Iowa Programs and Initiatives for Reducing Nutrient Transport to Water Resources from Ag Lands

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Iowa's Approach to Reducing Nutrient Transport From Ag Lands

1. Continue long-standing programs to encourage adoption of traditional conservation practices.

2. Develop new, innovative technologies and programs targeted to reducing nutrient transport to water resources.

Iowa Conservation Programs Which Reduce Nutrients to Water – State Fiscal Year 2011

Implementation & Watershed Protection	$87.04 million
Research & Technology Development	$13.16
Education & Outreach	$0.45
TOTAL*	$100.65 million

*includes landowner match $

New Innovative Technologies and Programs Targeted to Reduce Nutrient Transport

- On-Farm Nitrogen Network – Iowa Soy Association
- Iowa Learning Farms – Iowa State University
- Iowa CREP Nitrogen Removal Wetlands
- Cedar River Watershed Case Study
- Iowa Wetland Landscape Systems Initiative
- Iowa Strategy for Nutrient Reduction – Gulf of Mexico Hypoxia
- Voluntary BMP Adoption/Recognition Program – Iowa Ag Organizations

On-Farm Network

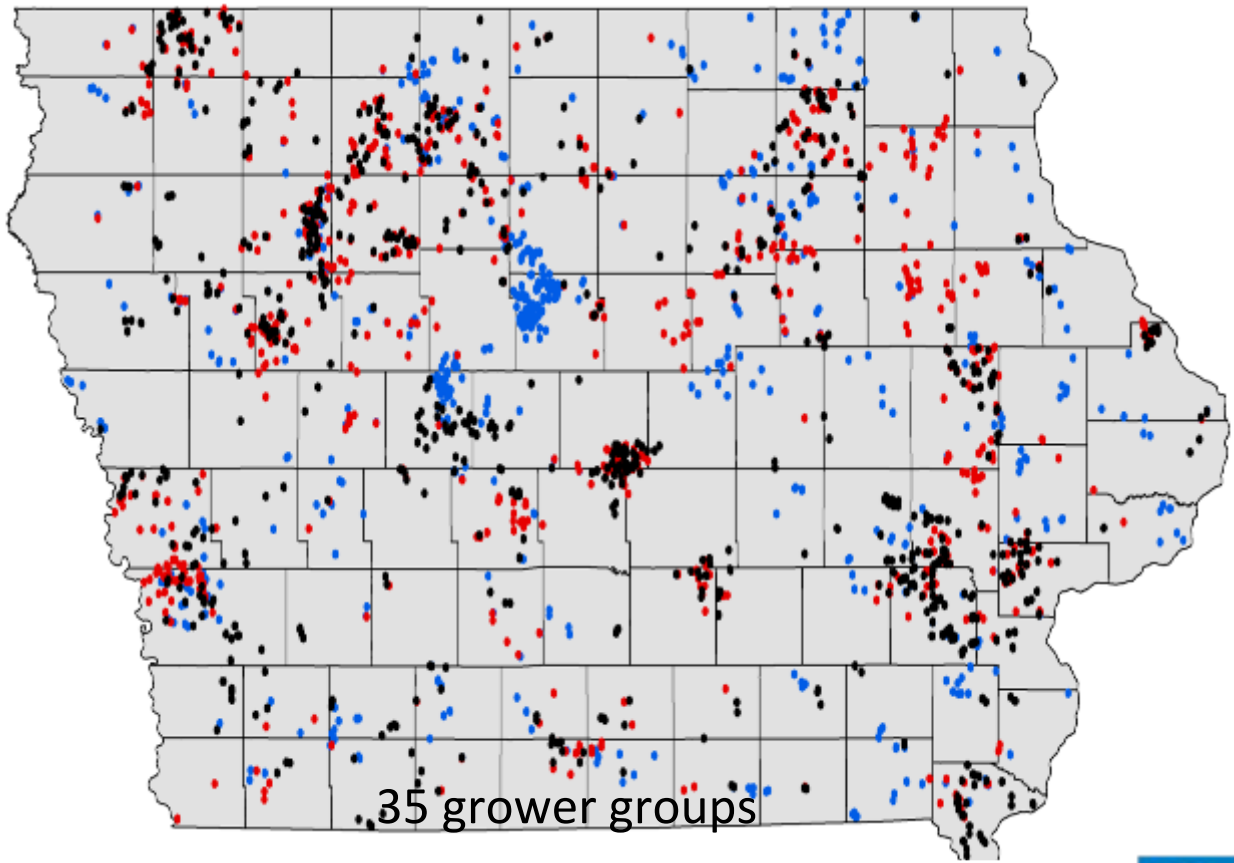
Over 3,000 guided stalk nitrate evaluations

Over 1,000 replicated strip trials

Focused on in-field comparisons of:

- N stabilizers
- Timing of N (fall vs. spring; Preplant vs SD)
- Forms of N (UAN, NH3, Urea, Manure)
- Type of application (injection vs dribbling)
- Crop sensors
- Potential for variable rate

Iowa



2006
2007
2008

35 grower groups

www.isafarmnet.com

On-Farm Network

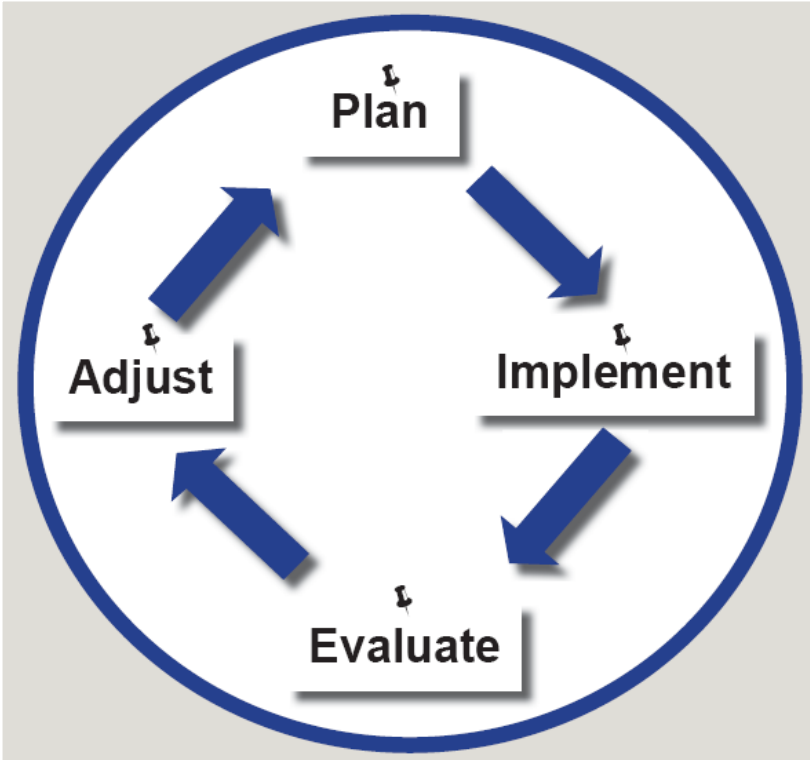
Iowa Soybean Association
EXPANDING OPPORTUNITIES. DELIVERING RESULTS.

Nitrogen Trials

Year	Rotation	Fertilizer N		Grain Yield		
		Low Rate	High Rate	Low Rate	High Rate	Diff.
		--------lb N/acre-------		----------bu/acre----------		
2001	**C-SB**	**80**	**130**	**177**	**176**	**-1**
2002	**C-SB**	**70**	**120**	**193**	**195**	**2**
2003	**C-C**	**130**	**180**	**167**	**166**	**-1**
2004	**C-SB**	**60**	**110**	**200**	**206**	**6**
	C-C	**110**	**160**	**172**	**178**	**6**
2005	**C-SB**	**60**	**110**	**192**	**197**	**5**
	C-C	**110**	**160**	**182**	**194**	**12**
2006	***C-C***	***120***	***150***	***188***	***193***	***4***
2007	***C-C***	***125***	***150***	***177***	***182***	***5***
2008	***C-C***	***130***	***155***	***169***	***174***	***4***

Adaptive Management

Need to evaluate what actually happened.

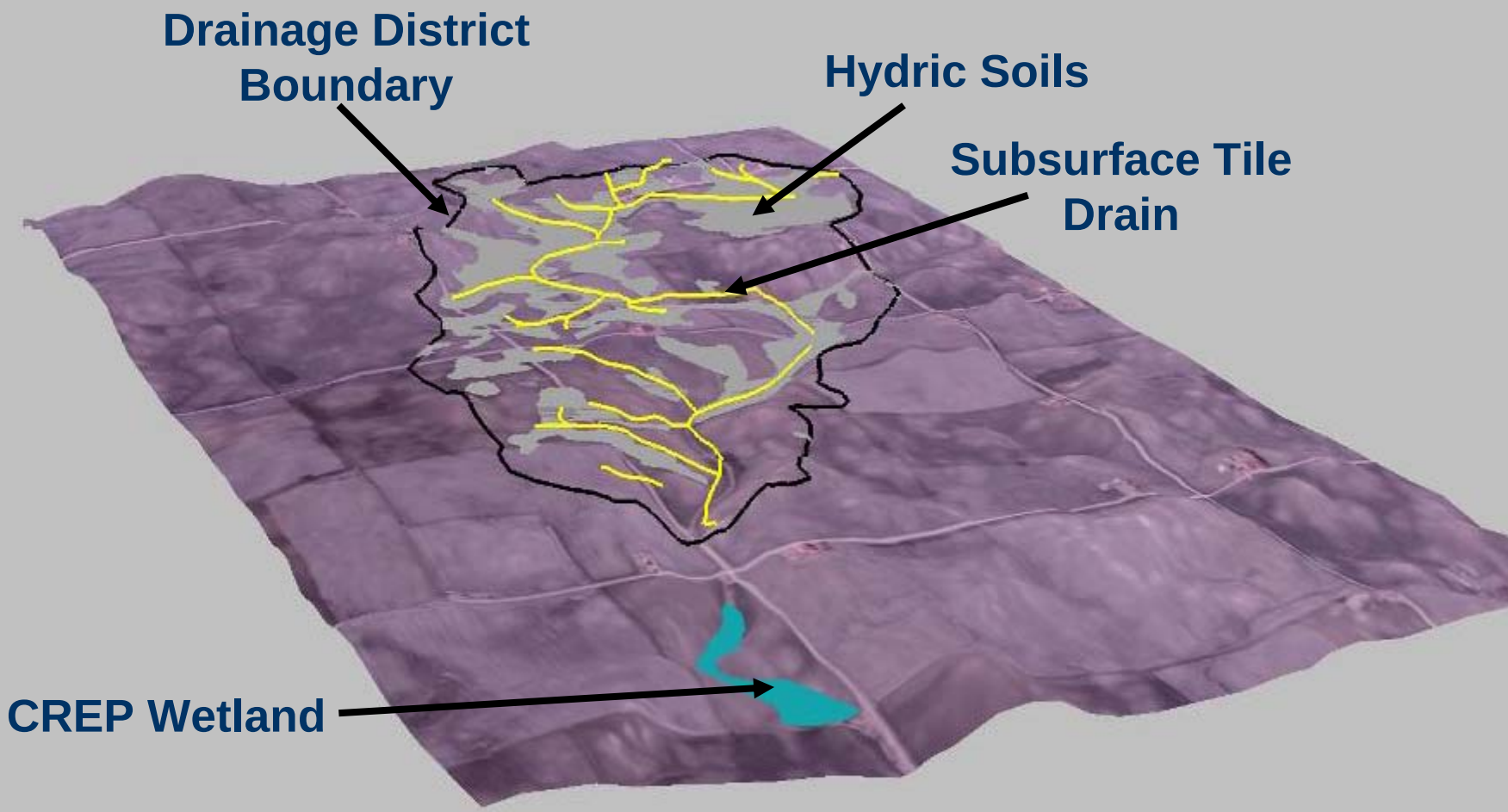


Iowa Learning Farms

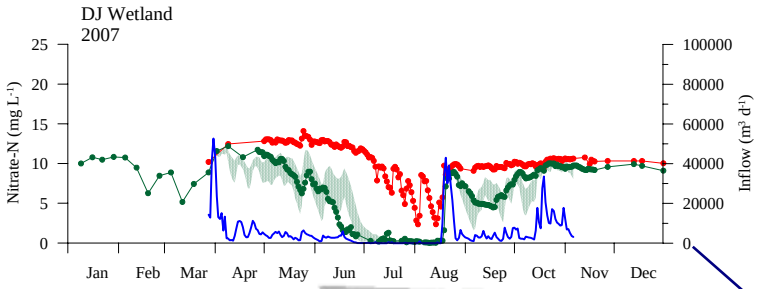
- Conducted by Iowa State University
- Farm cooperator demonstrations – crop residue and tillage management
- Education and outreach, awareness
- Rainfall simulator educational tools
- “Building A Culture of Conservation”

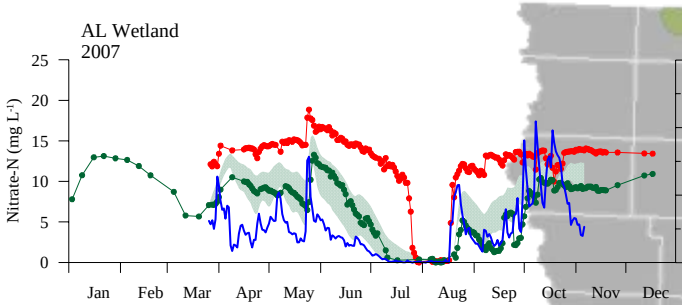

EASEMENT BOUNDARY
IOWA
Conservation
Reserve
Enhancement
Program
USDA

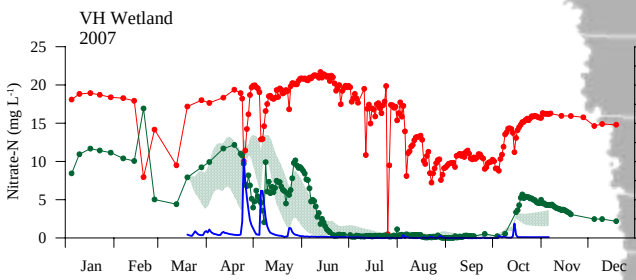
Iowa Conservation Reserve Enhancement Program

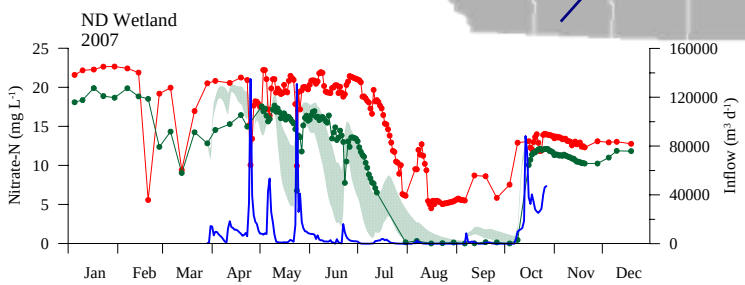


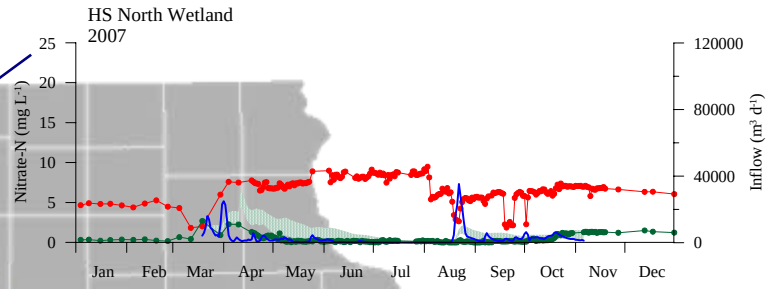
Observed and modeled wetland performance
(2007)

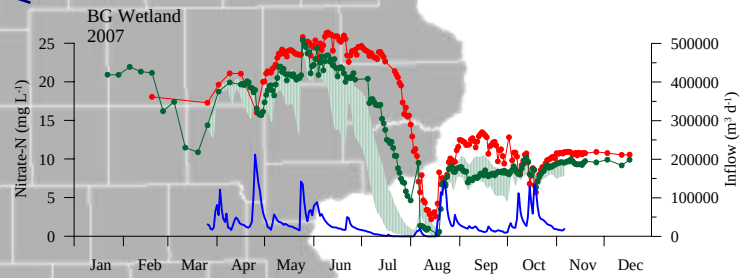


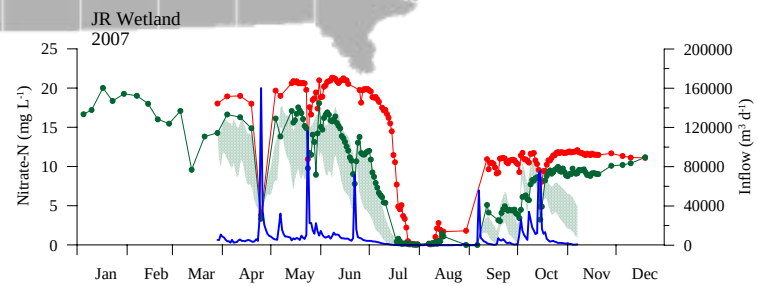






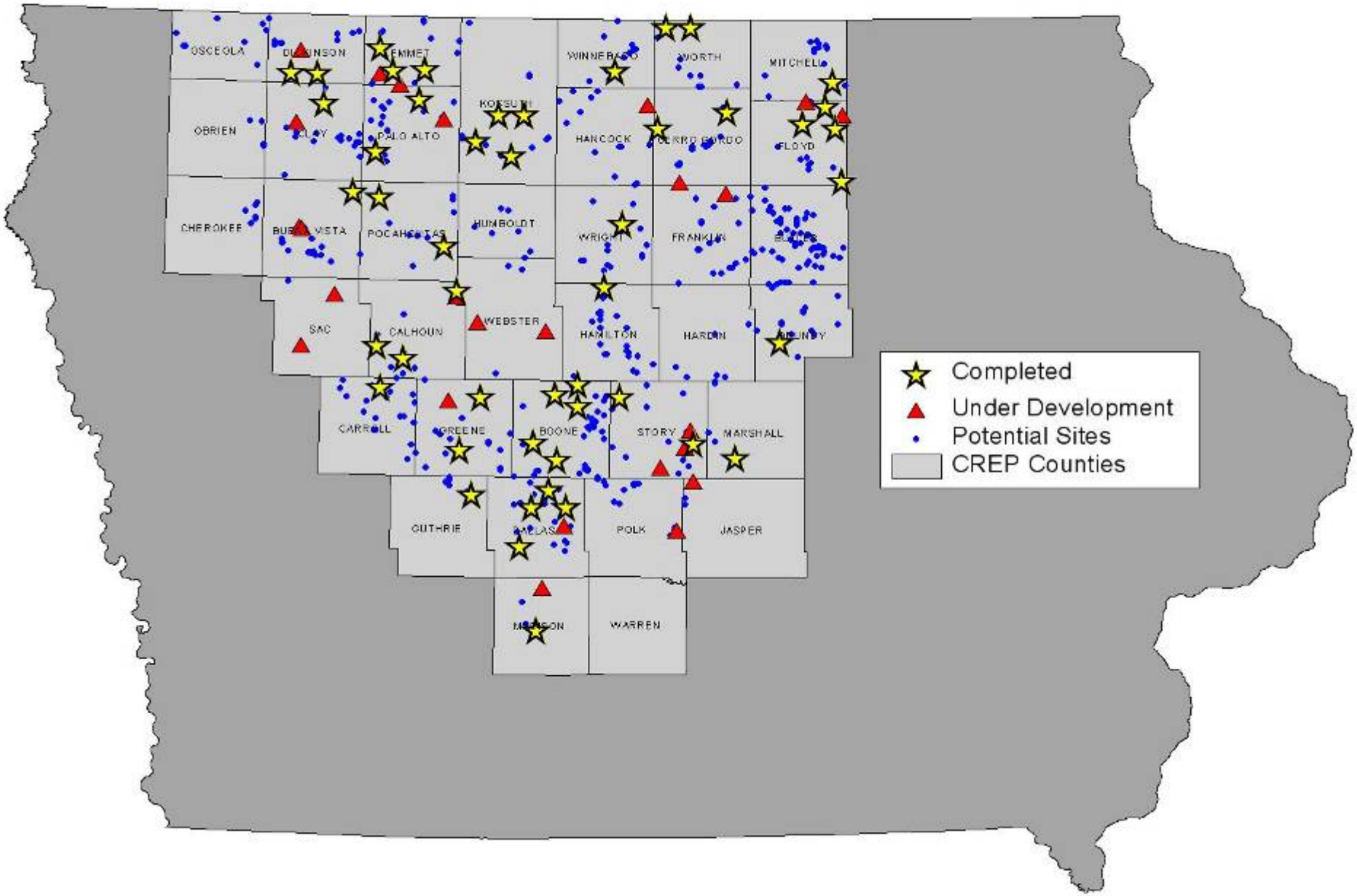






W.G. Crumpton, Iowa State University

Current Iowa CREP - Nitrate Removal Wetlands



Iowa CREP Status

72 wetlands restored, under construction or design

- 715 acres total wetland pool
- Remove 40-70% of nitrate from 86,100 acres
- Estimated nitrate removal over practice lifetime is 53,600 tons
- Nitrogen removal cost $0.23/lb, below current cost of fertilizer N

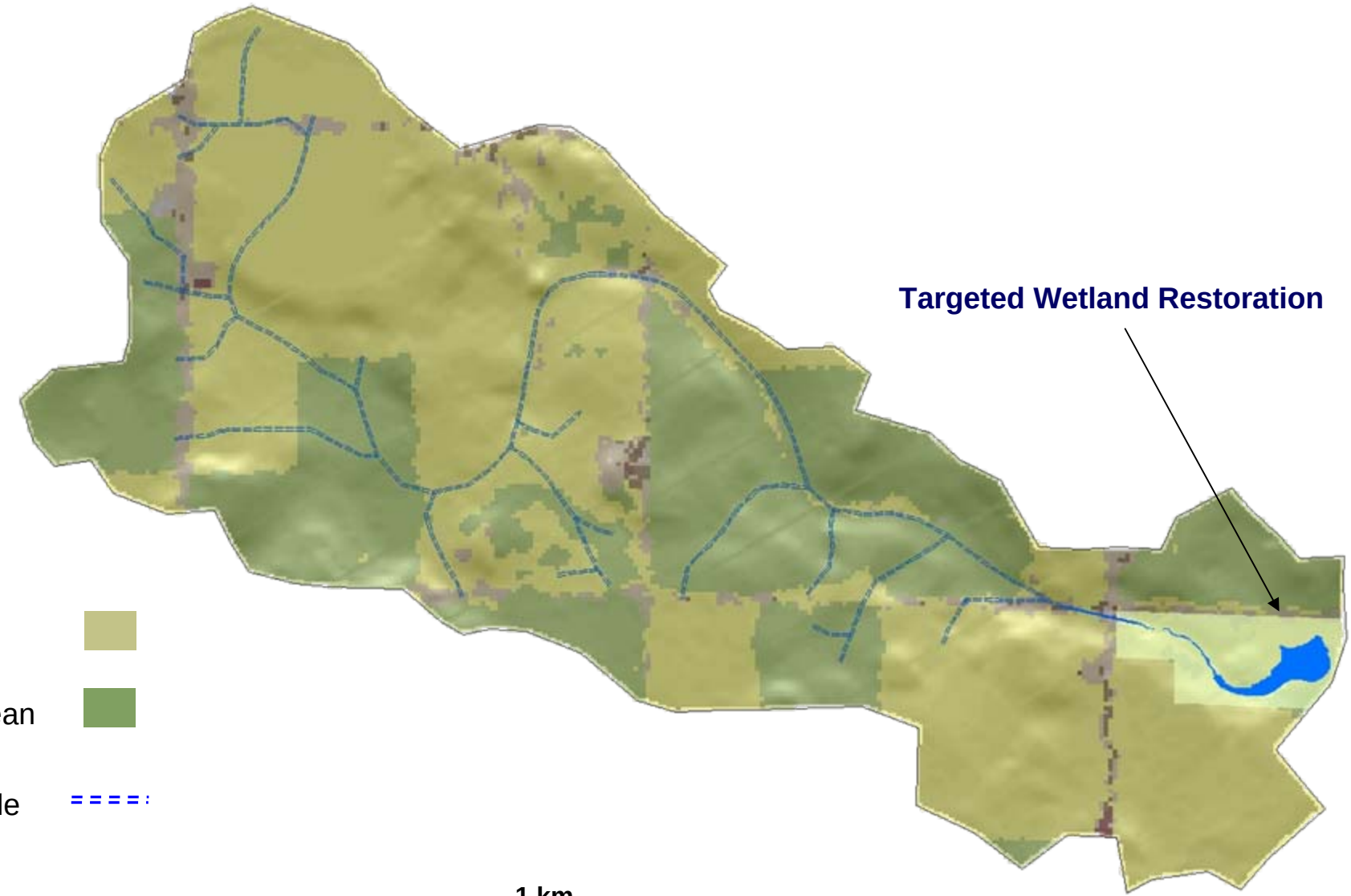
Cedar River Watershed Case Study – scenario to reduce nitrate losses 35% (9,200 tons/non-point source allocation) while retaining row-crop production

Practice	% reduction	Acres* treated	Tons reduced
140 to 100 N rate - CB	20.1% or 3.9 lb/ac	all or 1.70 M ac	3,315
190 to 150 N rate - CC	16.2% or 3.8 lb/ac	all or 0.10 M ac	190
Avoid fall N application	15% or 2.5 lb/ac	all or 300,000 ac	375
Rye cover crops	50% or 8 lb/ac	10% or 170,000 ac	680
Drainage water mgt	50% or 8 lb/ac	10% or 167,000 ac	670
N removal wetlands	50% or 8 lb/ac	59% or 1.00 M ac	4,000
TOTALS		*[*2/3 of 2.55 M or 1.70 M ac]*	9,230

Iowa Wetland Landscape Systems Initiative

Pilot Demonstrations

Iowa Wetland Landscape Systems Initiative



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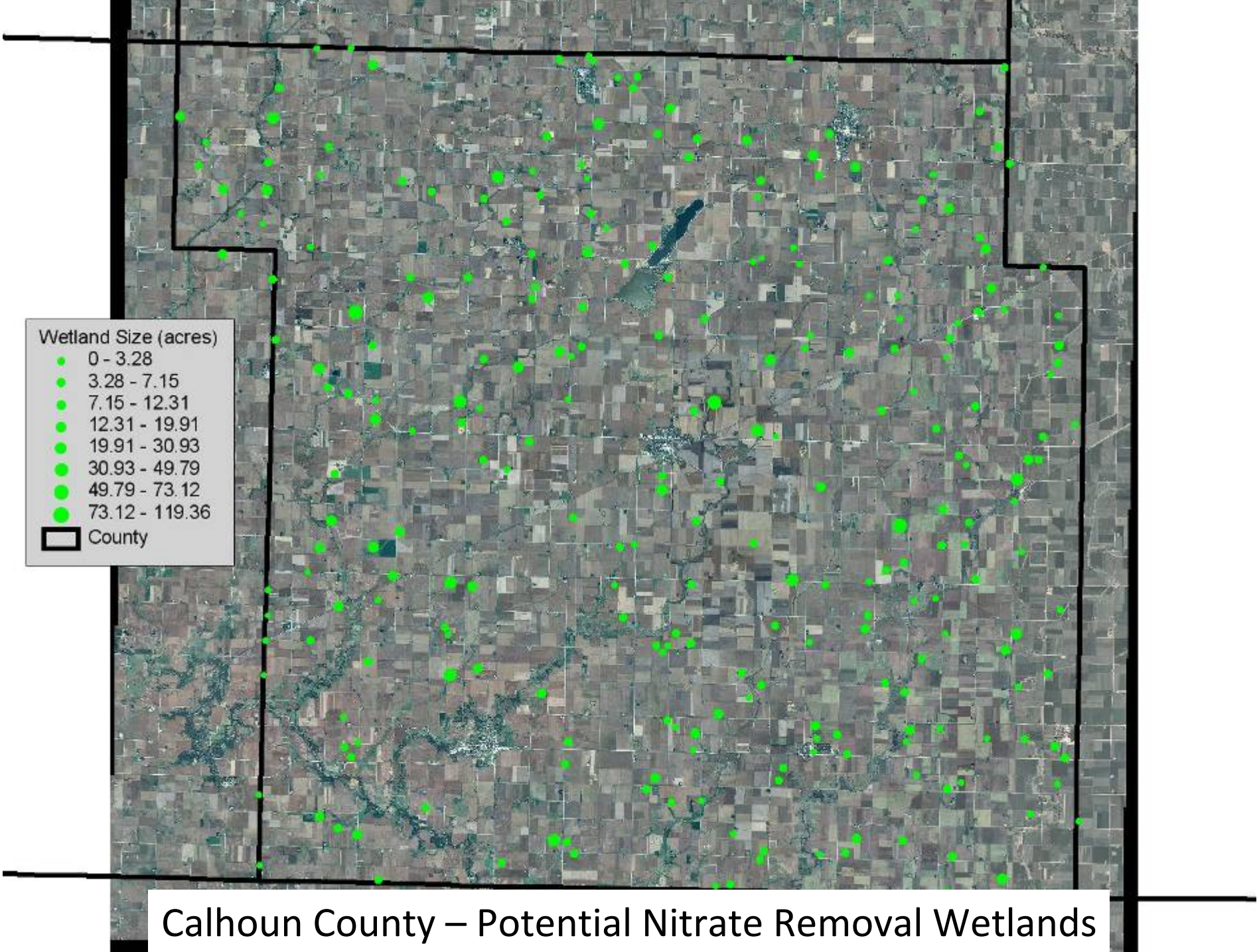
Projected Environmental/Ecological Service Benefits – Wetland Landscape Systems

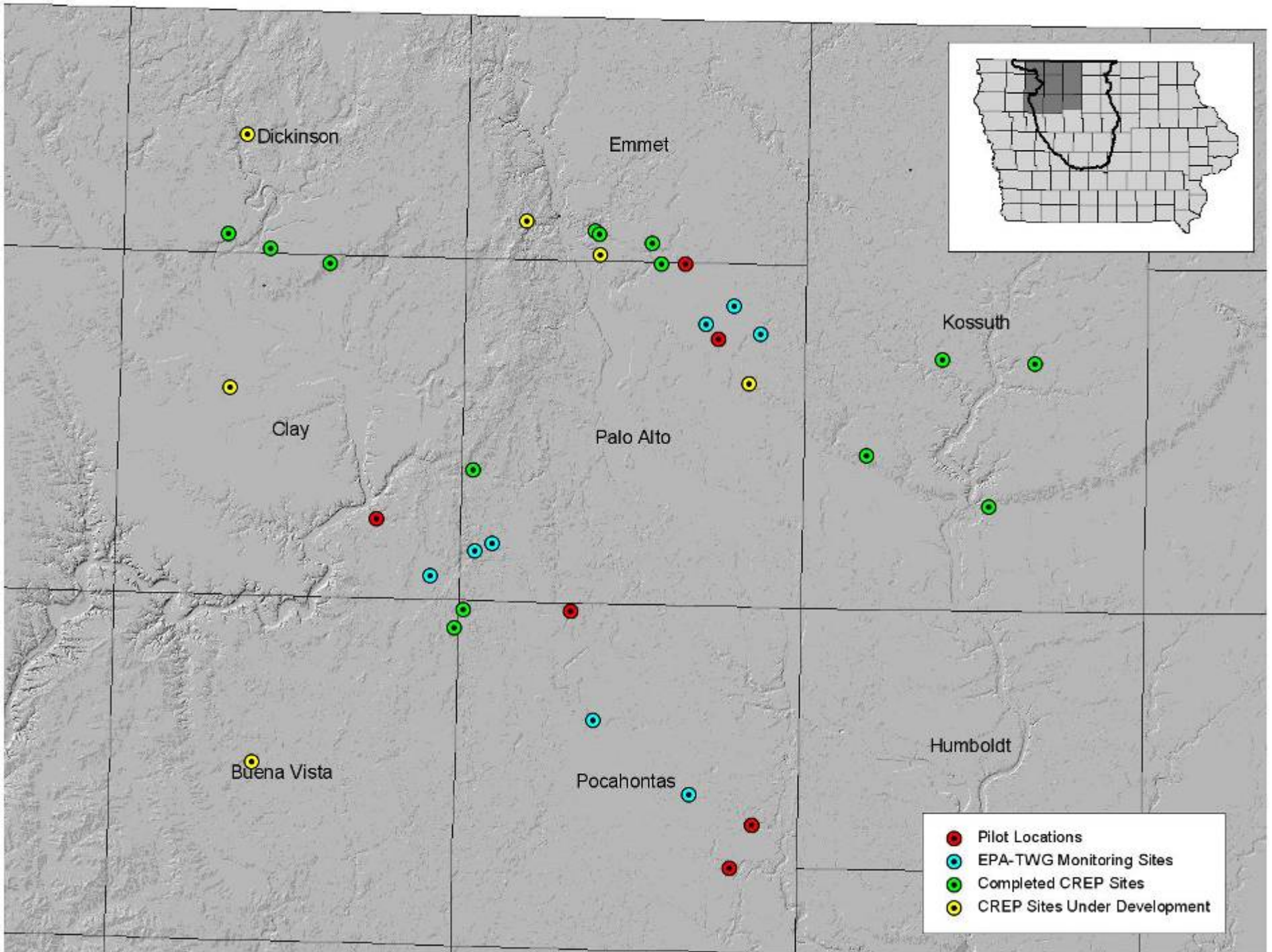
- Reduce nitrate transport – 40-70%
- Reduce surface runoff overland flow – 50%
- Reduce sediment delivery – 50%
- Reduce phosphorus transport – 50%
- Reduce N_2O greenhouse gas emissions
- Increase habitat and ecological service functions of the landscape – potential market force driver?
- Market force economic driver for implementation and food security benefit - optimize crop production



Calhoun County – Potential Nitrate Removal Wetlands

Pilot Demonstration Study Sites

- Solicitation of interest across 3000 watershed districts
- Pilot demonstration study watersheds
  - Pocahontas DD 65 (construction completed)
  - Clay DD 8
  - Pocahontas DD 48 & 81
  - Palo Alto DD15 North
  - Palo Alto DD15 South
  - Pocahontas/Palo Alto Joint DD36


Dickinson
Emmet
Kossuth
Clay
Palo Alto
Buena Vista
Pocahontas
Humboldt
Pilot Locations
EPA-TWG Monitoring Sites
Completed CREP Sites
CREP Sites Under Development

Interagency Working Group

Iowa Department of Agriculture & Land Stewardship (IDALS)
Iowa State University (ISU)
University of Iowa (UI)
Iowa Institute of Hydraulic Research (IIHR)
Center for Agricultural and Rural Development (CARD)
Iowa Flood Center (IFC)
Iowa Department of Natural Resources (DNR)
USDA – Farm Service Agency (FSA)
USDA – Natural Resources Conservation Service (NRCS)
USDA – Agricultural Research Service (ARS)
United States Fish & Wildlife Service (FWS)
United States Environmental Protection Agency (EPA)
United States Geological Survey (USGS)

Technical Work Groups and Study Areas

- Hydrology and Water Quality
- Soil Resources
- Habitat
- Green House Gases
- Crop Yield
- Decision Drivers

49 research and technical members

Wetland and Watershed Infrastructure Funding of Pilots

Landowners	$5.3 million
Iowa cost-share funds	4.0
Iowa CREP	2.0
State revolving fund	0.4 + loan
TOTAL	$11.7+ million

Iowa Strategy for Nutrient Reduction – Gulf of Mexico Hypoxia

Voluntary BMP Adoption/Recognition Program – Iowa Ag Organizations