

Becoming Part of the Solution

Joining PCM for Sustainable Agriculture



farmdoc



College of Agricultural,
Consumer &
Environmental Sciences
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



Clay Bess



Rachel Curry



Greg Goodwin



precisionconservation.org



Precision Conservation Management

**Positioning farmers to benefit
from conservation outcomes**



Precision Conservation Management

Understand how conservation practices impact farm net returns

Address water quality concerns. Prevent agricultural regulation

Position farmers to benefit from positive conservation outcomes

Position farmers to benefit from positive conservation outcomes

1-on-1 technical support

Data collection platform

Individualized yearly RAAP report

- **Economic cost tables**
- **Environmental assessments**
- **Local practice comparisons**

\$750 participation payment

Exclusive program offers cost share, other practice assistance

Networking & education opportunities



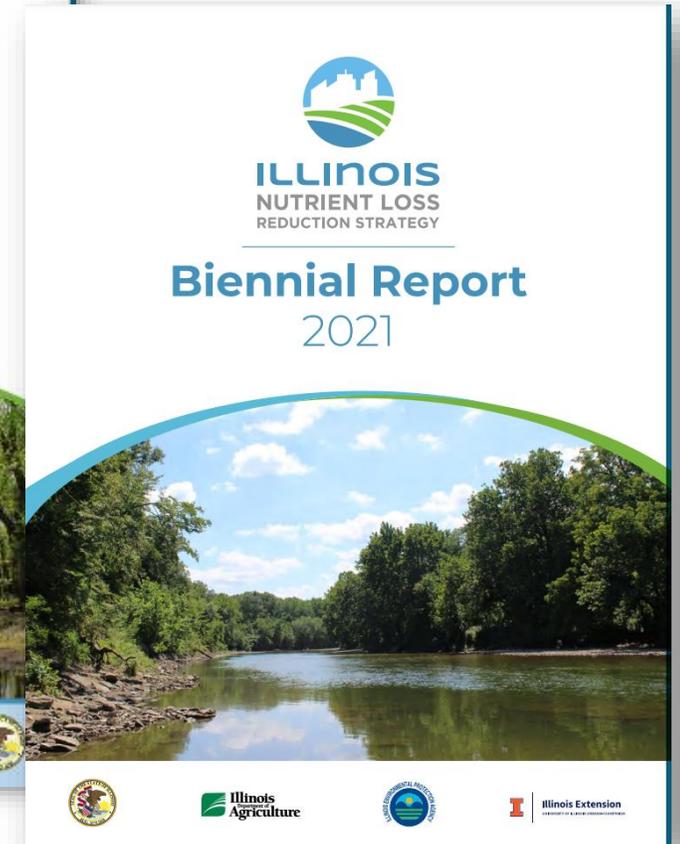
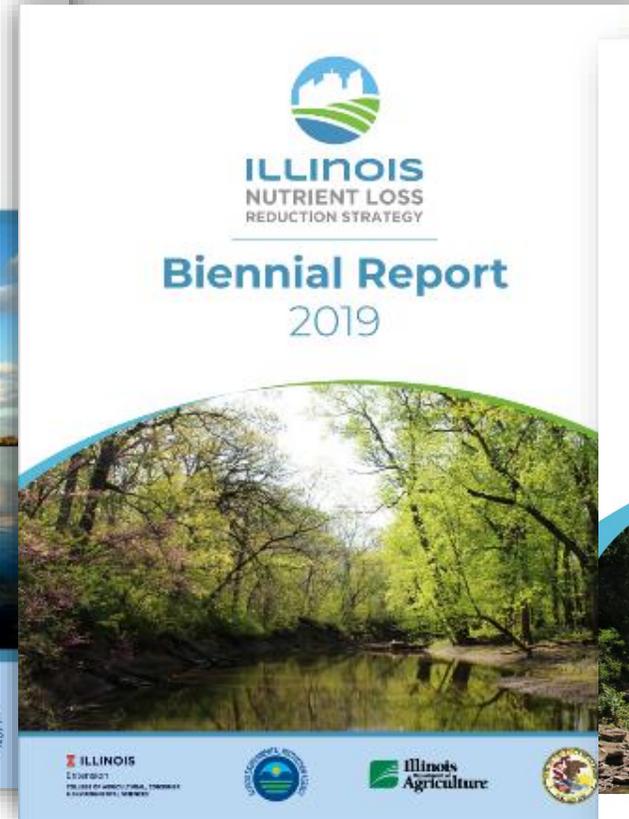
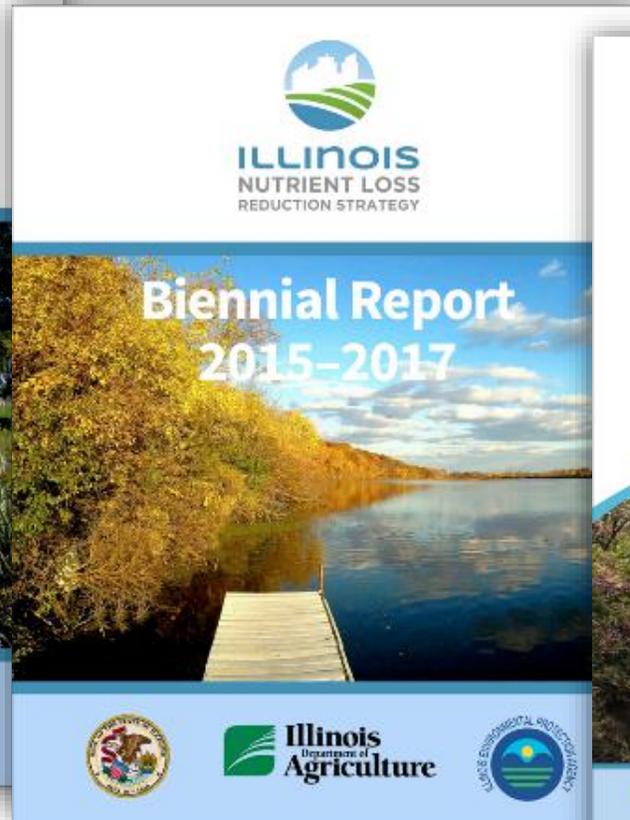
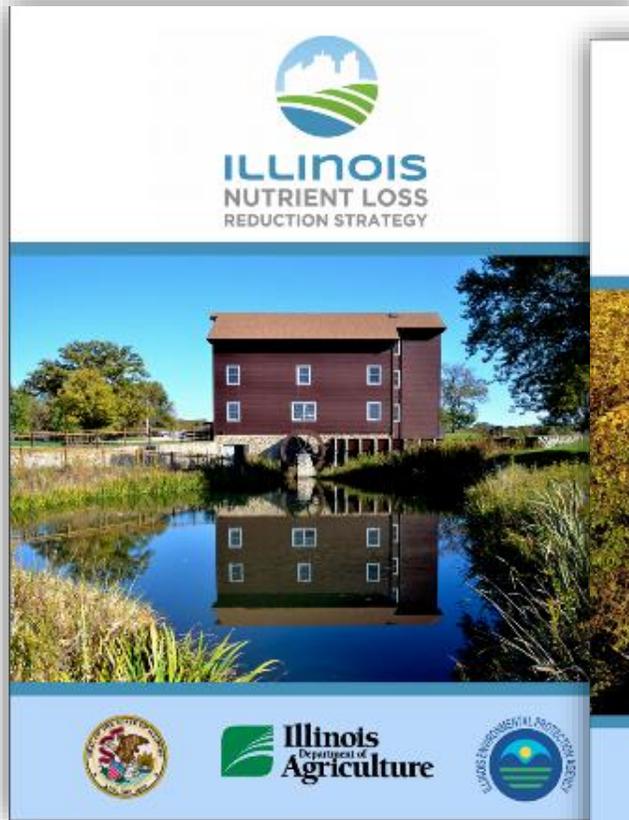
Why PCM?



Precision Conservation Management



Illinois Nutrient Loss Reduction Strategy



Goal: 45% Reduction in Total N & Total P Losses by **2035**

Interim: 15% Reduction in NO₃-N & **25% Reduction** in Total P by 2025



ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

Improving our
water resources
with collaboration
and innovation



Illinois
Department of
Agriculture



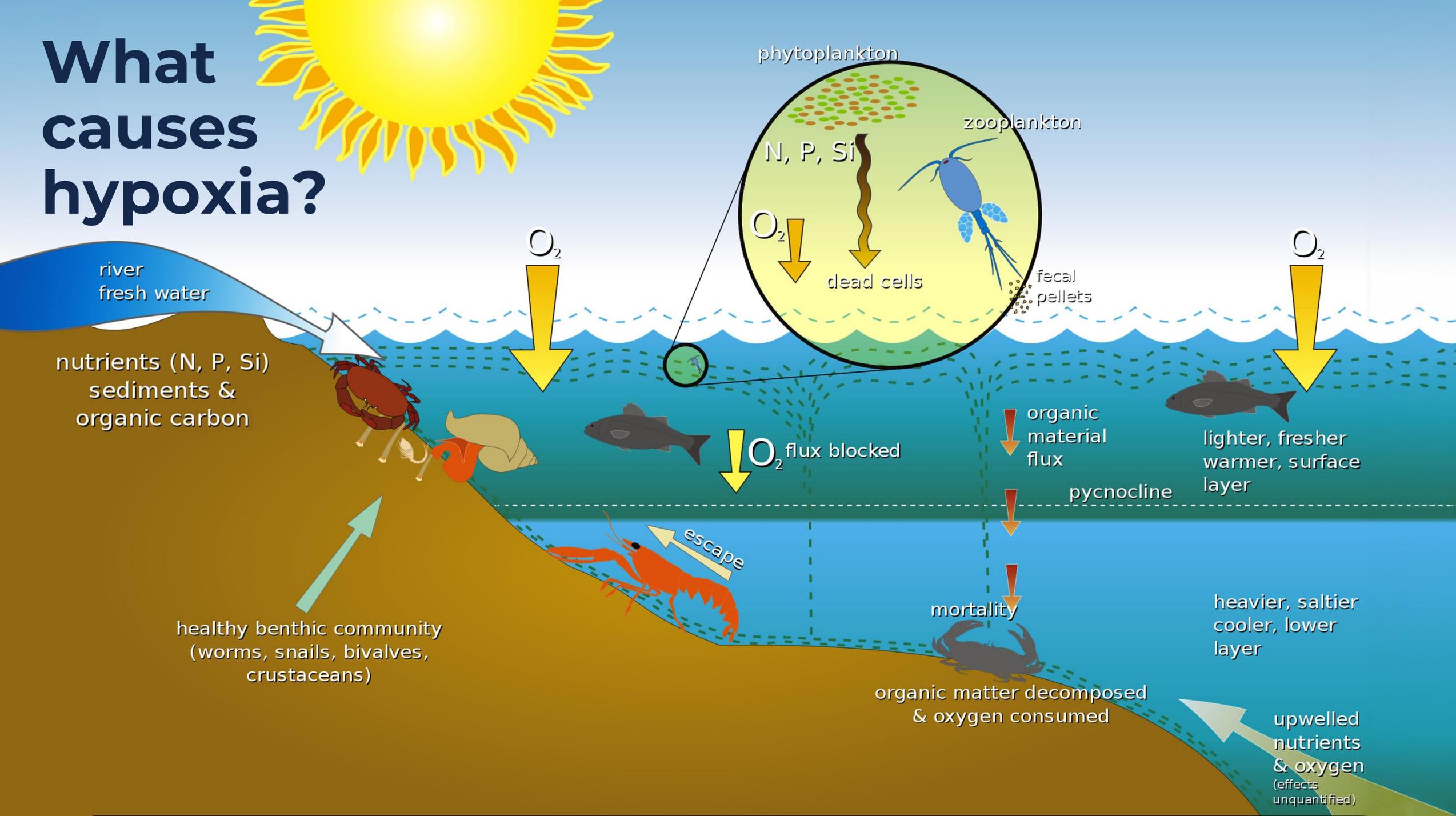
**College of Agricultural,
Consumer &
Environmental Sciences**
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



Rachel Curry
University of Illinois Extension



What causes hypoxia?



Gulf Hypoxia Task Force: Mission

- Causes and effects of eutrophication
- Coordinate activities to reduce size, shape, and severity
 - Coordinating and supporting nutrient management from all sources
 - Restoring habitats to capture and restore nutrients
 - Support other hypoxia-related activities



Gulf Hypoxia Task Force: Goal

- Reduce Hypoxic Zone to 1,930 sq mi
- Reduce nutrient loading to the Gulf of Mexico
- Reduce Total N and Total P by 45%

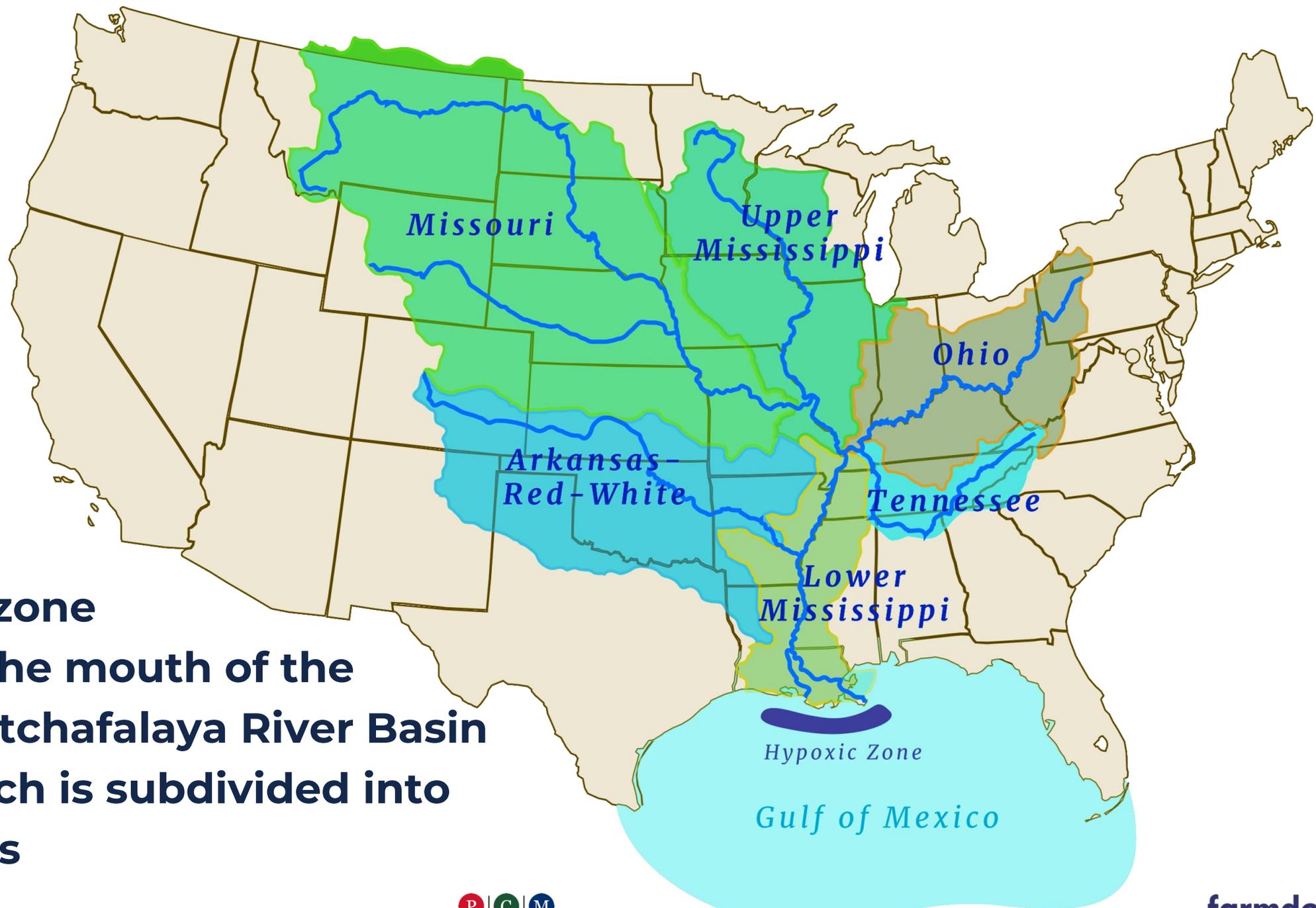


USEPA Nutrient Strategy Elements

1. Prioritize watersheds for N and P loading reductions
2. Set watershed load reduction goals based on best available information
3. Ensure the effectiveness of point source permits in priority sub-watersheds
4. Agricultural areas

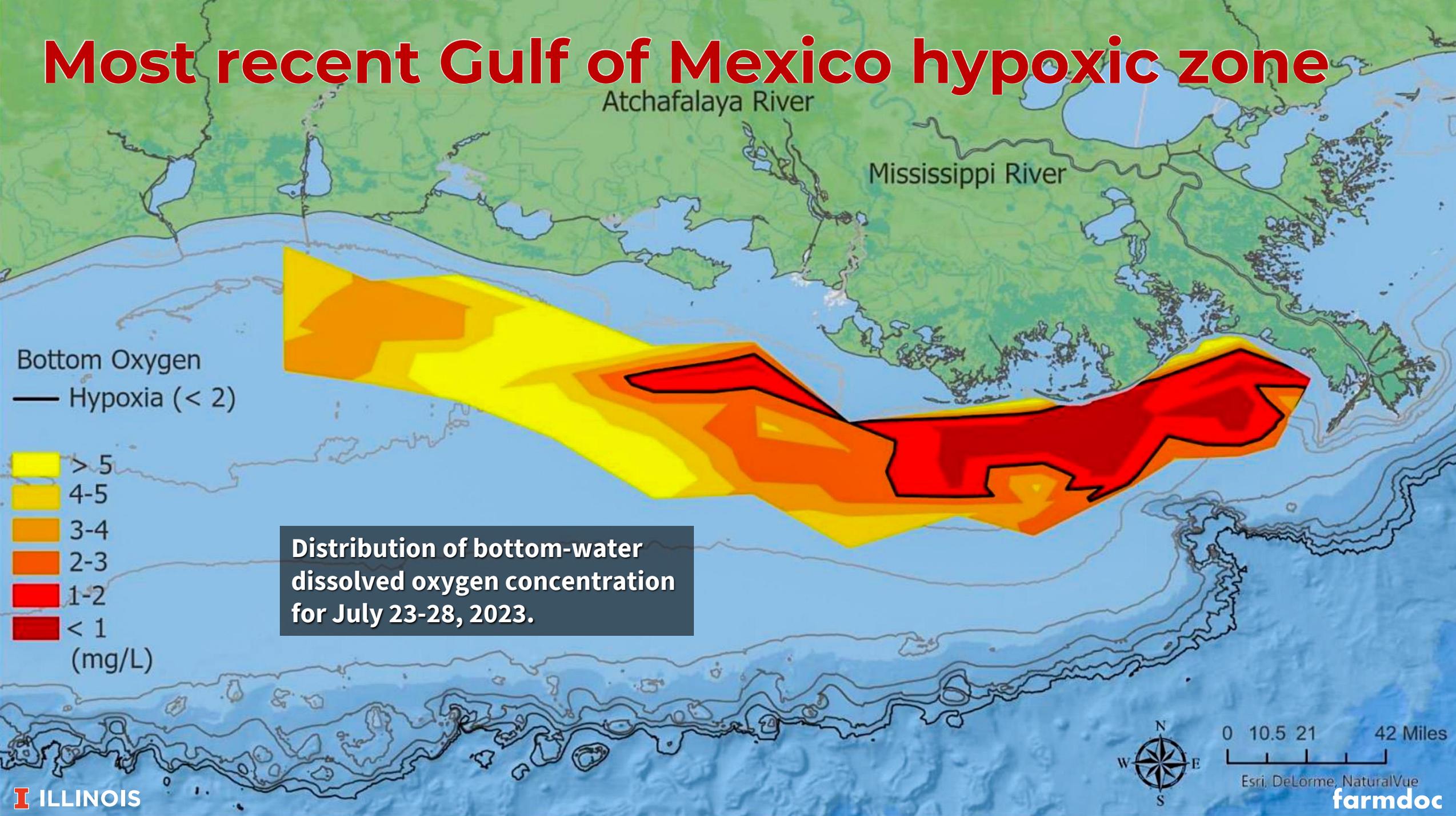
USEPA Nutrient Strategy Elements

- 5. Stormwater (non-MS4) and Septic systems**
- 6. Accountability and verification measures**
- 7. Annual public reporting of implementation and biennial reporting of load reductions**
- 8. Develop a work plan and schedule for numeric criteria development**

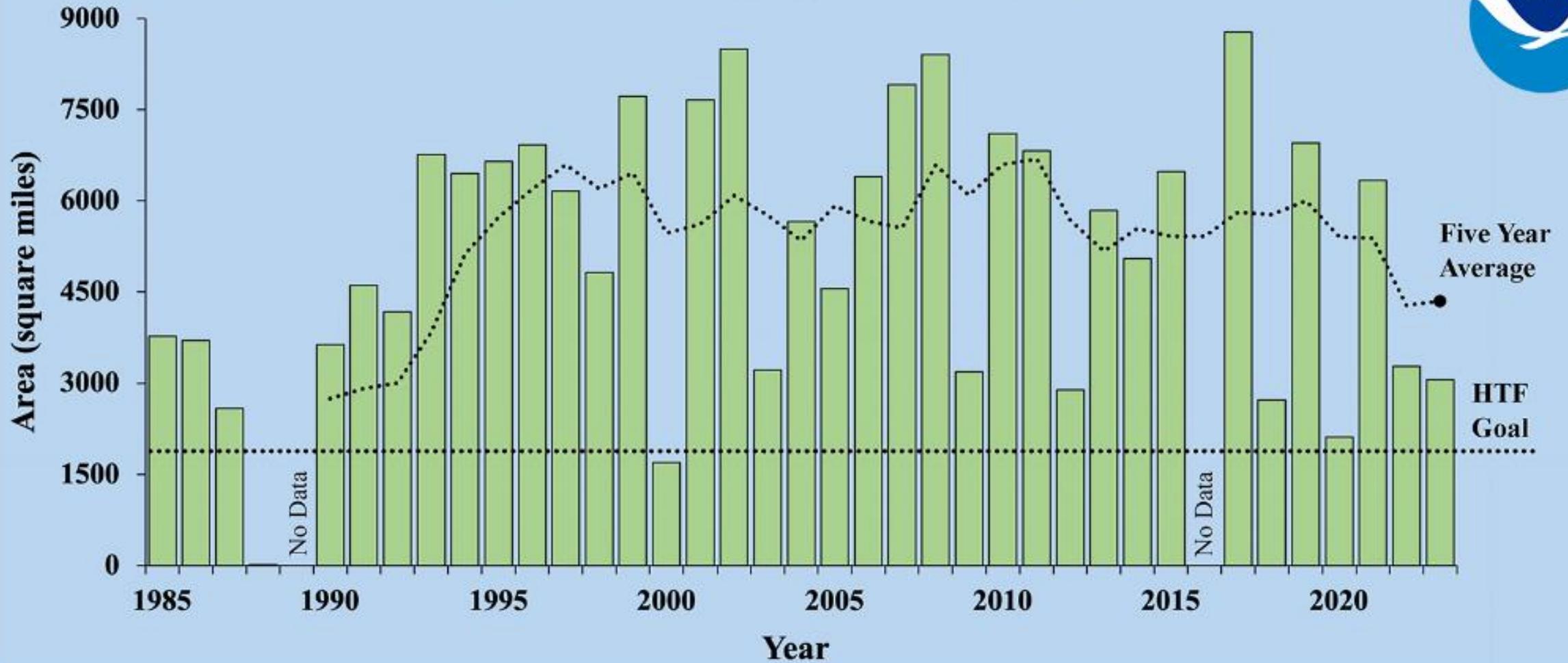


The hypoxic zone develops at the mouth of the Mississippi/Atchafalaya River Basin (MARB) , which is subdivided into six sub-basins

Most recent Gulf of Mexico hypoxic zone

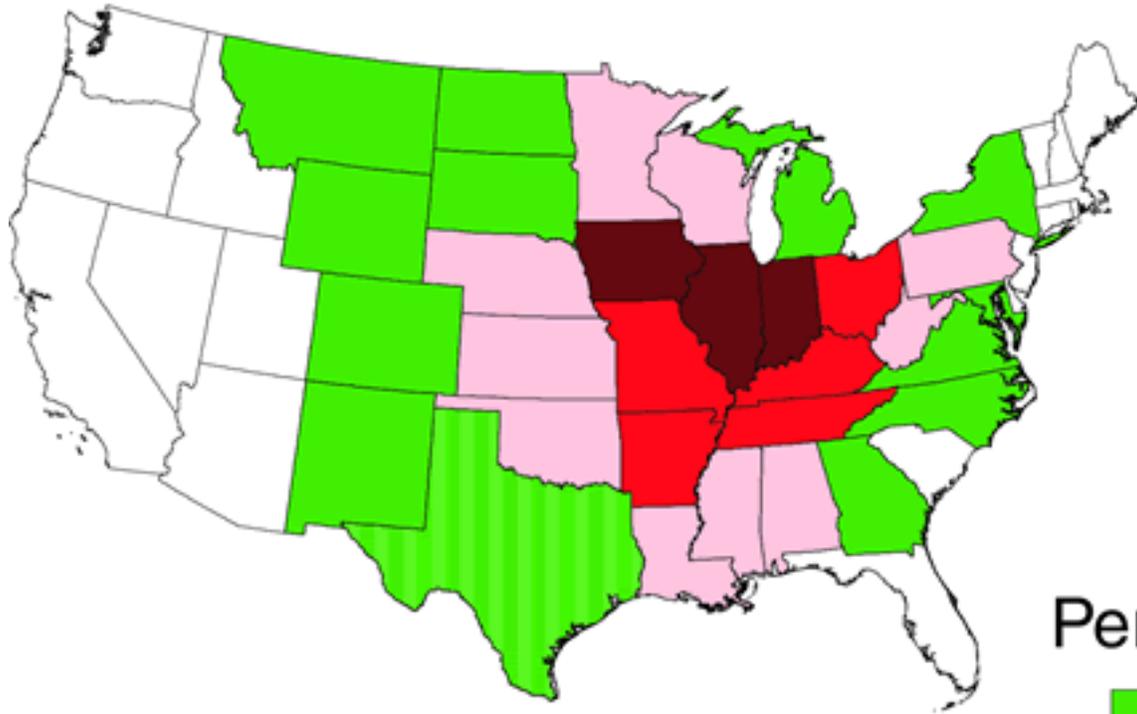


Bottom-Water Area of Hypoxia 1985-2023

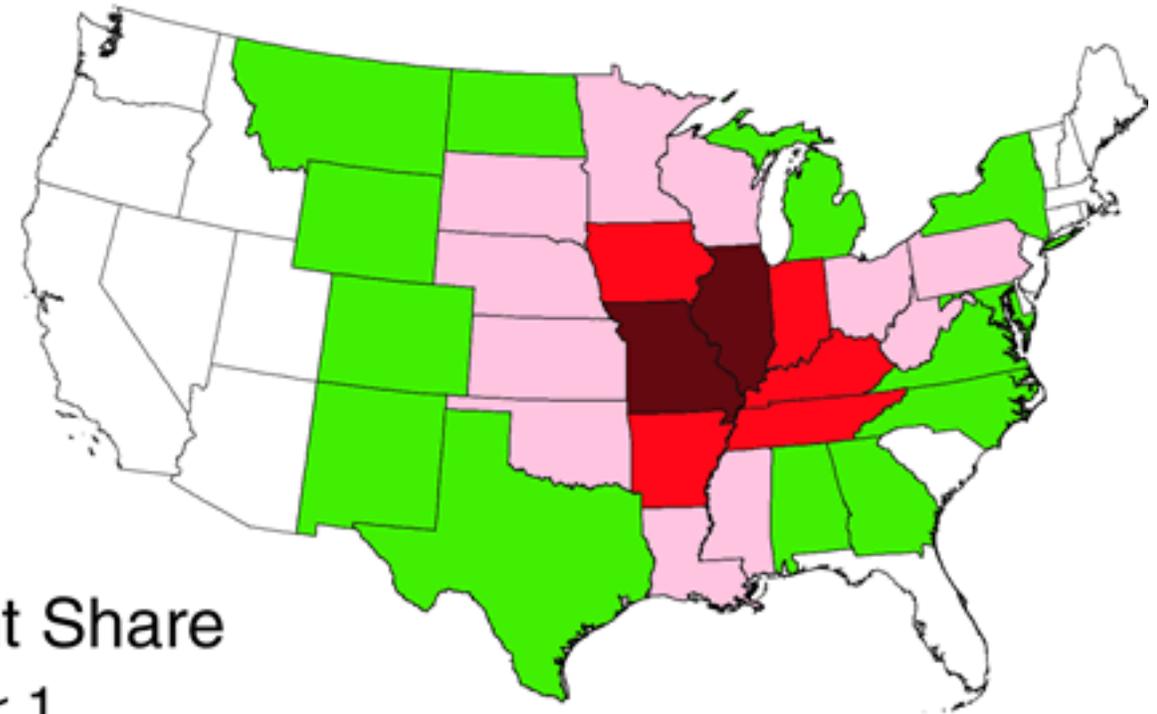


Nutrient contributions to the Gulf

Nitrogen



Phosphorus



Percent Share

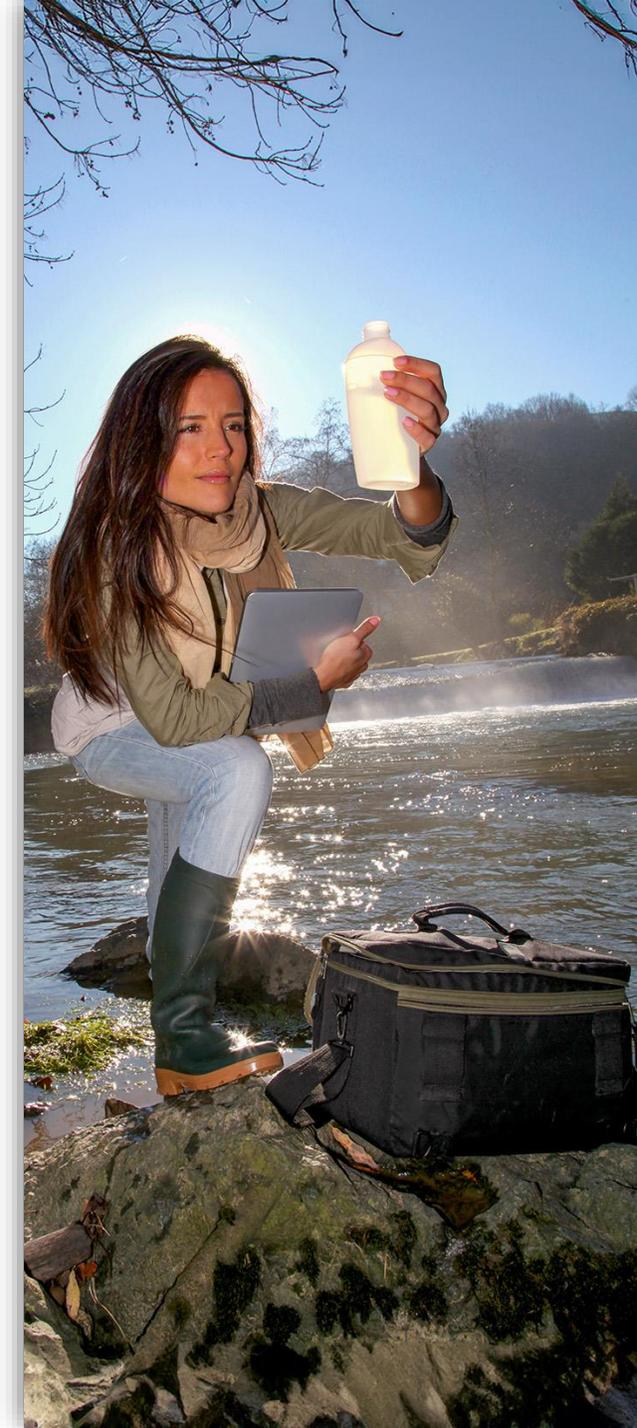
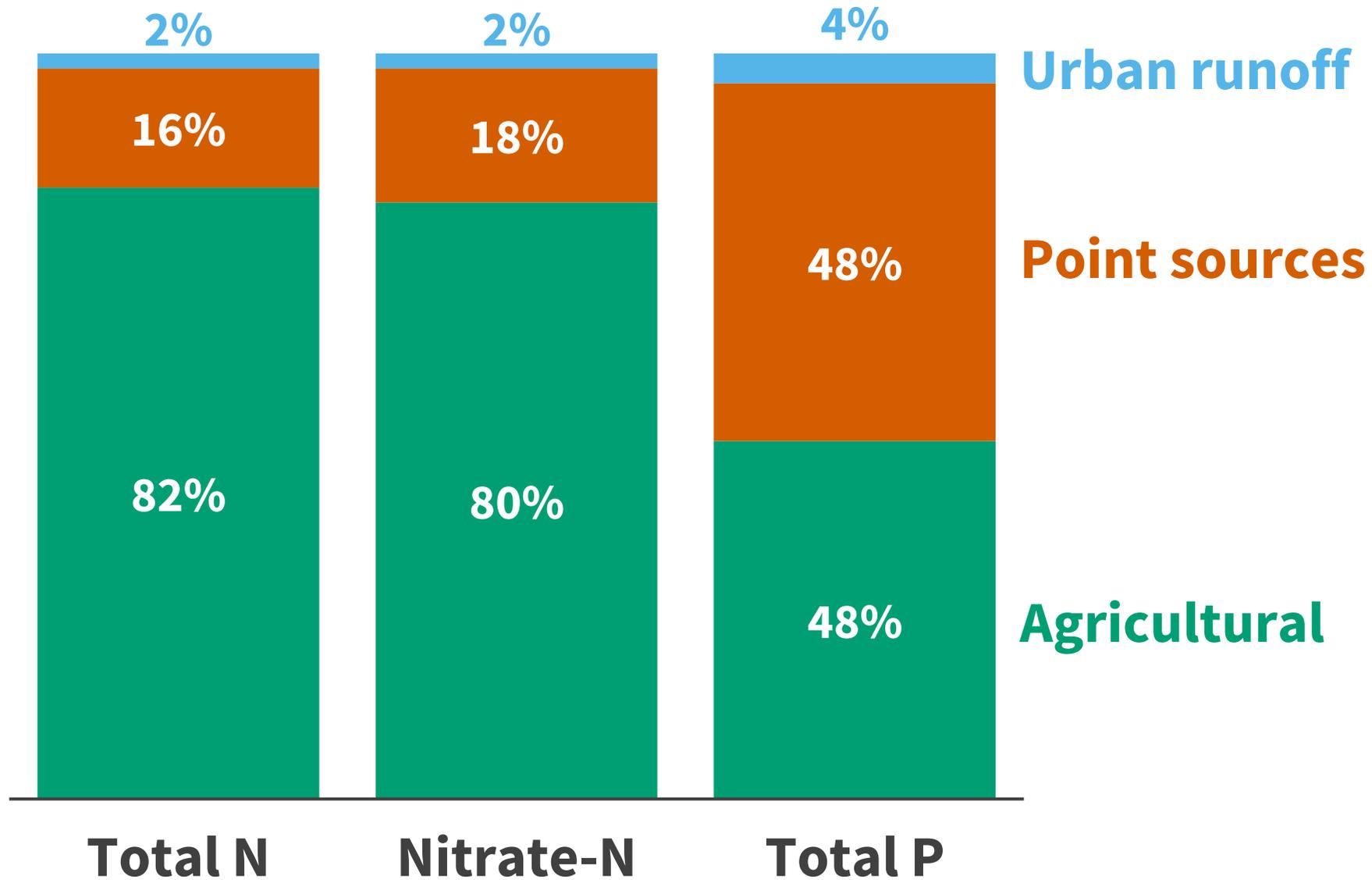


Nutrient Loss Reduction Strategy

- Released July 21, 2015
- Address nutrient loads from 3 sectors
 - Point Sources
 - Urban Stormwater
 - Agriculture
- Local water quality and Gulf hypoxia
- Long-term goal
 - Reduce N and P losses by 45%**
- 2025 interim goal
 - Reduce N by 15% and P by 25%**



1997 – 2011 average loads



Illinois NLRS Priority Watersheds

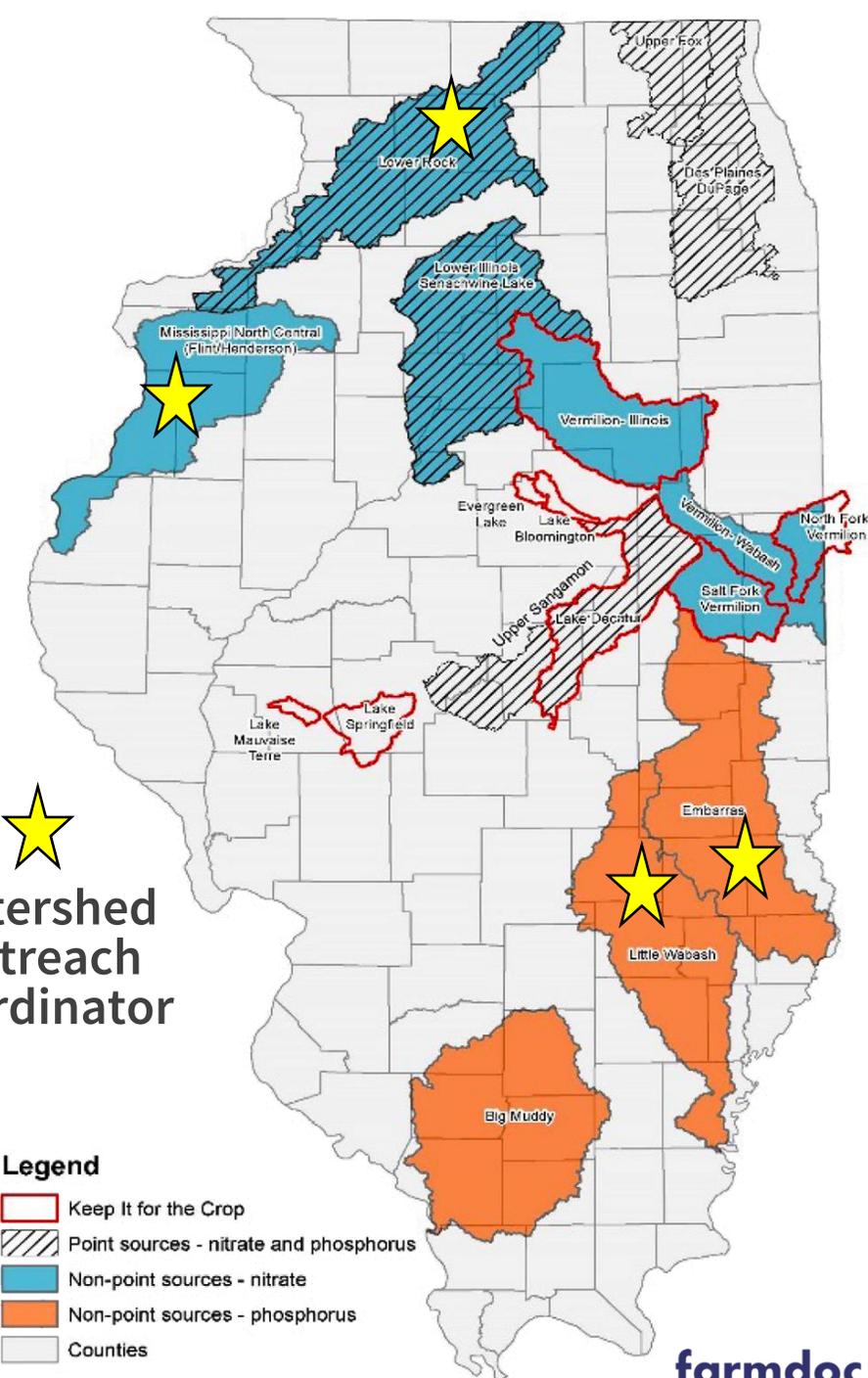
Prioritized by:

- Total loads (N or P)
- Local water quality concerns
- Active watershed plans

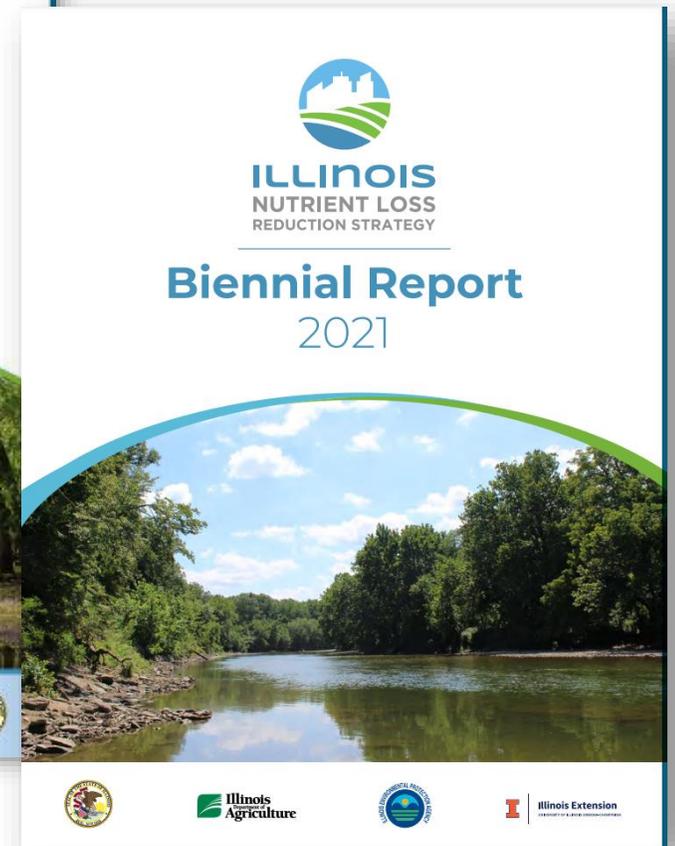
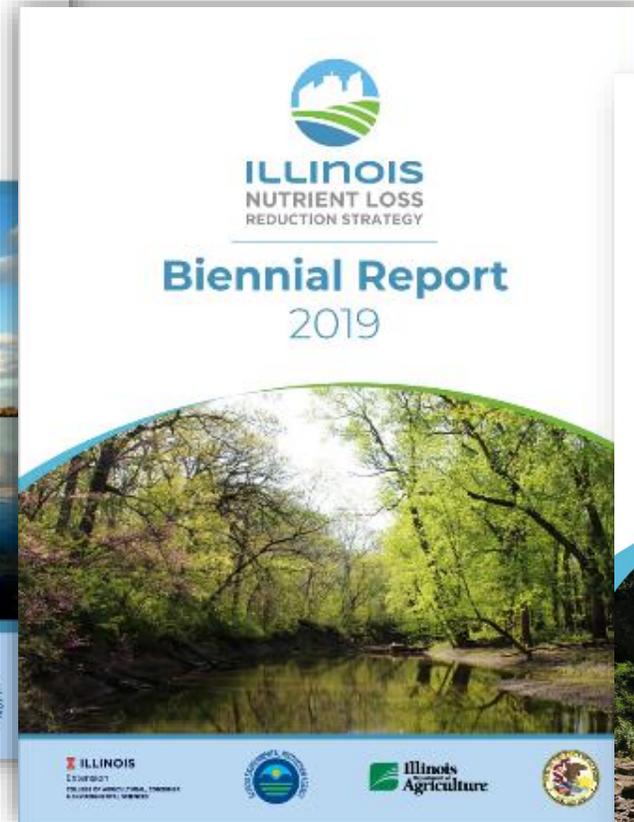
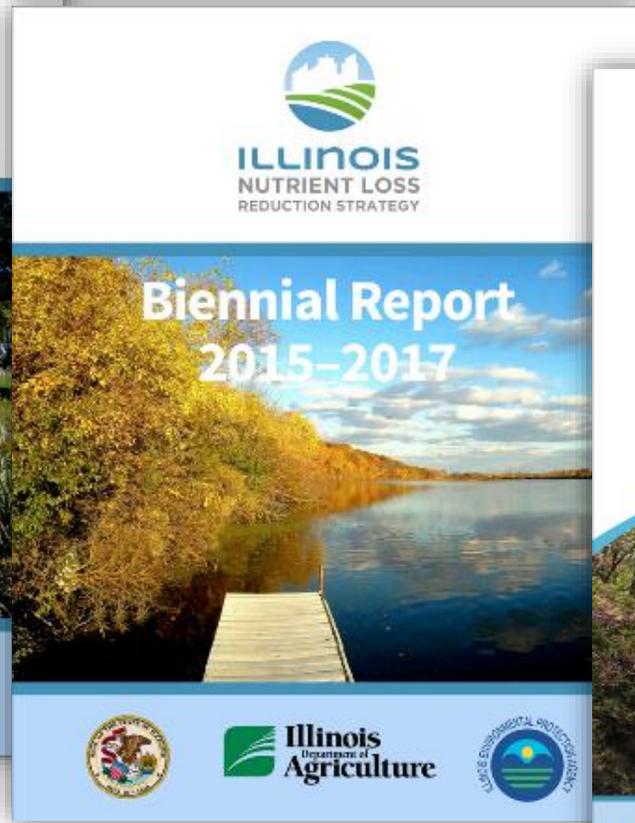
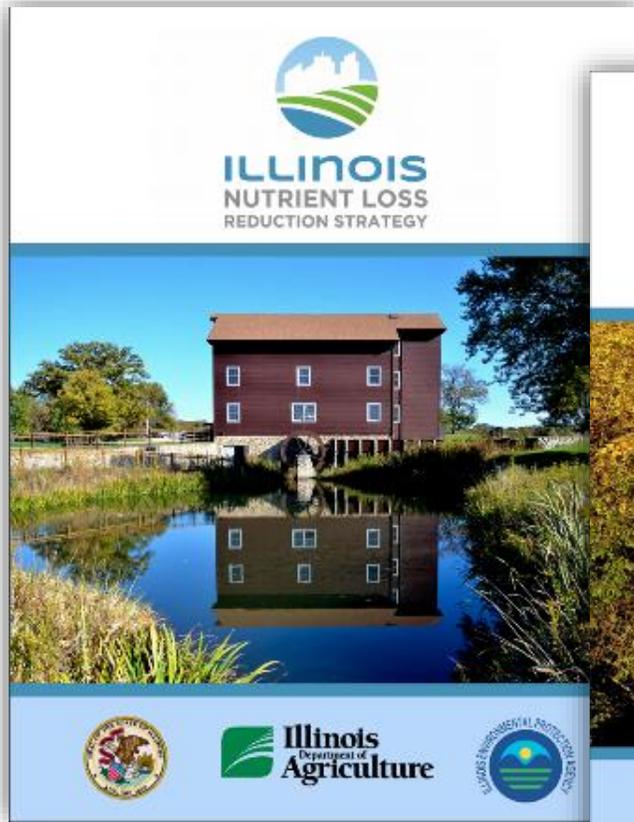
★
Watershed
Outreach
Coordinator

Legend

- Keep It for the Crop
- Point sources - nitrate and phosphorus
- Non-point sources - nitrate
- Non-point sources - phosphorus
- Counties



Illinois Nutrient Loss Reduction Strategy



<https://epa.illinois.gov/topics/water-quality/watershed-management/excess-nutrients/nutrient-loss-reduction-strategy.html>

Statewide Riverine Flow and Loads

	1980-96 Baseline	2013-17		2014-18		2015-2019		2016-20		2017-21	
	Average Value	Average Value	% Change from Baseline								
Nitrate-N Load (million lb/yr)	397	425	+7%	380	-4.4	448	+13%	461	+16.2%	416	+4.8%
Total Phosphorus Load (million lb/yr)	34	42	+23%	41	+20%	46	+35%	48	+42%	46	+35%
Water Yield (in/yr)	13	14.7	+13%	14.1	+9%	16.3	+25%	16.8	+30%	15.9	+23%

In-field Nutrient Loss Reduction Strategy conservation practices.

Practice	N Reduction	P Reduction	Cost / acre / year
Cover Crops (grassed-based)	30%	30% - 50% based on tillage choices	\$29
Maximum Return to Nitrogen Calculator	10%	0%	-\$8
Soil Test Phosphorus	0%	7%	-\$8
Conservation Tillage	0%	30% – 70% based on tillage choices	-\$17 to \$11 based on tillage choices
Nitrogen Inhibitor	10%	0%	\$7
50% Fall N / 50% Spring preplant N	7.5% - 10%	0%	\$17
40% Fall N / 10% Preplant / 50% Sidedress	15% - 20%	0%	\$17
Spring only Nitrogen	15% - 20%	0%	\$18
Terraces	0%	40%	\$40
Water and Sediment Control Basins	0%	60%	\$64

Edge of field Nutrient Loss Reduction Strategy conservation practices

Practice	N Reduction	P Reduction	Cost/acre/year
Bioreactor	25%	0%	\$17
Wetland	50%	0%	\$61
Saturated Buffers	40%	0%	\$10
Buffers (non-tiled)	90%	25% - 50%	\$294



Nutrient Loss Reduction Strategy land use change practice

Practice: Perennial / Energy Crops

N Reduction: 90%

P Reduction: 50% - 90%

based on tile drainage / tillage type

Cost/acre/year: \$86

Table 1. In-field Nutrient Loss Reduction Strategy conservation practices.

Practice	N Reduction	P Reduction	Cost / acre / year
Cover Crops (grassed-based)			
Maximum Return to Nitrogen Calculator	30%	30% - 50% based on tillage choices	\$29
Soil Test Phosphorus	10%	0%	-\$8
Conservation Tillage	0%	7%	-\$8
Nitrogen Inhibitor	0%	30% - 70% based on tillage choices	-\$17 to \$11 based on tillage choices
			\$7
			\$17
			\$17
			\$18
			\$40
			\$64

Illinois Nutrient Loss Reduction Strategy & Agricultural Conservation Practices

Nutrient loss in Illinois
Multiple sources contribute to the nutrients nitrogen and phosphorus in Illinois waterways. The Illinois Nutrient Loss Reduction Strategy identifies three primary source sectors of nutrients – agriculture, point sources, and storm water – based on measurements taken during the baseline period of 1980 to 1996 (Figure 1). The primary source of agricultural nutrient loss is fertilizer. Much of the nitrogen loss comes from tile-drained agricultural fields in northern and central Illinois. Phosphorus loss is often higher in southern Illinois where soil erosion rates are higher. The original 2015 strategy identified several priority watersheds. Of these, two nitrogen-priority and two phosphorus-priority watersheds had the greatest capacity to reduce annual nutrient losses and these regions have been provided with resources to help.

Impacts of nutrient loss
Excess nutrients can negatively impact water quality and aquatic life in local waterways, throughout the Mississippi River Basin, and downstream in the Gulf of Mexico. High levels of phosphorus and nitrogen lost from the land or wastewater facilities cause algal blooms. Algae grow quickly, consuming oxygen and blocking sunlight from reaching aquatic plants. When the algae die, bacteria in the water consume the oxygen, creating an uninhabitable hypoxic zone for aquatic life (U.S. EPA). The Gulf of Mexico Hypoxic dead zone costs the U.S. seafood and tourism industries \$82 million a year, according to the National Oceanic and Atmospheric Administration. Algal blooms also reduce the quality of drinking water and compromise the safety of recreational activities.

Nutrient loss has other economic implications. Fertilizer is necessary for optimal food production yields, but fertilizer costs have risen drastically in recent years (USDA Foreign Agricultural Service). Even with optimal fertilization techniques, fertilizer can be lost through a variety of pathways. Both over- and under-fertilization have impacts. Over-fertilizing leaves unused fertilizer in the field, which is easily lost. Under-fertilization might prevent the loss of nutrients but can impact crop production. Conservation practices and agricultural management

practices that optimize the source, rate, timing, and placement of nutrients help prevent nutrient loss and balance food production needs with stewardship of natural resources. Illinois' strategy highlights activities and management solutions that can reduce nutrient losses from agricultural systems.

The Illinois Nutrient Loss Reduction Strategy
In 2011, the U.S. Environmental Protection Agency tasked the 12 highest nutrient-contributing states to produce nutrient loss strategies. Each state outlined how it would reduce total nutrient loads by 45%. Illinois also has interim reduction goals of 15% nitrate-nitrogen and 25% total phosphorus by 2025. One way to reduce nutrient loss is by implementing conservation practices recommended by the strategy (Tables 1-3).

As research emerges, new and updated practices can be proposed and included in the strategy following a formal evaluation by its science team. These practices and their reduction values lead to measurable local water quality benefits and are also used to track progress toward the reduction goals.

NITRATE-NITROGEN

- 82% Agriculture
- 16% Point Sources
- 2% Urban Storm Water

PHOSPHORUS

- 48% Agriculture
- 48% Point Sources
- 4% Urban Storm Water

Figure 1. Nitrate-nitrogen and total phosphorus lost to the Mississippi River from Illinois by each sector from 1980 to 1996.

Scenario NP7

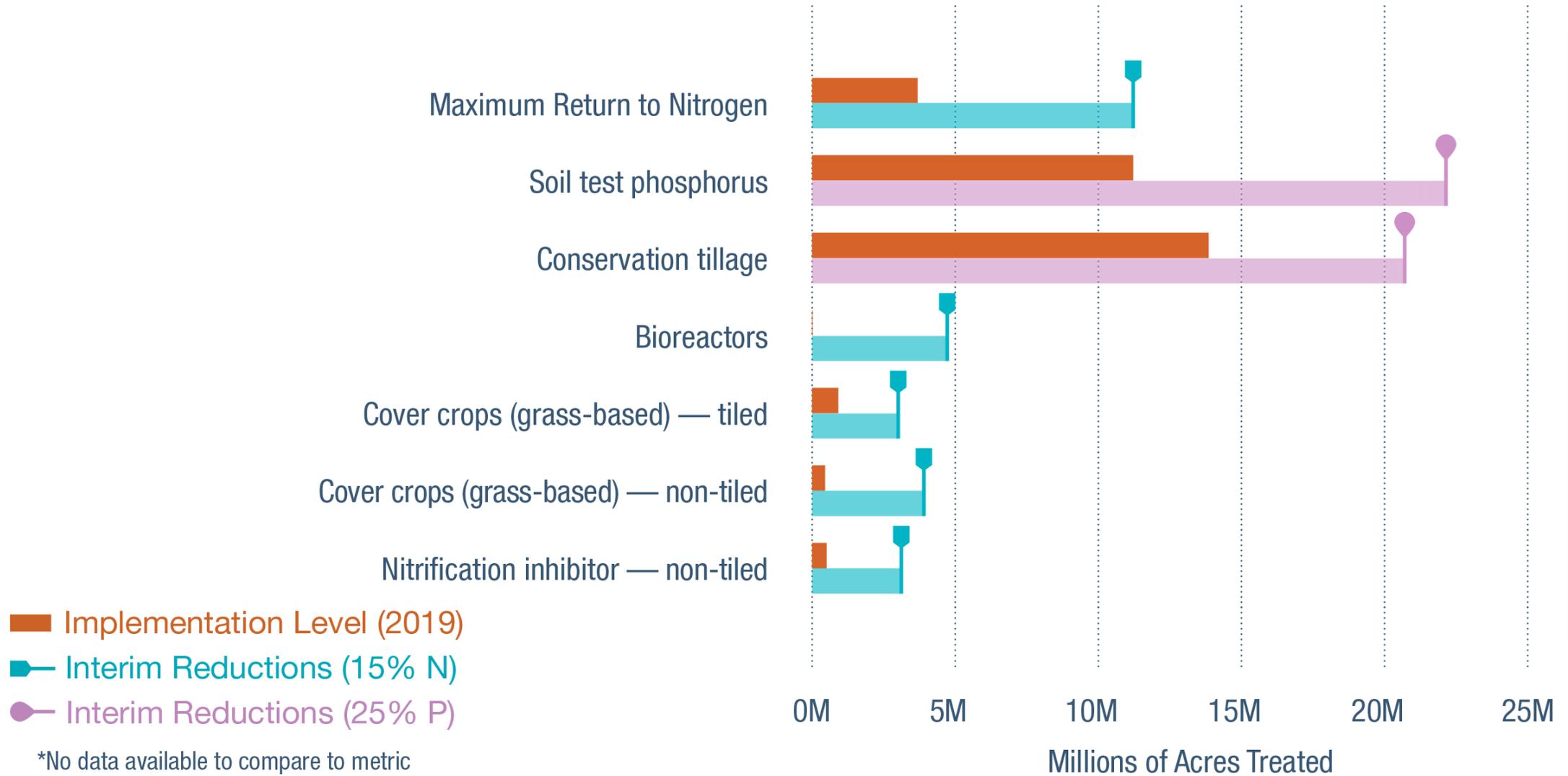


Figure 8.5. Agricultural implementation as compared with scenario NP7 (which reflects interim goals)

Scenario NP8

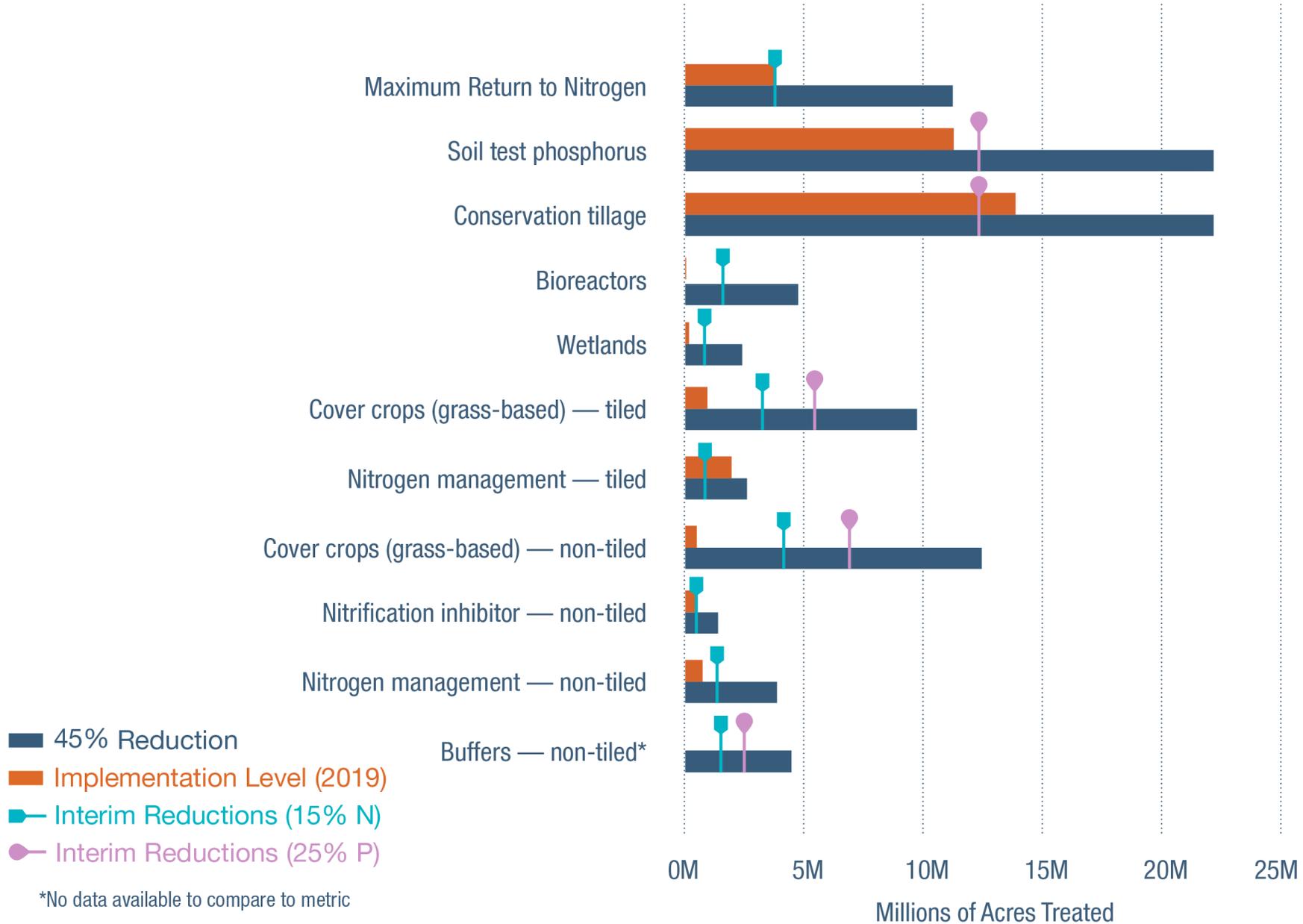


Figure 8.6. Agricultural implementation as compared with scenario NP8

New ag conservation practices

3 practices added recently

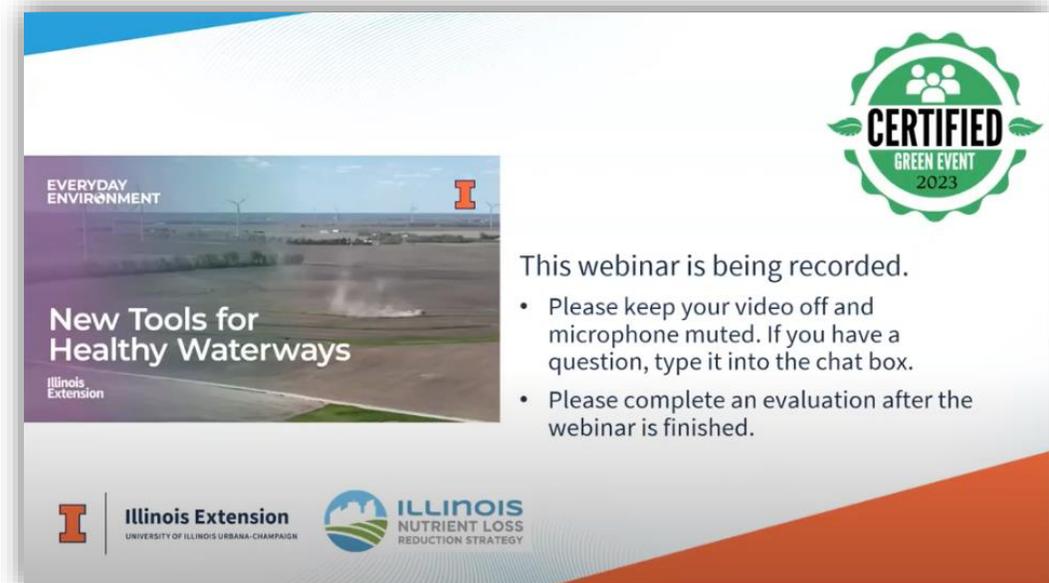
2021

- Saturated buffers
- Terraces

2023

- Water and Sediment Control Basins (WASCOBs)

Everyday Environment Webinar
New Tools for Healthy Waterways
go.illinois.edu/HealthyWaterways



EVERYDAY ENVIRONMENT

New Tools for Healthy Waterways

Illinois Extension

CERTIFIED GREEN EVENT 2023

This webinar is being recorded.

- Please keep your video off and microphone muted. If you have a question, type it into the chat box.
- Please complete an evaluation after the webinar is finished.

Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

NASS Survey Results – Nitrogen Management

Nitrogen Management Strategy	Acres in 2021	% of planted corn acres
Corn acres planted	11,000,000	100%
MRTN or lower rate	8,360,000	76%
Fall/winter fertilizer with nitrification inhibitors	3,410,000	31%
Spring fertilizer only	4,440,000	40%
Spring fertilizer with nitrification inhibitors	3,690,000	34%
Split fertilizer applications (spring and fall)	3,820,000	35%

NASS Survey Results

Phosphorus Management

Phosphorus applications	Acres in 2021
P application rates were reduced since 2011	6,210,000
Placement of P applications were moved from broadcast to subsurface or banding	1,080,000

- IL Agronomy Handbook removal rates were updated
- Soil test information
- Other reasons, including cost

NASS Survey Results

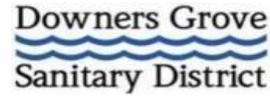
Cover Crops

2021 Cover Crops	Acres
Corn acres planted after cover crops	450,000
Soybean acres planted after cover crops	890,000
Total cover crops	1,390,000

Agriculture



Point Source



Public Works- stormwater, PWS

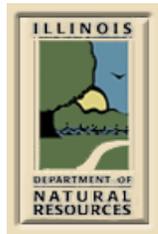
Metropolitan Planning Council



Government



Illinois Extension UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



Prairie Research Institute



The National Great Rivers Research & Education Center



Environment/Conservation



ENVIRONMENTAL LAW & POLICY CENTER



prairieriversnetwork



SIERRA CLUB ILLINOIS CHAPTER



farmdoc





Illinois Nutrient Loss Reduction Podcast



Illinois Nutrient Loss Reduction Blog

This is a podcast RSS Feed generated by Transistor.fm. It is meant for use by podcast apps using the URL in the address bar.

The Illinois Nutrient Loss Reduction Podcast

Podcast by Illinois Extension

[Visit podcast website →](#)



Episode 56 | Cover Crop Considerations: a farmers perspective
 Mon, 25 Sep 2023 10:51:43 -0500 • 19 minutes

▶ 0:00 / 0:00

Episode 55 | How Extension drives student experiences in agriculture: Research and Extension Experiences for Undergraduates (REEU)
 Thu, 10 Aug 2023 19:30:14 -0500 • 20 minutes

▶ 0:00 / 0:00

Episode 54 | Navigating Extreme Weather Impacts on Agriculture
 Mon, 31 Jul 2023 09:48:53 -0500 • 24 minutes

▶ 0:00 / 0:00

Episode 53 | Unlocking the Potential: Exploring Camelina as a Cover Crop
 Thu, 22 Jun 2023 11:09:44 -0500 • 19 minutes

▶ 0:00 / 0:00

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN [Give](#) / [Volunteer](#) / [Careers](#)

I College of Agricultural, Consumer & Environmental Sciences
 Illinois Extension

[Topics](#) ▾ [Learn](#) ▾ [Events](#) ▾ [News](#) [Connect](#) ▾ [Impact](#) ▾ [About](#) ▾



Nutrient Loss Reduction

[Home](#) > [Blogs](#) > Nutrient Loss Reduction

Latest Posts



Cover crop considerations: A farmer's perspective

Cover crop considerations: A farmer's perspective
October 11, 2023
 In a recent conversation held at the Farm Progress Show, three farmers spanning the state – Norm Deets, [Chad Bell](#), and...
[Finish this story](#)

Coming Soon!

2023 Biennial Report

December 2023

Past reports may be found at
go.Illinois.edu/NLRS

Annual NLRS Conference

January 25, 2024

- Open to the public
- Springfield, IL
- Hybrid available
- Register at go.Illinois.edu/NLRSconference

SAVE THE DATE

THURS.,
JANUARY
25 2024

ILLINOIS DEPARTMENT OF
AGRICULTURE
SPRINGFIELD, ILLINOIS
& ONLINE

ILLINOIS NLRS
PARTNERSHIP
CONFERENCE



ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

Who is PCM?



Precision Conservation Management





PEPSICO



NFWF



Precision Conservation Management
PrecisionConservation.org

Partners

MIDWEST ROW CROP COLLABORATIVE



Illinois Pork Producers. Generations of Commitment.



SUSTAINABLE FOOD LAB





Clay Bess

PCM Operation Manager
cbess@precisionconservation.org
309-445-0278



Lou Liva

PCM Specialist
Rock Island, Mercer, Knox, and Henry Counties
lliva@precisionconservation.org
309-391-2346



Andrea Kohring

PCM Specialist
Monroe, St. Clair, Madison, Clinton, and Washington Counties
akohring@precisionconservation.org
309-319-8809



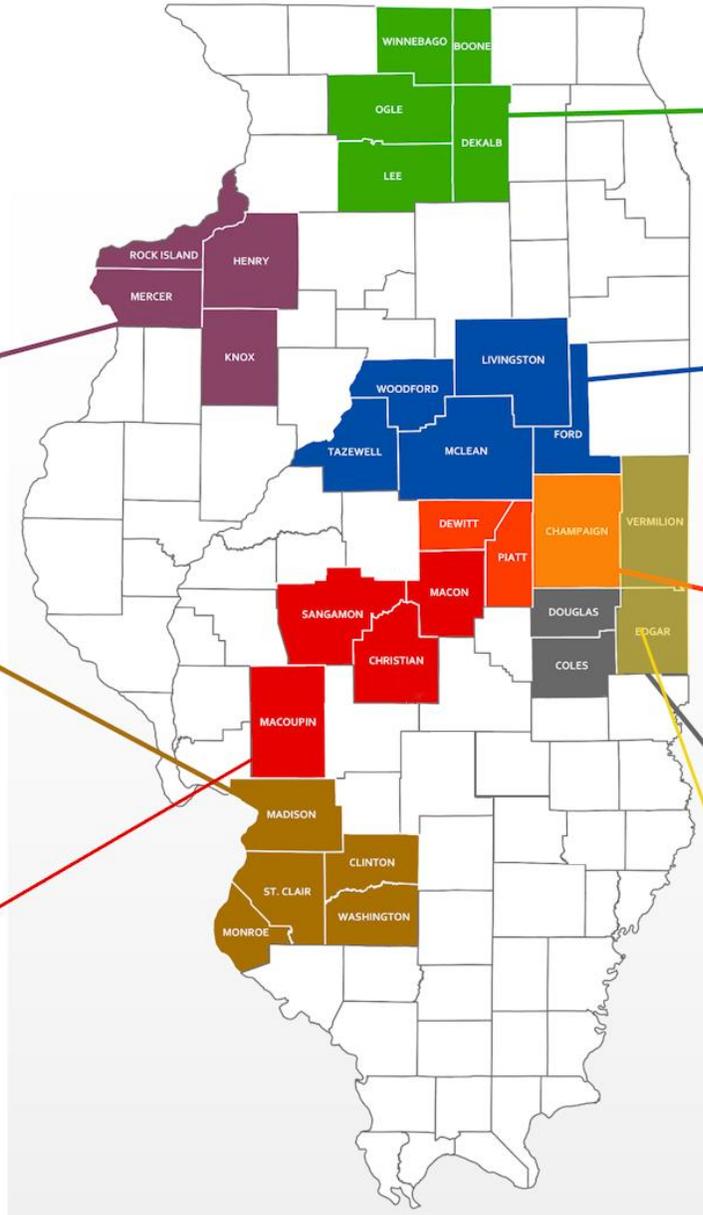
Darren Cudaback

PCM Specialist
Select counties in Nebraska
dcudaback@precisionconservation.org
308-216-1153



Andrew Hiser

PCM Specialist
Christian, Macoupin, Sangamon Counties
ahiser@precisionconservation.org
309-307-7520



Alexa Rutherford

PCM Specialist
Ogle, Lee, DeKalb, Boone, and Winnebago Counties
arutherford@precisionconservation.org
309-336-9779



Aidan Walton

PCM Specialist
Ford, Livingston, McLean, Tazewell, and Woodford Counties
awalton@precisionconservation.org
309-391-2345



Jonah Cooley

PCM Specialist
Piatt, DeWitt, and Champaign Counties
jcooley@precisionconservation.org
309-831-7558



Jacob Gard

PCM Specialist
Coles, Douglas, Edgar, and Vermilion Counties
jgard@precisionconservation.org
309-200-6180



Leyton Brown

PCM Specialist
Champaign, Vermilion and Edgar Counties
lbrown@precisionconservation.org
309-307-7515

Precision Conservation Management Focus Regions - Kentucky



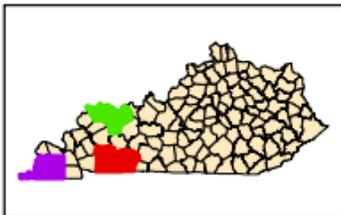
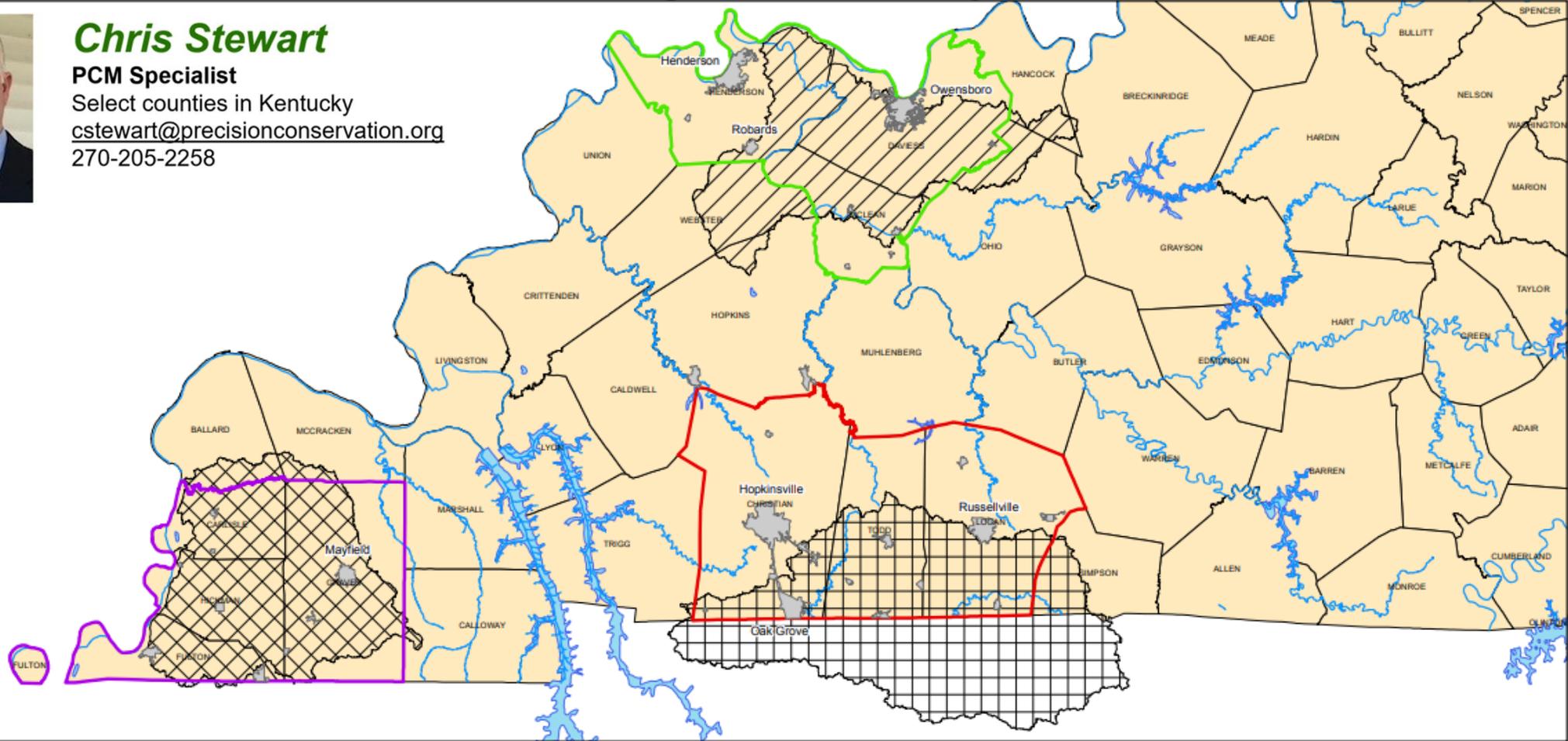
Chris Stewart

PCM Specialist

Select counties in Kentucky

cstewart@precisionconservation.org

270-205-2258



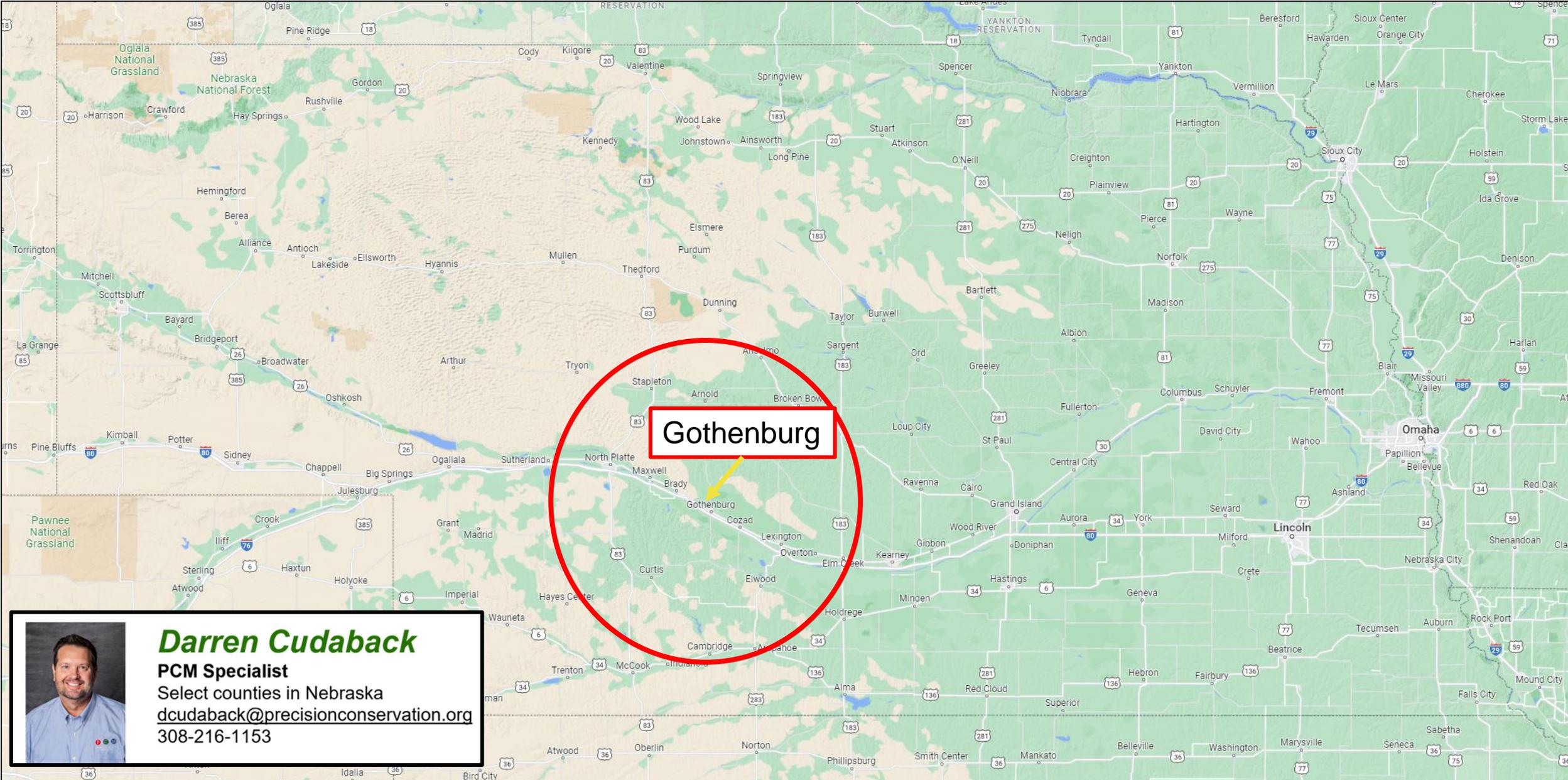
	Total Acres	Total Ag Acres	# of Farms
Lower Cumberland	1,061,327	817,113	2,842
Lower Green	767,272	537,527	1,715
Purchase	793,407	614,946	2,243

Source: NRCS, NHD, NASS
Map Produced November 2015

Legend

-  Lower Cumberland
-  Lower Green
-  Purchase

Map created by:
 Heartland
GIS



Darren Cudaback
PCM Specialist
Select counties in Nebraska
dcudaback@precisionconservation.org
308-216-1153

PCM Leadership and Support

Administration

- **IL Corn: Greg Goodwin, Dr. Laura Gentry, Debbie Malloch**
- **IL Soy Agronomy: Megan Miller**
- **PCM Operations: Clay Bess**

Additional Administrative Support

- **IL Corn Accounting: Lucas McPherson, Dana Hancock, Mike Ward**
- **IL Corn Operations: Kayla Gallagher, Katie Meredith**
- **IL Soy Agronomy: Deanna Burkhart**
- **IL Corn Comms: Lindsay Mitchell, Tara Desmond**
- **IL Soy Comms: Claire Weinzierl**
- **PCM Comms/Marketing: Rosalie Trump**

IT Partner

Heartland Science and Technology Group
Glen Salo, Andrew McClintock, Gershwin Marks, Susan Sterns

Data Analysis Partner

- **U of I ACES: Dr. Gary Schmitkey**
- **U of I farmdoc Team**

Additional Technical/Operations Support

- **5YT Program: Jim Isermann**
- **IL Soy: Agronomy Team**
- **IL Corn: Megan Dwyer**
- **IL Corn: Rod Weinzierl**
- **IL Corn: Jim Tarmann**
- **PCM Technical Support: Patrick Morse**

Glen Salo

President and Founder HS&TG



*“His pivotal contributions to the **Precision Conservation Management (PCM)** program, in partnership with the Illinois Corn Growers Association, provided farmers with essential tools to understand the delicate balance between environmental impact and financial prosperity.”*

– Austin Arrington, PLANT GROUP



How does PCM work with Farmers?



Farmer Onboarding – As easy as 1, 2, 3

Step 1: Visit www.precisionconservation.org

Increasing Farm Incomes & Environmental Outcomes

A Farm Conservation Service Program serving Illinois, Nebraska and Kentucky

Find Your Specialist

Log In



ACCESS TO EXPERTS



COST-SHARE OPPORTUNITIES



DATA ANALYSIS

Farmer Onboarding – As easy as 1, 2, 3

Step 2: New Farmer Register Here

Login



[Forgot Password?](#)

Login

[New Farmer Register Here](#)



Farmer Onboarding – As easy as 1, 2, 3

Step 3: Create an account

Registration

Using the Farmer Portal requires approval. To get started, please fill out this form including agreeing to the terms and conditions and requesting enrollment in the PCM Program.



- [Click here to read the terms and conditions](#)
- [Click here to request enrollment in the PCM Program](#)

Register

Already a PCM member? [Login](#)

Enrollment and Data Collection

- Striking a balance between light data burden and ability to produce meaningful insights and calculate outcomes
- PCM Specialists enter data on Farmer's behalf
- Can work with your data in any format provided

Date Collected: _____ Data Collector: _____
Farmer Name _____ DOB: _____
Home Address _____
Shop/Farm/PO _____
Cell Phone # _____
Email Address _____ Do you text? Prefer / Yes / No _____
Are you available for 7 a.m. report deliveries in February? Yes Maybe
What generation farmer are you? _____ Innovator _____ early adopter _____ main stream _____ late adopter _____
When did you start: Farming _____ No-tilling _____ Strip-tilling _____ Cover Cropping _____
Would you be interested in (AI=already implementing):
1. Reduce N to MRTN Yes No AI 4. Moving N to spring/in-season Yes No AI
2. No-till or Strip-till Yes No AI 5. Incorporating Small Grains Yes No AI
3. Cover Crops Yes No AI 6. Speaking to other growers, at events, or about PCM Yes No
Circle if you've tried: Cereal Rye / Annual RG / Radishes / Oats / Clover / Turnip / Rapeseed / _____
Cover Crop Dealer: _____ Cover Crop Applicator: _____
County that most farm acres are in: _____ Have you ever worked with NRCS? Yes / No _____
Illinois Corn Member? Yes / No _____ Are you participating in the SWCD's PFC program? Yes / No _____
PCM works with certain co-ops/entities to provide financial assistance. Circle if you work with
Cargill TGM Bunge Frito Marquis Nutrien ADM PEI Elevator: _____
Carbon Market Participation: SWOF ESMC CIBO Other: _____ None Interested
Reason(s) for conservation: _____
Your biggest hurdle for conservation: _____
How did you hear about PCM? _____
Other involvement: _____ ex: PF, leadership, board
 My Specialist has explained, and I agree to the PCM, FPC, CFT, STAR, SYT terms & conditions
 I confirm to be participating in only one, if any, carbon market (above information is correct)

PCM Reports: Resource Analysis & Assessment Plan (RAAP)



Farmer's Time Commitment

\$500 first year participation payment, \$250 second year

4 touch points, at least 3 in-person

- Summer Data Collection/Enrollment
30 minutes to 2 hours
- Fall Visit to discuss next year's practices
30 min or combine ride
- Harvest Data Collection
phone call or quick visit
- RAAP Delivery
45 minutes to 2 hours



Deciphering Programs & Promoting Opportunities

*Exclusively
through PCM*

1. PCM AVAILABLE PROGRAMS: THE BEST OF THE BEST (OF THE BEST)

PepsiCo Cover Crop Cost Share

PCM farmers are eligible to receive \$10 or \$15/acre for growing a cover crop. Preference is for fields that have not previously received cover crops. Farmers are also eligible for payments on no-till/strip till acres and acres where they have reduced their nitrogen rates by a substantial amount. Farmers agree that PepsiCo has exclusive rights to claim all greenhouse gas reductions (carbon credits) generated on cost shared acres.

5-Year Transition Program

The 5-year Transition program (5YT) is a partnership effort between PCM, NRCS, and the Walton Family Foundation. To participate, work with your PCM Specialist to identify one field (80+ acres) or 2 adjacent fields (40+ acres each) on which you will maintain your current management system on half the acres and implement a 5-year “soil health management system” on the other half. Compensation for this project includes \$1500/year.

NRCS-RCPP Cost Share

NRCS (Natural Resources Conservation Service) offers PCM farmers Farm Bill-available funding through the Regional Conservation Partnership Program (RCPP) to grow cover crops when their application is accepted. Farmers can receive anywhere from \$35-\$64/a to grow cover crops. Many options are available and funding level increases with more advanced overwintering species, longer contract length, and increased acreage. Although applications can be submitted anytime, these contracts cannot be finalized until early 2023 so the funds will be available for cover crop seeding in fall 2023.

Deciphering Programs & Promoting Opportunities

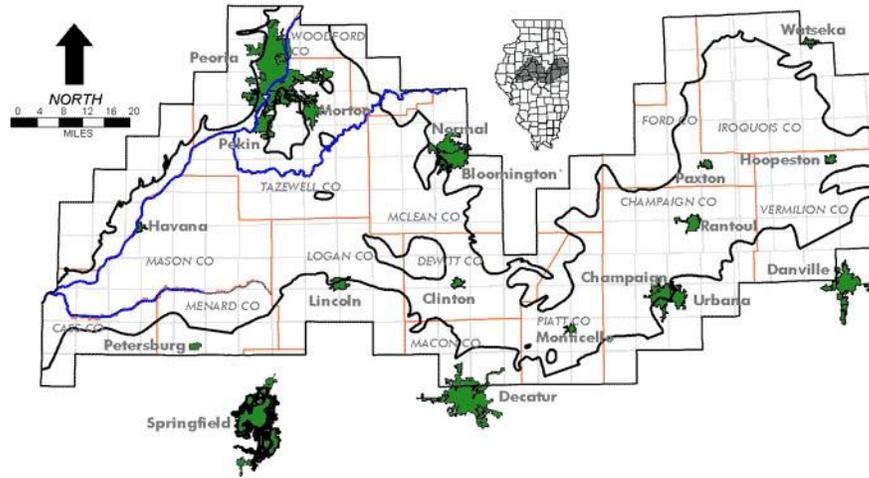
11. AVAILABLE PROGRAMS

11.1. Illinois

Program	Financial Incentive	Targeted Practices	Duration	Pre-Requisites
Conservation Stewardship Program (CSP) (NRCS)	Minimum of \$1,500, Maximum of \$40k per year	focus on in-field practices esp. nutrient management, reduced tillage, & cover crops	<u>5 year</u> contract	Full control of land for 5 years, agriculture producer
Environmental Quality Incentives Program (EQIP) (NRCS)	Determined by practice	First-time implementation to address resource concerns	Annual contract	Agriculture producer, control of land
IL Corn Cover Crop Coupon Program	Between \$150 and \$200	Cover Crop	One time discount	IL Corn Growers Association Membership
Precision Conservation Drone	Free of charge	All conservation practices	Seasonal	PCM Cooperator
Conservation Partnership Program	Variable (up to 75% funded)	Minimum tillage, cover crops, well decommissioning, Filter Strips, Waterways, Nutrient Management	Varies, Until Funds are Exhausted	Must be a new practice
S.T.A.R. Program	Potential premium and stewardship recognition	Any conservation, land agreements	Rolling	None

What your farming practices might impact

The Mahomet Aquifer Region of East-Central Illinois



- Update on the NLRS goals
- Latest on regulation talk and conservation policy

Priority Watersheds

Illinois Nutrient Loss Reduction Strategy

Drinking water sources Aquifers Wells

2. LOCAL RESOURCE CONCERNS

The following pages contain watershed and resource assessments and concerns for each of the townships in which you have fields.

2.1. Grant Township Vermilion County

Priority Watersheds

Every farmer knows that food doesn't come from "the grocery store". We also understand that water doesn't come from "the faucet". Where does your drinking water come from? PCM wants to develop a better understanding of how your management decisions impact 1) nutrient losses to local and drinking waters, 2) loss of your most valuable resource – your topsoil, and 3) your profitability. **Because fields in this township are located within the Lake Vermilion watershed, a Non-Point Nitrogen Loss Priority Watershed, the Illinois Nutrient Loss Reduction Strategy identifies these fields as areas that are especially vulnerable to nitrate-N losses.** The Vermilion watershed is also designated as a **Keep it 4R Crop priority watershed** by the IL Council for Best Management Practices, indicating that it is a significant and threatened drinking water watershed. According to the Illinois State Geological Survey, a portion of Grant County is at a high susceptibility rate for aquifer recharge which can correlate with greater susceptibility for aquifer contamination from dissolved nutrients and other chemicals. Therefore, Fields in this township are an especially important field for adopting nitrate loss reduction practices such as 4Rs nutrient management practices and cover crops.

Facts about your watershed:

- Drinking water sources potentially impacted by your management practices: Lake Vermilion, the Mahomet Aquifer, three community water supply wells in Grant township
- Lake Vermilion supplies drinking water to more than 60,000 people in Danville, Tilton, Catlin, Westville, and Belgium.
- The Mahomet Aquifer is the most important source of drinking water in east-central IL.
- Average nitrate-N loss, according to IL NLRS (fig. 3.13, IL NLRS): 20-24.99 lb nitrate-N/acre/yr
- Average phosphorus loss, according to IL NLRS (fig. 3.15, IL NLRS): 0.50-0.99 lb P/acre/yr
- Local TMDLs and impaired waters within Grant township: North Fork of the Vermilion River

Data Security

3. WHAT HAVE YOU DONE WITH MY DATA?!

3.1. What does PCM do with your data after it goes into the Farmer Portal?

Data is powerful. When it's YOUR data, you deserve to know how it's being used. If a company or organization is reluctant to share with you how they wish to use your data, proceed with caution and follow the money. If someone is asking for your data and they're also selling you a product...think about how their analysis and recommendations might impact their company's bottom line.

PCM has a rock-solid commitment to using your data to serve YOU, first and foremost. Do we use your data to serve others, too? Yes. We also use aggregated, anonymized PCM data to help other farmers – non-PCM farmers and enrolled farmers alike – to make good decisions on their farms regarding conservation practices. It is only through the wholesale adoption of conservation practices on Midwest agricultural fields that we will achieve the nutrient loss goals called for by the US EPA, the Illinois Nutrient Loss Reduction Strategy, and other states' nutrient reduction goals. We also hope someday to use aggregated, anonymized PCM data to inform policy makers about how conservation practices are likely to affect farm financial stability with the purpose of garnering more funding or protecting farmers from time consuming, ineffective, and costly government regulations.

Before any of your data is sent to our analysis team, it is “anonymized”; that means any personally identifiable information (e.g. your name, address, contact information, or geo-referenced field locations) is removed and replaced with very long, ugly codes. Here is an actual code used to replace the name of a PCM cooperator: **59527a34f72c6f0d9459a188**. Only after data is anonymized do we transfer it to our data analysis team.



PCM Approach

4.3. PCM's Philosophy for Nutrient Loss Practices Prioritization:

PCM promotes **in-field practices** (4Rs nutrient management, cover crops, and reduced tillage) as a first line of defense to address nutrient loss issues. Our reasoning for this prioritization is that in-field practices are the most financially favorable means of addressing nutrient losses because, in most years, they provide a proven return on investment for a farmer's fertilizer expenses. **Edge-of-field and end-of-pipe methods** (buffers, constructed wetlands, bioreactors, etc.) are used as supporting techniques for nutrient loss reductions after in-field practices have been optimized. Finally, PCM promotes **land use change practices**, i.e. taking land out of annual row crop production, as a final means of preventing nutrient losses when other practices prove ineffective for reducing losses to a level that the farmer finds acceptable while maintaining profitability. PCM will work with farmers and landowners to convert land to perennial grasses or other land cover that reduces nutrient losses and will work with farmers to recoup land opportunity costs by assisting with applications for NRCS programs and other set-aside programs offered by other programs and conservation efforts.

Summary of the Farmer's Data

- **Number of fields**
- **Acres**
- **Crops by year in PCM**
- **Average yield**
- **Nitrogen rate**
- **Nitrogen Use Efficiency (NUE) by year & crop**

Each field's

- **Yield**
- **Nitrogen rate**
- **NUE**
- **Project**
- **Practice classification by year**

Maximum Return to Nitrogen

University's recommended rate vs the farmer's average rate

6.3. MRTN Graphs

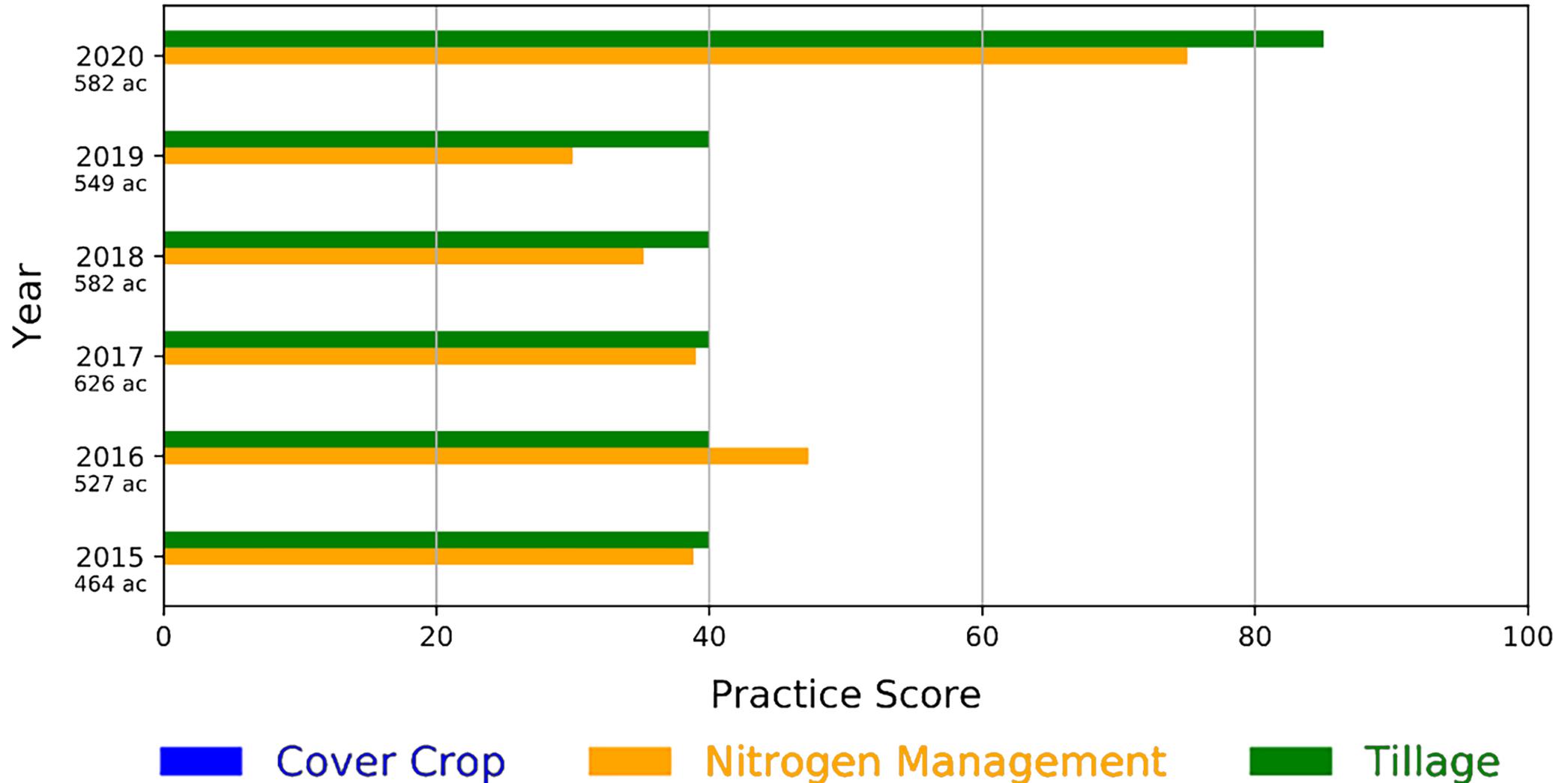
MRTN Assumptions			
Nitrogen price \$/lb actual N	0.34	Field Location	Central Illinois
Corn price \$/bu	3.90	Previous year's crop	Soybean
MRTN Recommendations			
Actual	217	High	189
Recommended	173	Low	158

■ MRTN Recommended Range
▼ The actual is 25% above MRTN recommended value



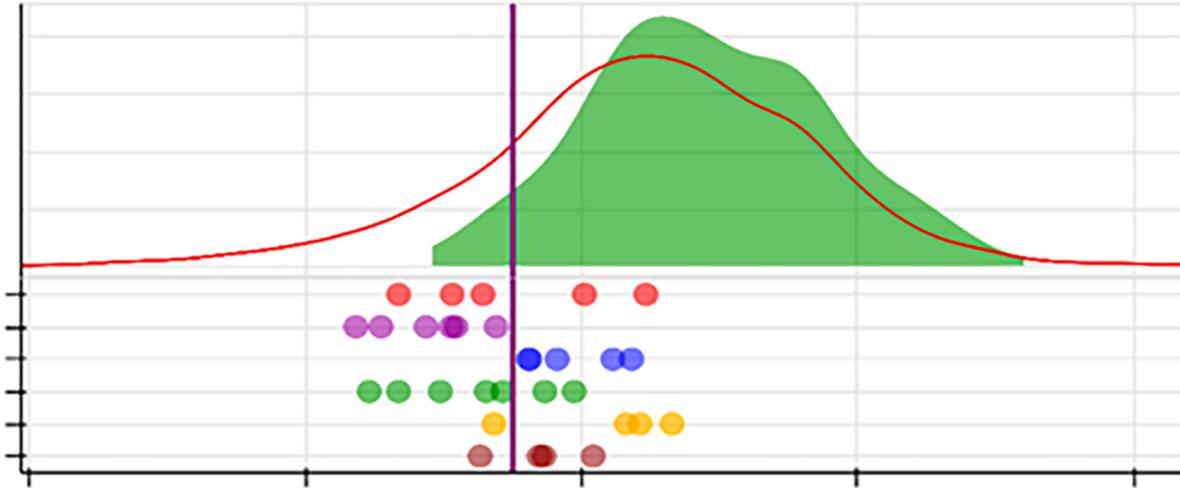
Individual Farmer's Conservation Trend

Conventional Corn Conservation Scorecard

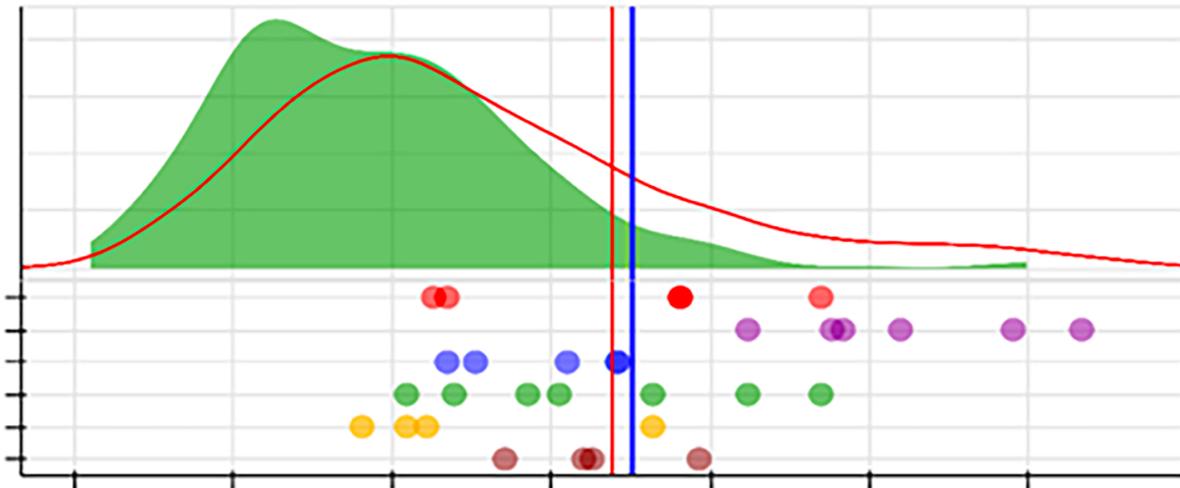


Field-to-Market FieldPrint Platform

Operator and Land Return



Land Use



Sustainability Metrics

1. Land Use
2. Soil Conservation
3. Energy
4. Green House Gas



Field to Market[®]

The Alliance for Sustainable Agriculture

PLUS
Greenhouse Gas analysis
from the Cool Farm Tool

Financial analysis – by crop, by practice

COMPARISON OF TILLAGE PROGRAM COSTS/REVENUES												
Price per bu.: \$6.50	Farmer's Strip-Till		County's Strip-Till		Region's Strip-Till		Farmer's 1-Pass Light		County's 1-Pass Light		Region's 1-Pass Light	
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
SPR												
Yield per acre												
# Acres												
Revenue (\$)												
Crop Revenue												
ARC/PLC or ACRE												
Crop Insurance												
Other Farm Receipts												
Gross Revenue												
Expenses (\$)												
P, K, Lime, micro, and other nutrients												
Nitrogen												
Pesticides												
Insecticides												
Seed												
Seed – cover crop												
Drying												
Storage												
Crop Insurance												
Labor												
Roller Crimper												
Direct Costs												
Field work												
Planting - crop												
Planting - cover crop												
Machine hire/lease/application cost												
Harvest												
Power Costs												
Overhead Costs												
Total Non-Land Costs												
Operator and Land Return (\$)												

COMPARISON OF COVER CROP PROGRAM COSTS/REVENUES												
Price per bu.: \$13.50	Farmer's No Cover Crop		County's No Cover Crop		Region's No Cover Crop		County's Overwintering		Region's Overwintering		State's Partial Overwintering	
	High	Low	High	Low								
SPR												
Yield per acre												
# Acres												
Revenue (\$)												
Crop Revenue												
ARC/PLC or ACRE												
Crop Insurance												
Other Farm Receipts												
Gross Revenue												
Expenses (\$)												
P, K, Lime, micro, and other nutrients												
Nitrogen												
Pesticides												
Insecticides												
Seed												
Seed – cover crop												
Drying												
Storage												
Crop Insurance												
Labor												
Roller Crimper												
Direct Costs												
Field work												
Planting - crop												
Planting - cover crop												
Machine hire/lease/application cost												
Harvest												
Power Costs												
Overhead Costs												
Total Non-Land Costs												
Operator and Land Return (\$)												

Individual Field Page

Township	Ogden Township	Field Area	37.25	Years of data	7
County	Champaign County	Soil Productivity Rating	141.35	Avg Soybean yield/return	72/408
State	Illinois	HUC8 Watershed	Vermilion	Avg Corn yield/return	217/374

STAR Rating



Notes from your Specialist:

Field:

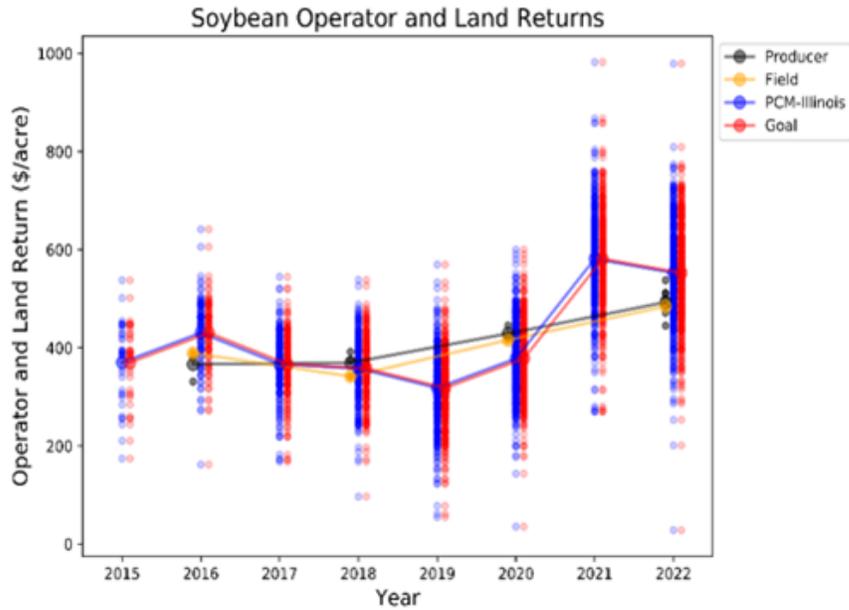


Table 8. Ehlers tillage operations and fertility summary.

Year	Crop	Program	System	Tillage Operations	N (lb/a)	P ₂ O ₅ (lb/a)	K ₂ O (lb/a)	Lime (lb/a)	Yield (bu/a)	NUE (lbs N/bu)	Operator and Land Return (\$)
2022	Soybean 15" 125-150K BIF	NT SB TSP & POT, FI, 2xH	Conventional		0	104	102	0	69	0	484.7
2021	Corn 34-36K BST	1p ST C MAP+POT, F, 2xH	Conventional	Strip Till	184	56	33	0	224	0.82	622.4
2020	Soybean 15" 125-150K BIF	NT Soybean FUN	Conventional		9	42	96	0	71	0.12	415.96
2019	Corn 34-36K BST	Corn + F	Conventional		187	69	45	0	201	0.93	248.41
2018	Soybean 15" 125-150K BIF	Soybean 3xHerb + F	Conventional		0	34	90	0	76	0	341.84
2017	Corn 34-36K BST	Corn 3xHerb, + F	Conventional		187	69	45	0	226	0.83	251.47
2016	Soybean 15" 125-150K BIF	Soybean 3xHerb + F	Conventional		0	34	90	0	70	0	389.03

Follow Up & Next Steps

- Specialists deliver up to 100 RAAPs in February/March
- Action Item from each delivery, prioritized
- Enroll farmers into programs
- Acquire info for farmers or provide contacts for assistance
- Follow up on practice commitments or interests

What do farmers think of the RAAP?



Precision Conservation Management



What do farmers think of the RAAP?

Format: Anonymously answer series of questions related to interaction with their Specialist and perceived value of different components of the RAAP

~25% participation rate

RAAP/Delivery Evaluation

How many years have you participated in PCM? *

Which PCM Specialist do you work with? *

Choose the best answer for each of the following. *

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The specialist(s) communicated information clearly	<input type="radio"/>				
I learned something new	<input type="radio"/>				

Possible Responses

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

Check all that apply

- Very Likely
- Likely
- Neutral
- Unlikely
- Very Unlikely

Based on the information I have received, I am likely to change my nutrient management plan

What do farmers think of the RAAP?

1. Did the Specialist communicate the information clearly?
2. Did you learn something new?
3. The material was relevant to my farming operation?
4. It will be easy to apply the information I received?
5. On the whole, the economic cost tables represented my own farm financials?

What do farmers think of the RAAP?

6. I am likely to review my RAAP after meeting with my Conservation Specialist?

7. Based on the information I received; I am likely to:

- Change my tillage?
- Try/expand cover crops on my farm?
- Change my nutrient management plan?

What do farmers think of the RAAP?

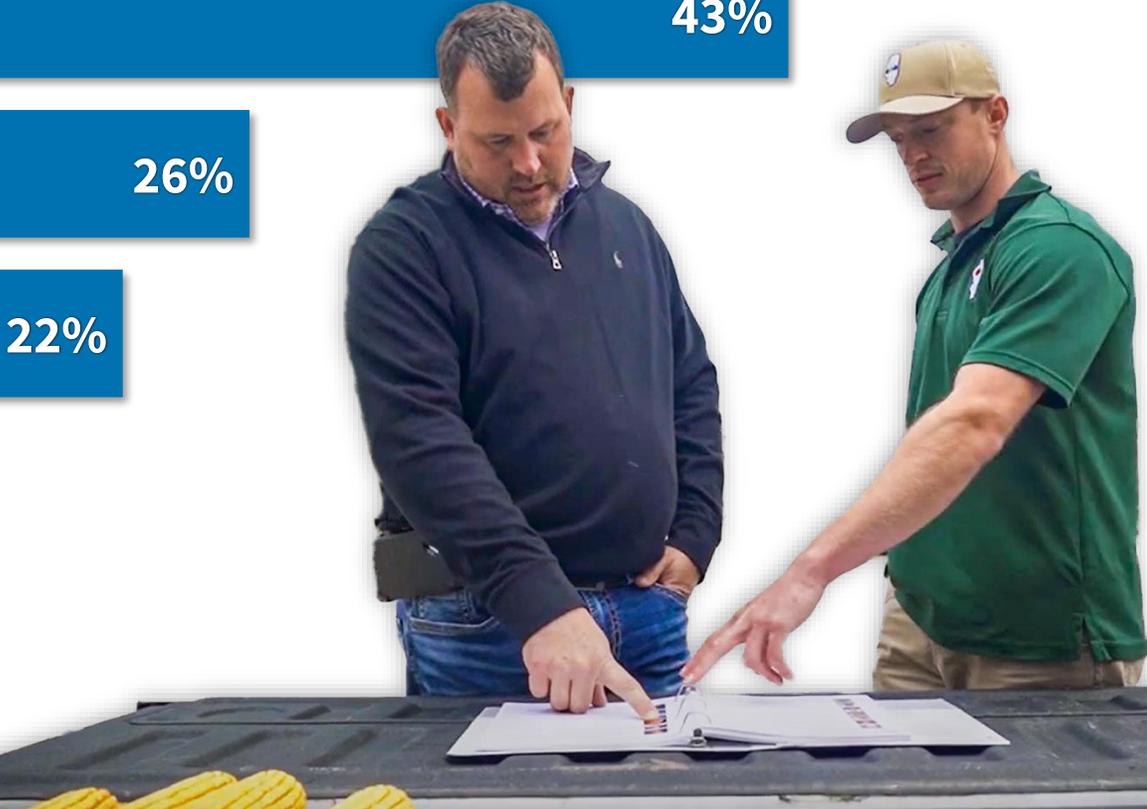
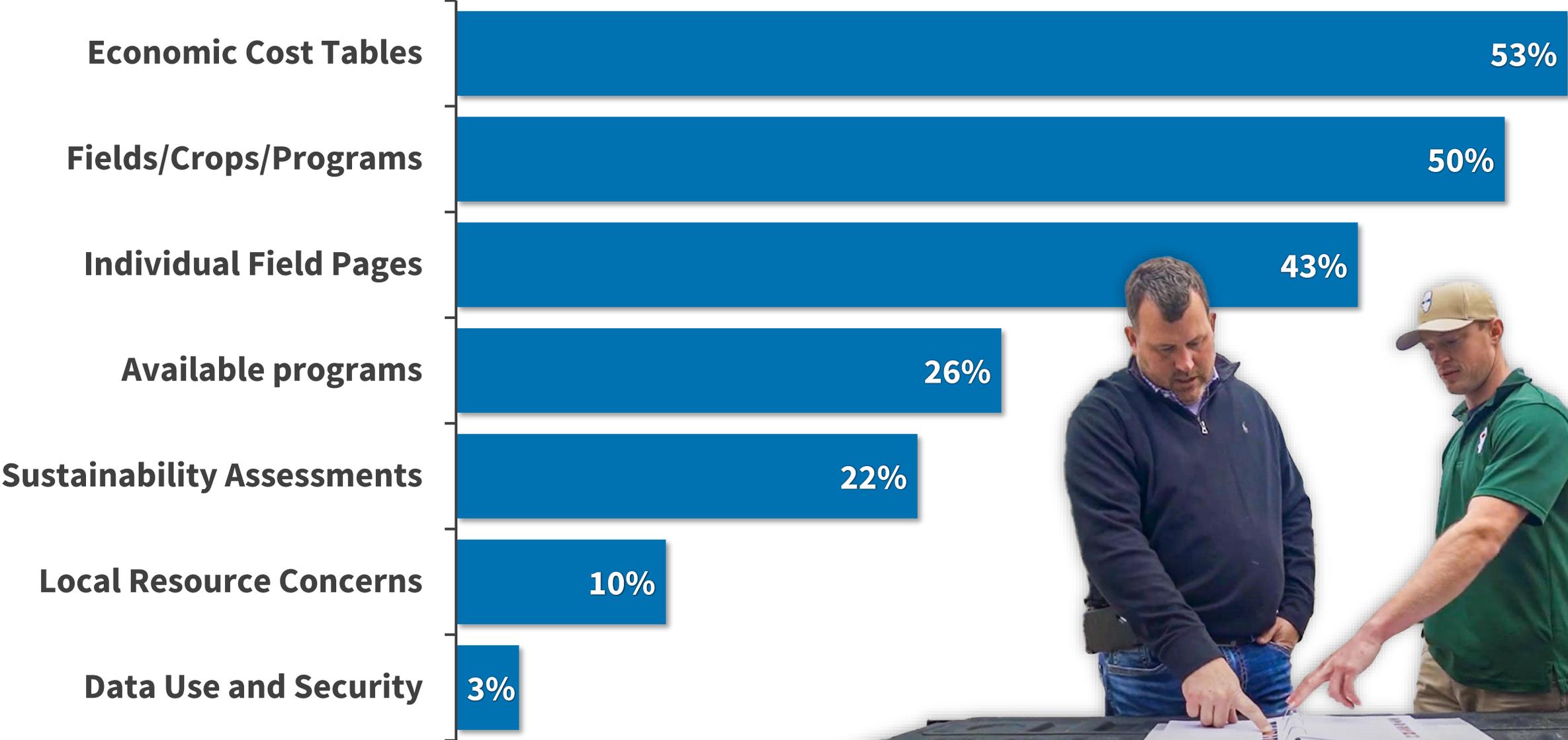
8. Which of the following sections do you find most valuable?
9. Based on your experience, how likely are you to continue working with PCM?
10. How likely would you be to recommend PCM to a neighbor?

What do farmers think of the RAAP?

#	Question	Strongly Agree/Agree	Neutral	Disagree/Strongly Disagree
1	Communicated Clearly?	100%	0%	0%
2	Learned something new?	98%	2%	0%
3	Relevant to my farm?	97%	3%	0%
4	Easy to apply?	90%	9%	1%
5	Cost tables fair?	80%	16%	3%
6	Look at my RAAP?	81%	15%	3%
7a	Change my tillage?	36%	35%	29%
7b	Try/Expand cover crops?	63%	24%	13%
7c	Change my nutrient management?	45%	43%	12%

#	Question	Very Likely/Likely	Neutral	Unlikely/Very Unlikely
10	Stay in PCM?	95%	2%	1%
11	Recommend PCM to neighbor?	90%	9%	0%

What do farmers think of the RAAP?



How many people does PCM reach?



Precision Conservation Management



PCM Participation Statistics

as of September 6th, 2023

Specialists: 10 Full-Time

Farmer Cooperators: 496

Acres: 415,470

Fields: 7,563

Each field is a “data point”



Precision Conservation Management

A program of the *IL Corn Growers Association* and the *Illinois Soybean Association*

2015-2022 DATA SUMMARY

The Business Case for Conservation

Cost-Benefit Analysis of Conservation Practices



Precision Conservation Management

Annual Data Booklet in *PRAIRIE FARMER*

Can I earn money through PCM?



YES!! Cost-share and Incentives through many opportunities

Farmers can earn money for utilizing cover crops, no-till or strip-till, or making nitrogen reductions on their corn crop.

- Regional Conservation Partnership Program (RCPP)
- MRTN Strip Trial Program
- 5 Year Transition Program (5YT)
- Connection to county/local conservation efforts
- Connection to
USDA Climate Smart Grant opportunities



Learn more at www.PrecisionConservation.org

Increasing Farm Incomes & Environmental Outcomes

A Farm Conservation Service Program serving Illinois, Nebraska and Kentucky

[Find Your Specialist](#)

[Log In](#)



Precision Conservation Management



ACCESS TO EXPERTS

PCM Farmers receive ongoing one-on-one consultations with conservation experts in their region to identify the best opportunities for their farm.



COST-SHARE OPPORTUNITIES

PCM Supply Chain Partnerships create a financial advantage for farmers who use regenerative farming practices.



DATA ANALYSIS

The Farmer Portal collects aggregated, anonymized farm data to demonstrate the financial and environmental impact of conservation practices.



farmdoc Sponsors

TIAA

Center for
Farmland Research



farmdoc Educational Partners



I ILLINOIS
Extension

COLLEGE OF AGRICULTURAL, CONSUMER
& ENVIRONMENTAL SCIENCES

I ILLINOIS
Agricultural & Consumer Economics

COLLEGE OF AGRICULTURAL, CONSUMER
& ENVIRONMENTAL SCIENCES





Thank You for joining us!

Please submit your questions

Visit us at

farmdocDAILY
.Illinois.edu

✉ Subscribe for Latest News Updates



**College of Agricultural,
Consumer &
Environmental Sciences**

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



For the webinar archives and **5-minute** farmdoc
Subscribe to our channel [YouTube.com/@farmdoc](https://www.youtube.com/@farmdoc)

