1.00	0.37	3 2100 Pull2	0.83	1.00	0.37
4 2140 Pull2	0.83	1.00	0.37	4 2140 Pull2	0.83	1.00	0.37
Total acres = 100.00				Total acres = 100.00			
weighted average P Index = 1.00				weighted average P Index = 1.00			
weighted average soil conditioning index = 0.97				weighted average soil conditioning index = 0.74			

2 Continuous Corn				6 Corn/Soybean Rotation w/buffer			
Acres	Index	SD	Weight	Acres	Index	SD	Weight
1 1700 Pull2	1.00	0.00	0.14	1 1700 Pull2	1.00	0.00	0.14
2 1900 Pull2	1.37	1.00	0.45	2 1900 Pull2	1.37	0.75	0.14
3 2100 Pull2	0.83	1.00	0.37	3 2100 Pull2	0.83	1.00	0.37
4 2140 Pull2	0.83	1.00	0.37	4 2140 Pull2	0.83	1.00	0.37
Total acres = 100.00				Total acres = 100.00			
weighted average P Index = 1.00				weighted average P Index = 1.00			
weighted average soil conditioning index = 0.97				weighted average soil conditioning index = 0.97			

4 Corn/Corn/Soybean				8 No-till Corn/Soybean			
Acres	Index	SD	Weight	Acres	Index	SD	Weight
1 1700 Pull2	1.00	0.00	0.14	1 1700 Pull2	1.00	0.00	0.14
2 1900 Pull2	1.37	0.99	0.45	2 1900 Pull2	1.37	0.65	0.14
3 2100 Pull2	0.83	1.00	0.37	3 2100 Pull2	0.83	1.00	0.37
4 2140 Pull2	0.83	1.00	0.37	4 2140 Pull2	0.83	1.00	0.37
Total acres = 100.00				Total acres = 100.00			
weighted average P Index = 1.35				weighted average P Index = 1.00			
weighted average soil conditioning index = 0.54				weighted average soil conditioning index = 0.74			

2' CC for cellulose				2" No-till CC for cellulose			
Acres	Index	SD	Weight	Acres	Index	SD	Weight
1 1700 Pull2	1.00	0.00	0.14	1 1700 Pull2	1.00	0.00	0.14
2 1900 Pull2	1.37	1.00	0.45	2 1900 Pull2	1.37	0.65	0.14
3 2100 Pull2	0.83	1.00	0.37	3 2100 Pull2	0.83	1.00	0.37
4 2140 Pull2	0.83	1.00	0.37	4 2140 Pull2	0.83	1.11	0.12
Total acres = 100.00				Total acres = 100.00			
weighted average P Index = 1.00				weighted average P Index = 1.00			
weighted average soil conditioning index = 0.96				weighted average soil conditioning index = 0.76			

P-Index list – Coldwater/Palmer **P-Index list – Hewitt**

Coldwater-Palmer Watershed Phosphorus Index Rating - 2007															
Watershed ID	Watershed Name	Watershed Acres	Watershed P Index	Watershed SD	Watershed Weight	Watershed Soil Conditioning Index	Watershed Soil Conditioning Weight	Watershed Soil Conditioning Index	Watershed Soil Conditioning Weight	Watershed Soil Conditioning Index	Watershed Soil Conditioning Weight	Watershed Soil Conditioning Index	Watershed Soil Conditioning Weight	Watershed Soil Conditioning Index	Watershed Soil Conditioning Weight
1	1700	1700	1.00	0.00	0.14	1.00	0.97	0.14	0.97	0.14	0.97	0.14	0.97	0.14	0.97
2	1900	1900	1.37	1.00	0.45	1.37	0.75	0.14	0.75	0.14	0.75	0.14	0.75	0.14	0.75
3	2100	2100	0.83	1.00	0.37	0.83	1.00	0.37	1.00	0.37	1.00	0.37	1.00	0.37	1.00
4	2140	2140	0.83	1.00	0.37	0.83	1.00	0.37	1.00	0.37	1.00	0.37	1.00	0.37	1.00
Total acres = 100.00															
weighted average P Index = 1.00															
weighted average soil conditioning index = 0.97															

Hewitt Watershed Phosphorus Index Rating - 2007															
Watershed ID	Watershed Name	Watershed Acres	Watershed P Index	Watershed SD	Watershed Weight	Watershed Soil Conditioning Index	Watershed Soil Conditioning Weight	Watershed Soil Conditioning Index	Watershed Soil Conditioning Weight	Watershed Soil Conditioning Index	Watershed Soil Conditioning Weight	Watershed Soil Conditioning Index	Watershed Soil Conditioning Weight	Watershed Soil Conditioning Index	Watershed Soil Conditioning Weight
1	1700	1700	1.00	0.00	0.14	1.00	0.97	0.14	0.97	0.14	0.97	0.14	0.97	0.14	0.97
2	1900	1900	1.37	1.00	0.45	1.37	0.75	0.14	0.75	0.14	0.75	0.14	0.75	0.14	0.75
3	2100	2100	0.83	1.00	0.37	0.83	1.00	0.37	1.00	0.37	1.00	0.37	1.00	0.37	1.00
4	2140	2140	0.83	1.00	0.37	0.83	1.00	0.37	1.00	0.37	1.00	0.37	1.00	0.37	1.00
Total acres = 100.00															
weighted average P Index = 1.00															
weighted average soil conditioning index = 0.97															

2007 Cornstalk nitrate test results

Watershed ID	Watershed Name	Watershed Acres	Watershed Nitrate	Watershed SD	Watershed Weight
1	1700	1700	1.00	0.00	0.14
2	1900	1900	1.37	1.00	0.45
3	2100	2100	0.83	1.00	0.37
4	2140	2140	0.83	1.00	0.37
Total acres = 100.00					
weighted average Nitrate = 1.00					

- ### Program – Client Targeting
- Farm operators: day to day decision-makers
 - Low resource and new farm operators
 - Livestock producers – manure credits
 - Flexibility to select low-cost alternatives
 - Neighbor-to-neighbor sharing and peer pressure
 - On-farm demonstrations of alternative nutrient, tillage, planting and other management
 - Local stakeholder involvement – over 50%

- ### Program Evaluation – Survey
- **100% yes** – The performance-incentive program rewards a conservation systems approach.
 - **94% yes** – Program encourages management changes.
 - **86% yes** / **12% not sure** – 86% – program has a positive effect on the environment – 12% not sure yet.
 - **91% yes** – Program helped make their operation somewhat or more profitable.

Desirable outcomes

Results include an increase in:

- fish population and diversity
- macro-invertebrate population and diversity
- aquatic life, birds and wildlife

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