

# Illinois NLRs Policy Working Group Meeting

Tuesday, April 2, 2024

Starting at 9:00 am - Noon



Illinois Environmental  
Protection Agency



**Illinois**  
Department of  
**Agriculture**



**Illinois Extension**  
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



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**NUTRIENT LOSS**  
**REDUCTION STRATEGY**

# Meeting Roles:

Policy Working Group Chair: *Trevor Sample, Illinois EPA*

Facilitation: *Joan Cox, Illinois Extension*

Technology Support & Minutes: *Amanda Christenson, Illinois Extension*

*Special thanks to the NLRs Steering Committee, IDOA Staff:*

*Heather Wilkins, Russel Krug, Angela and Nina at front desk*



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# Policy Working Group Agenda

9:00 am	<b>Welcome and PWG survey results</b> <i>Joan Cox, Illinois Extension &amp; Trevor Sample, Illinois EPA</i>
9:25 am	<b>Phosphorus Research</b> <i>Dr. Andrew Margenot, University of Illinois</i>
10:25 am	<b>10-minute Break</b>
10:35 am	<b>Fall Covers for Spring Savings 500K</b> <i>Kris Reynolds, American Farmland Trust</i>
11:05 am	<b>Precision Conservation Management</b> <i>Megan Dwyer, Illinois Corn Growers Association</i>
11:25 am	<b>ISAP Resources for NLRs</b> <i>Jean Brokish, Illinois Sustainable Agriculture Partnership</i>
10:40 am	<b>Partner Updates</b>
Noon	<b>Break for Lunch – On Your Own</b>



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# PWG survey results

Joan Cox, Illinois Extension



Illinois Environmental  
Protection Agency



**Illinois**  
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**Agriculture**



**Illinois Extension**  
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



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# Policy Working Group partner perspectives on:

1. DASHBOARD/REPORT
2. STRATEGY UPDATE
3. EXECUTIVE SUMMARY
4. WORKING GROUPS

Members were surveyed March 1-15.  
24/29 responded.



# Policy Working Group Survey Summary

1. Initiate move to dashboard. Next steps are to seek PWG input on metrics, accessibility of data.
2. Do not change the interim goal or set a year for the long-term goal until more data is available. More discussion will be needed through the Performance Benchmark Committee and PWG.
3. Report future strategy updates separate from the dashboard but much abridged from traditional report (~50 pages).
4. Executive summaries should be composed periodically in coordination with dashboard update (possibly annually).



# Policy Working Group Survey Summary (cont.)

5. Keep PWG proportional representation not open to new membership. There may be future conversations about a member inactivity protocol and nomination protocol to fill vacancies.
6. Add a Point Source Working Group only if someone is willing to lead it (chair), set goals and agendas, and moderate meetings (Steering can host on Zoom).
7. Work to showcase flow-normalized WQ data and baseline POTW point source data.



# Part 1. DASHBOARD/ REPORT



# 1.a - Indicate your preference for accessing Illinois NLRs data. 18 responses

- I like the idea of accessing the NLRs data through an online dashboard using the Great Lakes to Gulf platform. (9)
- I prefer to access NLRs data through the traditional biennial report (pdf). (9)

## Steering Interpretation

**Dashboard vs Report** looks undecided indicating a need for more dialogue.

4 members that chose traditional report commented support for a dashboard.

2 members who did not make a choice commented support for a dashboard.

Could be interpreted as 15/5 in favor of dashboard.

Comments indicate certain conditions should be met, namely data accessibility, and ability to download of pdfs of the dashboard sections.

At least 5 members indicate not wanting to switch.



1	1.a		1.c
2	Indicate your preference for accessing Illinois NLRS data.	INTERPRETATION	Is there anything you would like to share regarding an online dashboard?
3	I prefer to access NLRS data through the traditional biennial report (pdf).	no	
4	I prefer to access NLRS data through the traditional biennial report (pdf).	no (maybe)	I prefer the printed document but can see the advantage of switching to the digital format.
5	I prefer to access NLRS data through the traditional biennial report (pdf).	no (conditional on accessibility of pdf section downloadable)	With the online idea would we be able to download it as a PDF or sections of it from the dashboard?
6	I like the idea of accessing the NLRS data through an online dashboard using the Great Lakes to Gulf platform.		
7	I like the idea of accessing the NLRS data through an online dashboard using the Great Lakes to Gulf platform.		I would prefer a dashboard with a condensed executive summary printed copy resource.
8			
9	I like the idea of accessing the NLRS data through an online dashboard using the Great Lakes to Gulf platform.		
10	I like the idea of accessing the NLRS data through an online dashboard using the Great Lakes to Gulf platform.		
12	I prefer to access NLRS data through the traditional biennial report (pdf).	no	
13			I'd prefer whichever option is less costly, so dollars can be spent on higher priority items-- practice implementation, monitoring.
14	I prefer to access NLRS data through the traditional biennial report (pdf).	no	Nope.
16	I like the idea of accessing the NLRS data through an online dashboard using the Great Lakes to Gulf platform.		Utilizing a website or dashboard seems to be a much more effective way to share the data and updates on benchmarks and progress
17	I prefer to access NLRS data through the traditional biennial report (pdf).	no (conditional on being accessible)	Use either which will be more accessible to Working Policy Group members
18	I like the idea of accessing the NLRS data through an online dashboard using the Great Lakes to Gulf platform.		
19	I like the idea of accessing the NLRS data through an online dashboard using the Great Lakes to Gulf platform.		

# 1c comments

X

X

X



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# 1c comments (cont.)

20			An online dashboard can be beneficial and educational if it is user friendly. However, the science committee would be a good review of the origin of the data and how it would be interpreted.
21	I prefer to access NLRS data through the traditional biennial report (pdf).	no (conditional on accessibility of pdf section downloadable)	If you move to an online dashboard, please set it up so that information can easily be printed out or downloaded. It does not necessarily have to be as an entire report. It could be available within a grouping or category.
22	I prefer to access NLRS data through the traditional biennial report (pdf).	no	
23	I like the idea of accessing the NLRS data through an online dashboard using the Great Lakes to Gulf platform.		Before a dashboard is created, the PwG should be informed regarding which metrics and data sources will be used for different sectors. The PwG should also be informed about which topics will be
24	I like the idea of accessing the NLRS data through an online dashboard using the Great Lakes to Gulf platform.		No
25			I am OK with adding a dashboard, but we need some form of a annual or biennial REPORT to point at to assess progress and review concepts that don't fit into a dashboard - i.e. where is research leading us? Any dashboard should be updated biennially as a minimum, preferably annually.
26	I prefer to access NLRS data through the traditional biennial report (pdf).	no	In theory, I am not opposed to an online dashboard. However, given the lack of success in achieving the goals of the NLRS, I don't think resources should be spent on reworking the reporting mechanism. We would be better off spending resources and analyzing why the NLRS is not succeeding.
27	I like the idea of accessing the NLRS data through an online dashboard using the Great Lakes to Gulf platform.		not at this time

X

X

X

# 1.c - Is there anything you would like to share regarding an online dashboard idea or the traditional report?

## 1.c. Comments Summary

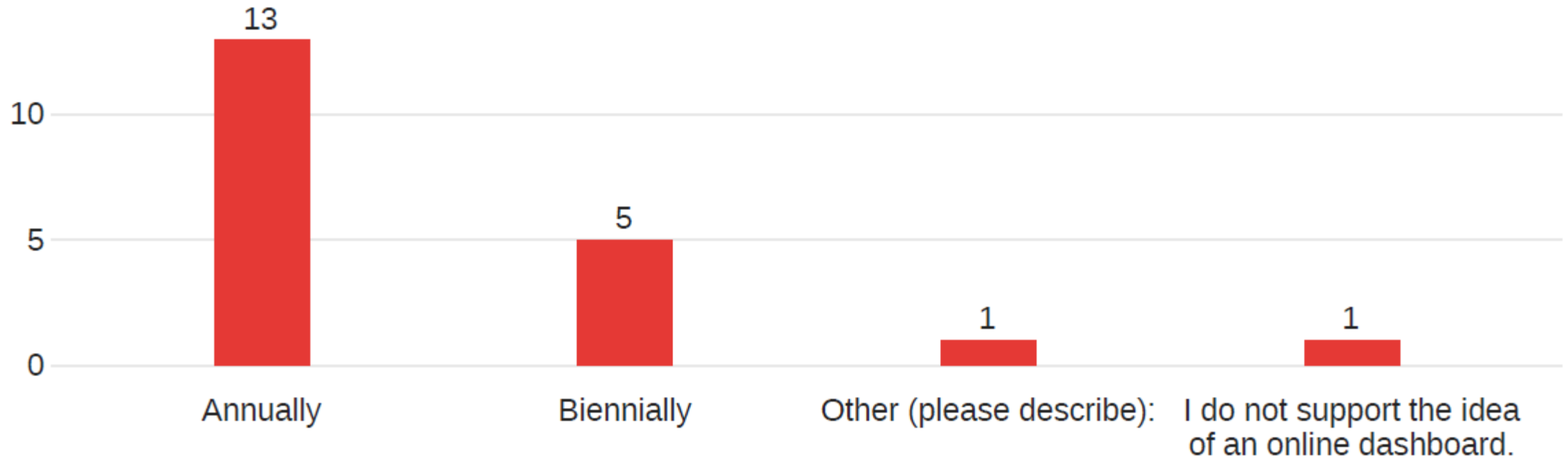
- Responses from 6 members could be counted as conditional “yes to dashboard”
- PWG should inform metrics and topics in dashboard
- Dashboard is beneficial to show data if it is user-friendly
- Dashboard should be accessible (able to download of pdfs of the sections)
- Concerns about cost of switching reporting mechanisms, want the least costly way to report





## 1.b - If we move to an online dashboard, how often would you like to see the dashboard data updated?

20 Responses



Other (1): semi-annually

# Part 2. STRATEGY UPDATE



## 2.a – Background:

Updating the Illinois Nutrient Loss Reduction Strategy requires a thorough review of the latest scientific assessments, comprehensive water quality data, and recent implementation progress across the Agriculture, Point Source, and Urban Stormwater sectors.

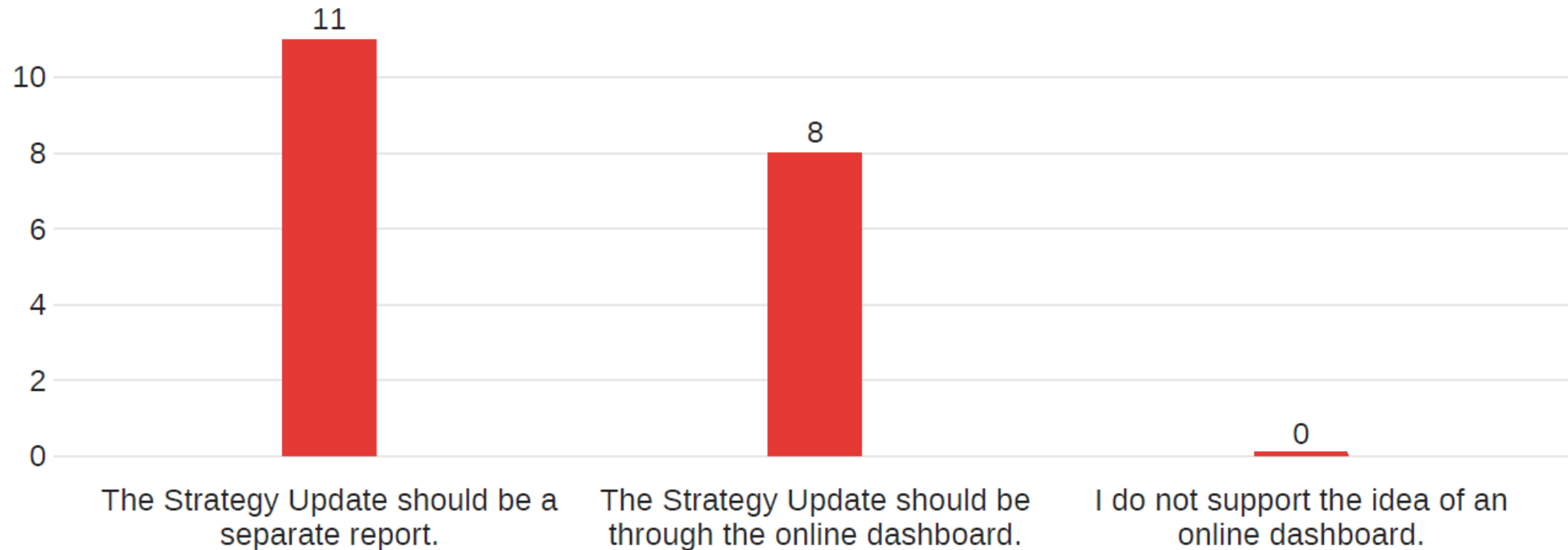
This process is crucial for summarizing sector progress and developing adaptive management strategies. Up to 2023, Illinois has released the Biennial Report, in odd years, as an update to the Strategy.



2a

## If the online dashboard idea is widely supported, should a Strategy Update be in the format of a separate report or should it be through an online dashboard?

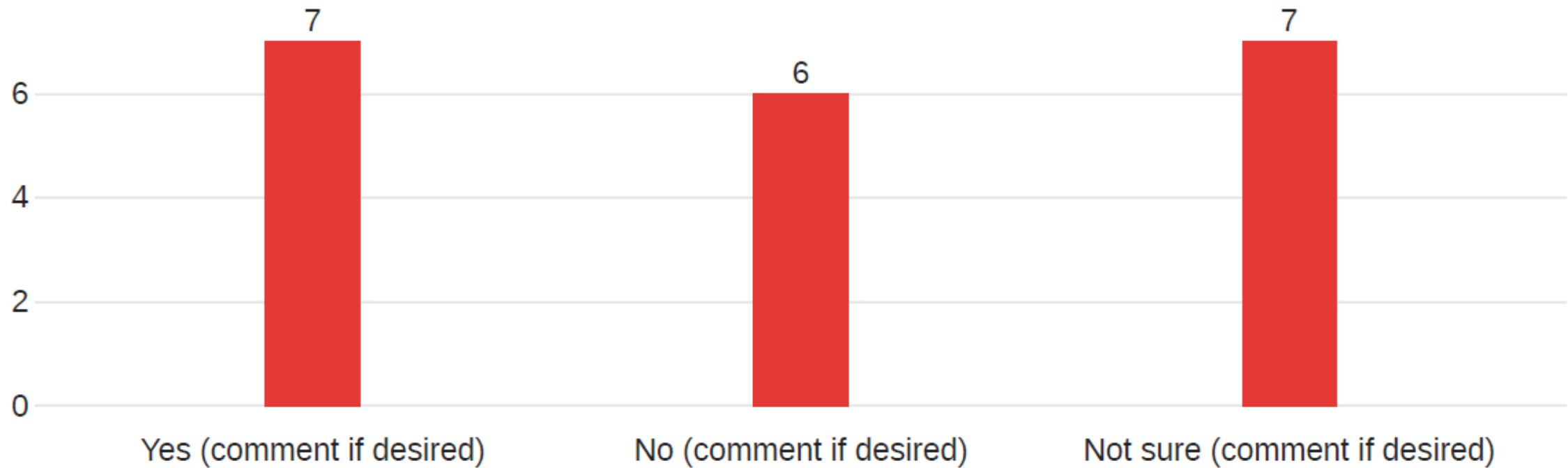
19 Responses



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## 2.b - Do you think Illinois NLRs should set new interim goals beyond 2025?

20 Responses



## Yes

- Develop new scenarios (1)
- Make it realistic based on data from last 10 years (2)
- 2035 as new interim goal (1)

## No

- Stay committed to first meet current interim goals
- Just work toward 2035

## Not sure

- Wait for the data to back it up, including legacy nutrient data and interpretation (2)
- Reset interim only if we confirm a date for the long-term (1)
- Wait until non-point sector meets the first interim goals before setting new ones (1)



2.c - The Illinois strategy has not adopted a year for the 45% reduction goal. Do you think Illinois NLRS should set a year on the 45% goal?

20 Responses



## Yes

- Pick a timeline and be accountable (2)
- Limit the 45% goal year to the point source sector (1)
- First understand all factors that affect the timeline (1)
- Use 2035 like the Hypoxia Task Force (4)
- Set a date then revise as needed (1)

## No

- Not enough information currently (4)
- Follow metrics and timelines of HTF (1)

## Not Sure

- None (0)





# Steering Follow-up Question

## Policy Working Group (PWG)

- oversight on identifying adaptive management adjustments and strategy updates.

## Performance Benchmark Committee (PBC)

- subset of PWG members
- input on adaptive management strategies and implementation reporting metrics from all sectors

Can we continue using the PBC for working on strategy update issues?

Anyone is welcome to join the PBC.



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# Part 3. EXECUTIVE SUMMARY



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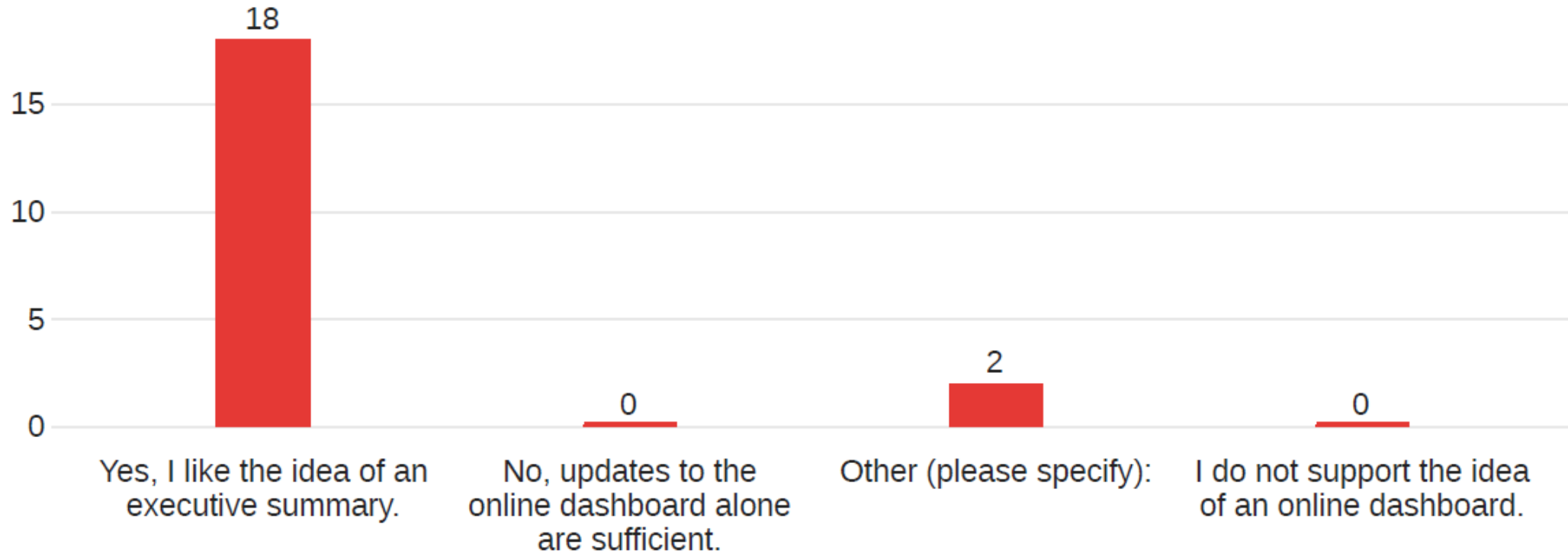
3.a - Background: In addition to periodic releases of an Updated Illinois Strategy, there is an option to provide an executive summary report. The executive summary would not alter the strategy itself but would offer a concise overview of the key dashboard updates, including:

- 5-year annual average water quality data, including flows and nutrient loads
- Highlighted examples of sector-specific implementation efforts (Agriculture, Point Source, Urban Stormwater)
- Identified future needs and areas for focus



### 3a If the move to dashboard reporting is adopted, do you support an executive summary report?

20 Responses



#### Comments:

- Detail the WQ data, measurements correlated to dollars spent
- At least one print document is needed, either this executive summary OR a printed strategy update described in 2a.



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# Part 4. Working Groups



## 4a

4.a - Background: The current structure of the Policy Working Group includes 29 permanent seats representing the three NLRs sectors.

Requests have been received from additional organizations to join the Policy Working Group. To date, all requests have been declined. The current membership is shown below.



Company	Full Name	Sector
University of Illinois Extension	Dennis Bowman	Ag / Ev
University of Illinois Agricultural and Biological Engineering	Paul Davidson	Ag
Illinois Corn Growers Association	Megan Dwyer	Ag
U.S. Department of Agriculture - Natural Resources Conservation Service	Eric Gerth	Ag
Nutrient Research and Education Council	Julie Hewitt	Ag
GROWMARK	Liz Hobart	Ag
Illinois Association of Drainage Districts	Richard Lyons	Ag
Illinois Department of Agriculture	Brian Rennecker	Ag
American Farmland Trust	Kris Reynolds	Ag
Illinois Fertilizer & Chemical Association	Dan Schaefer	Ag
Illinois Farm Bureau	Sanjay Sofat	Ag
Association of Illinois Soil and Water Conservation Districts	Steve Stierwalt	Ag
Illinois Pork Producers Association	Jennifer Tirey	Ag
The Nature Conservancy	Megan Baskerville	Ev
Prairie Rivers Network	Robert Hirschfeld	Ev
Sierra Club	Mila Marshall	Ev
Environmental Law & Policy Center	David McEllis	Ev
Illinois Department of Natural Resources	Justin Ramey	Ev
Illinois Environmental Regulatory Group	Kelly Thompson	Ev
Mississippi River Collaborative	Albert Ettinger	Ev
Illinois Environmental Protection Agency	Trevor Sample	N/A
American Bottoms Regional Wastewater Treatment Facility	Aubree Basso	PS
Metropolitan Water Reclamation District of Greater Chicago	Albert Cox	PS
Bloomington Normal Water Reclamation District	Tim Ervin	PS
Village of Deerfield Public Works & Engineering	Brandon Janes	PS
City of Springfield City Water, Light, and Power	Todd LaFountain	PS
Urbana and Champaign Sanitary District	Rick Manner	PS
Downers Grove Sanitary District	Amy Underwood	PS
DuPage County Stormwater Management	Mary Beth Falsey	US

# Policy Working Group member list

## proportional representation

**agriculture** 13/28 = **46.4%**

**point source** 7/28 = **25%**

**urban stormwater** 1/28 = **3.6%**

**environmental** 8/28 = **28.6%**

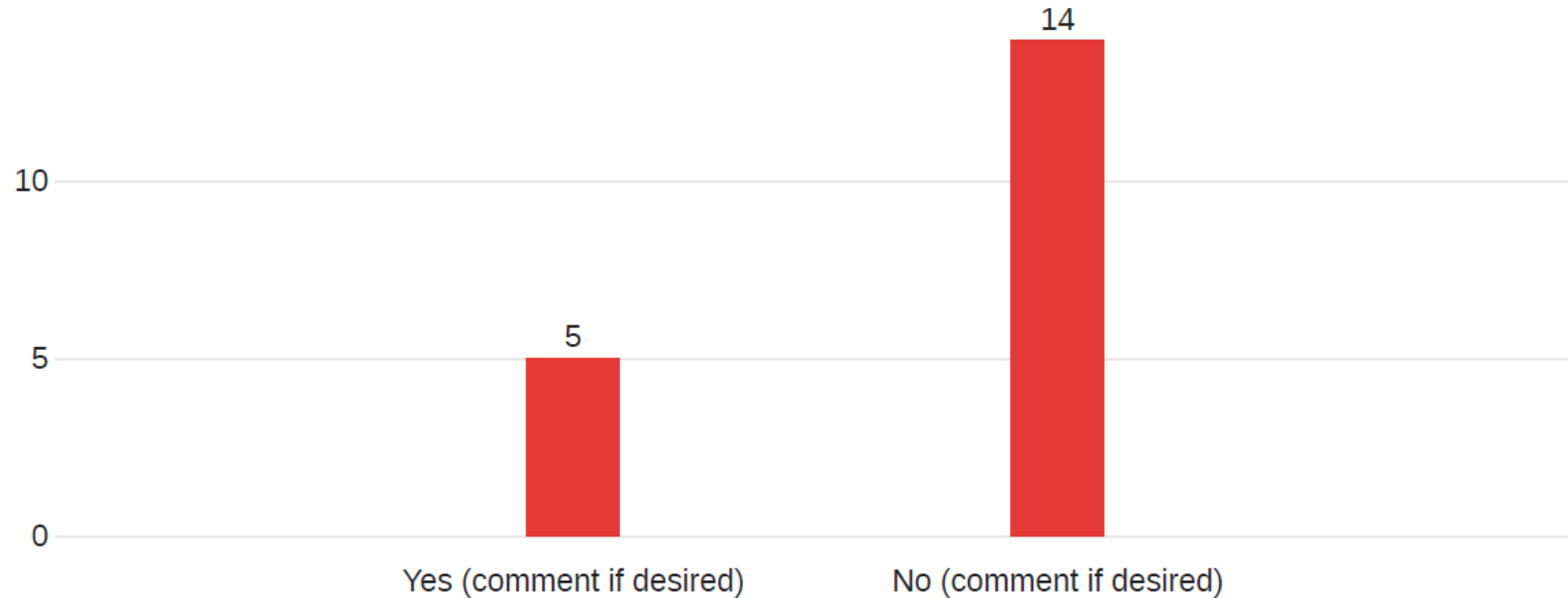
*Note: total is over 100% since Extension is  
ag and environmental*



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## Should the PWG be open to any organization which officially requests to join?

19 Responses





Yes

- None (0)

No

- Support new members joining if vetted (3)
- Concern about changing proportional representation balance (4)
- Non-PWG Stakeholders attend meetings and provide input already (2)

## Steering Interpretation

Comments indicate 8 “yes”, 11 “no”; majority say no.  
Look at vetting suggestions (4b)



4.b - At the last meeting, some PWG members suggested establishing criteria to allow PWG representation. **Do you have any suggestions for criteria by which a new organization could be admitted to PWG membership?**

18 Responses



# 4b summary

4 members indicated no support for new organizations on PWG. Their reasons include:

- Having to address criteria for membership
- Good representation of sectors already established, and subgroups allow anyone

7 members have ideas for membership criteria:

## New members should:

- Be approved (voted in) by existing members
- Be considered significant by existing members
- Represent a geographic area that is not already represented
- Have existing NLRS programming
- Have legislative/policy staff in the organization
- Fill out an application



4.c - Background: There are currently working groups focused on monitoring and implementation of NLRS in agricultural and urban stormwater non-point sectors. A recommendation has been made to add a Point Source Committee. **Do you support establishing a Point Source Working Group?**

20 Responses



# 4c comments

Yes

- It could expand membership and public awareness beyond IAWA involvement in NLRS (1)

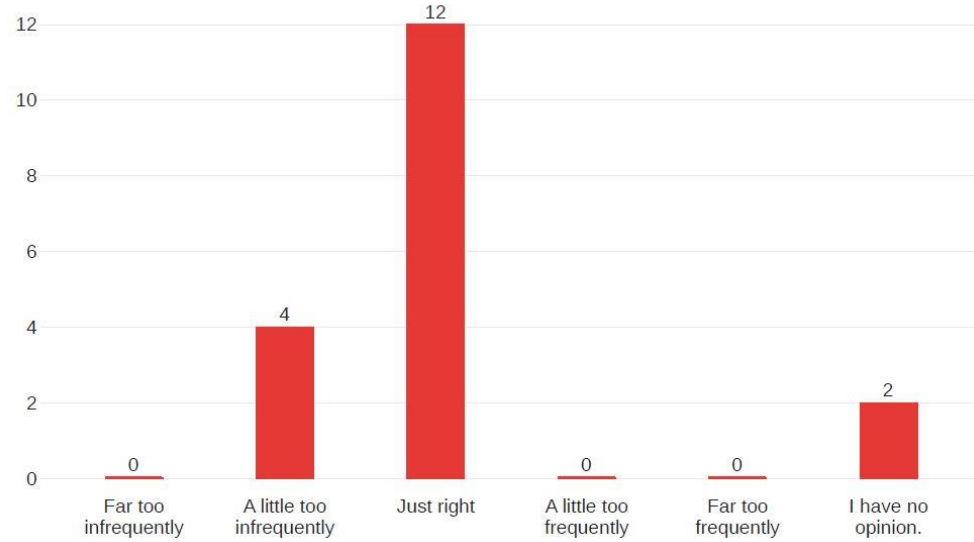
Not Sure

- Point source is meeting goals and progressing via permits, additional time/resources not important (2)
- Watershed groups could send reps, but may not impact point source progress in the watershed groups (1)
- Concern about further comparing point to nonpoint source via having a new group. Solutions are very different, don't further accent the differences by making a new separate group. (1)



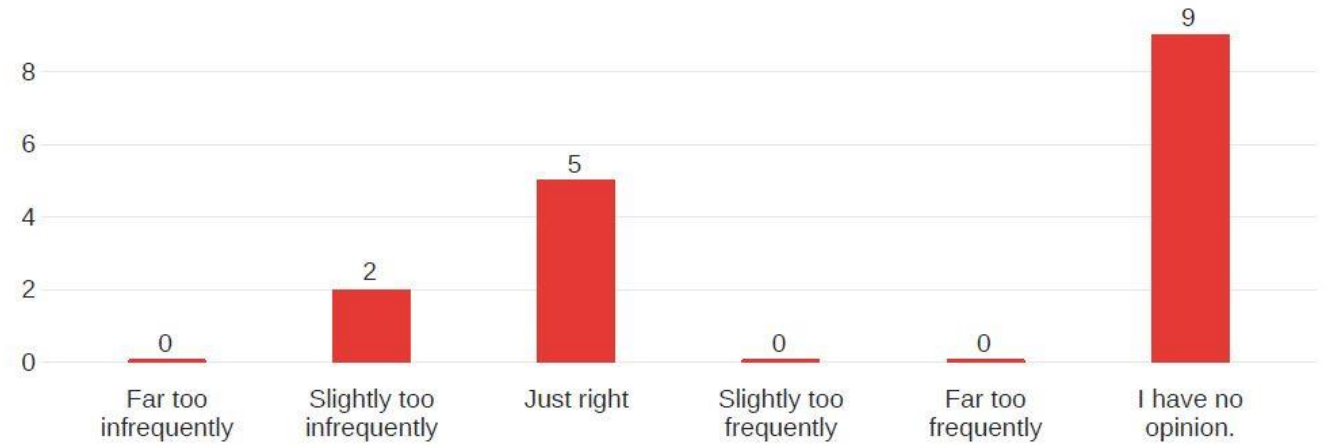
#### 4.e.1 - Please rate your overall satisfaction with Policy Working Group meeting frequency.

18 Responses



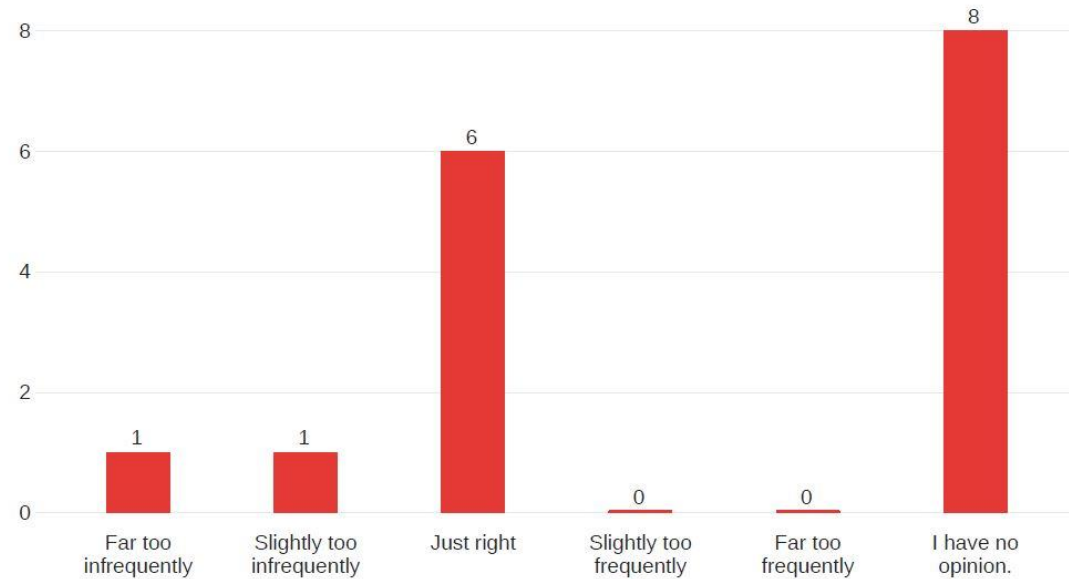
#### 4.e.2 Nutrient Monitoring Council

16 Responses



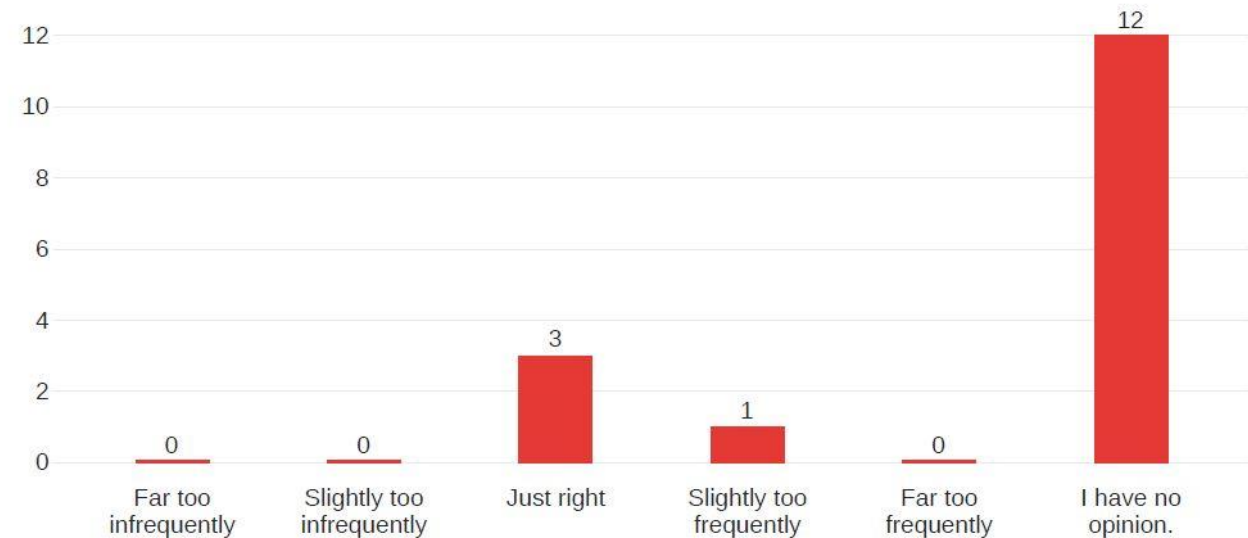
#### 4.e.8 Performance Benchmark Committee

16 Responses



#### 4.e.9 Communication Subgroup

16 Responses

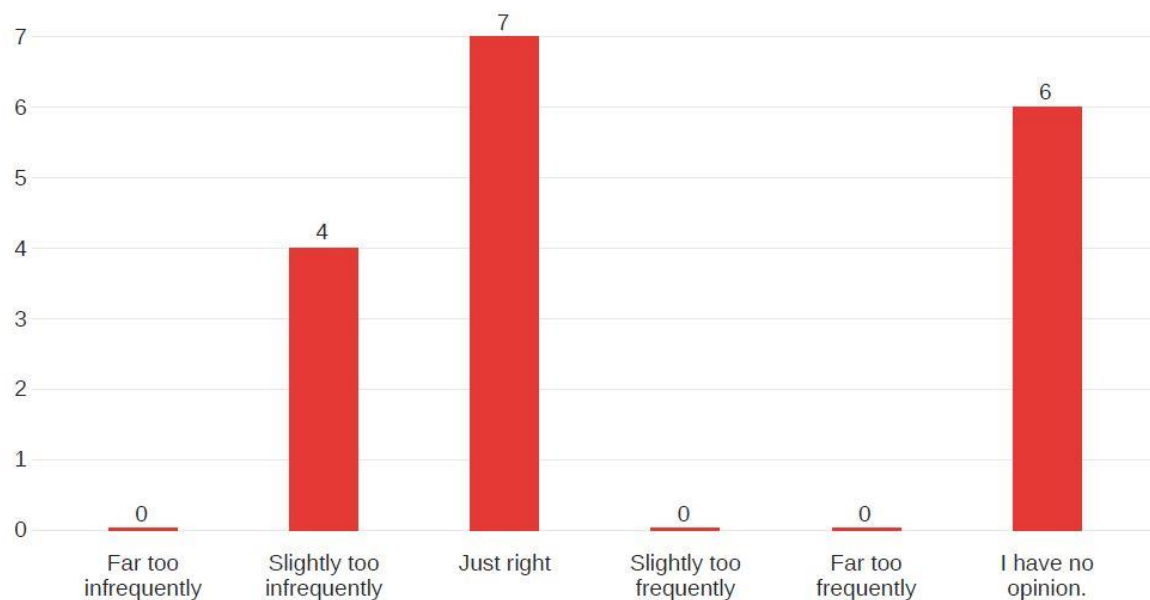


# 4e – Agriculture

4e

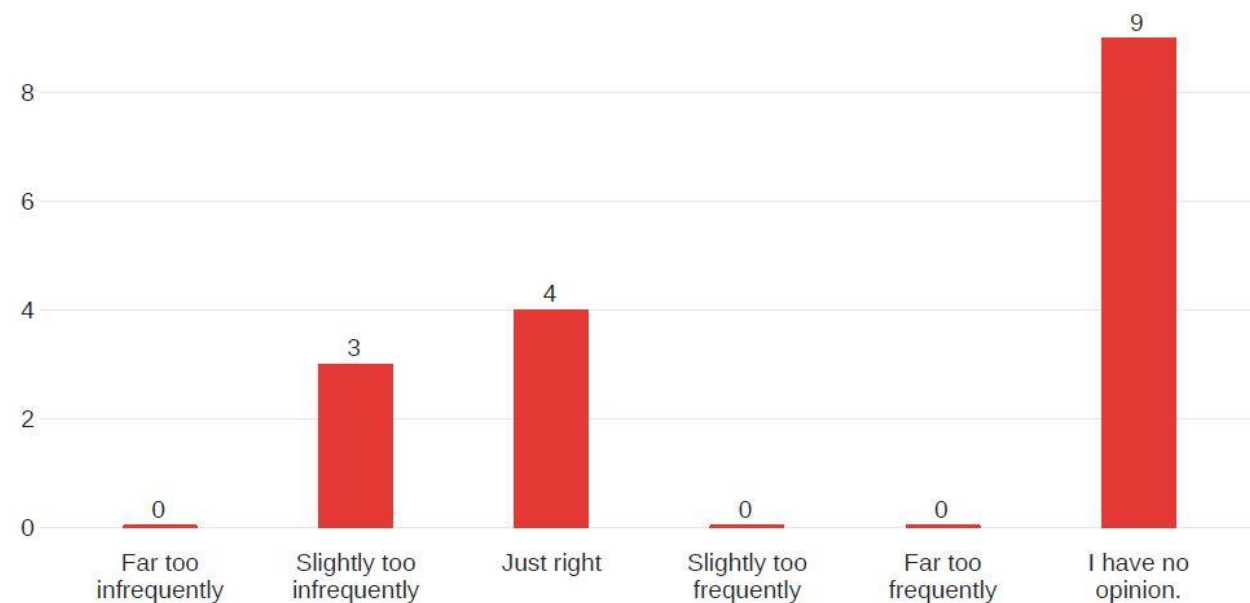
## 4.e.3 Agriculture Water Quality Partnership Forum (AWQPF)

17 Responses



## 4.e.4 AWQPF Technical Subgroup

16 Responses



Comments:

More AWQPF meetings needed

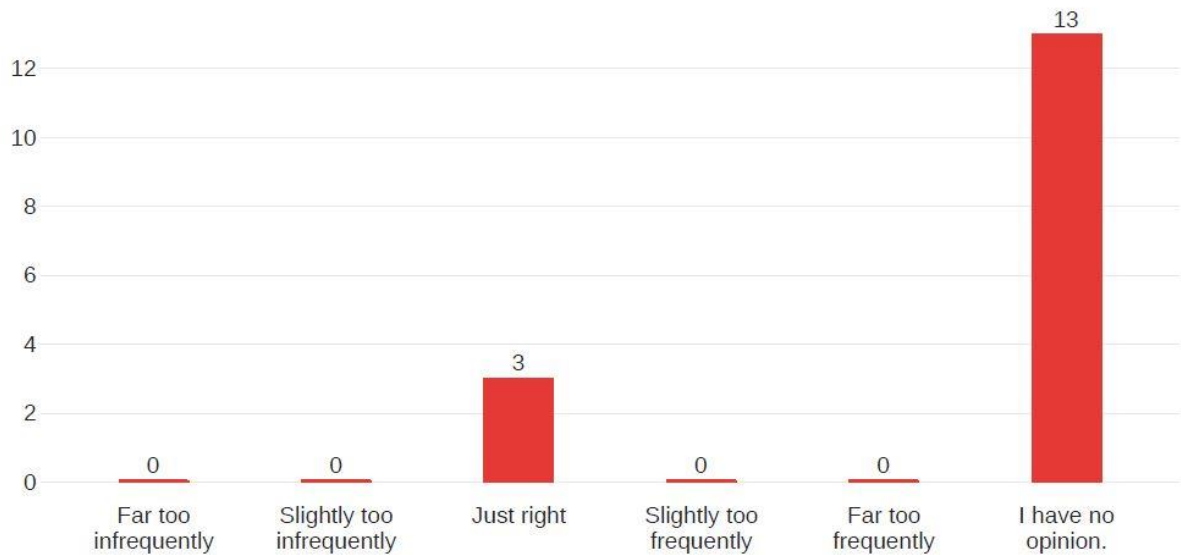


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# 4e – Urban Stormwater

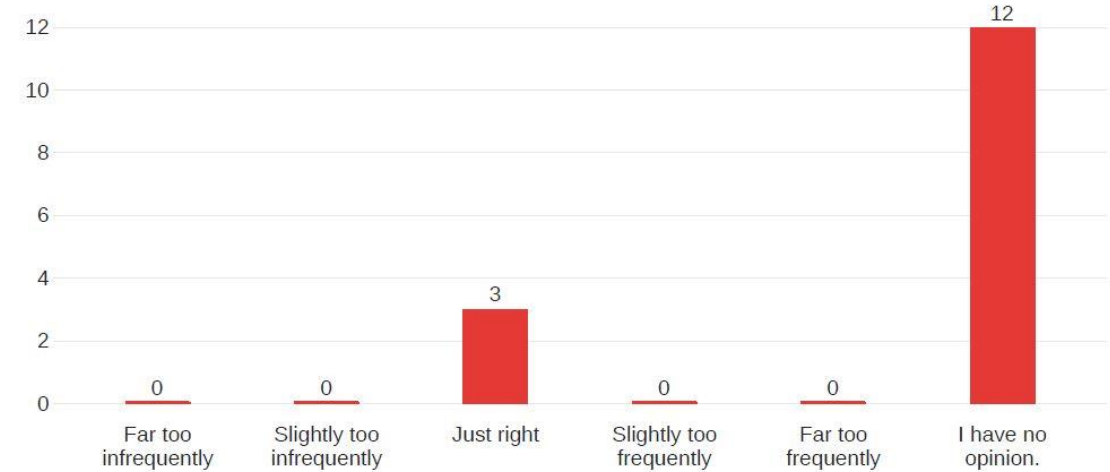
## 4.e.5 Urban Stormwater Working Group (USWG)

16 Responses



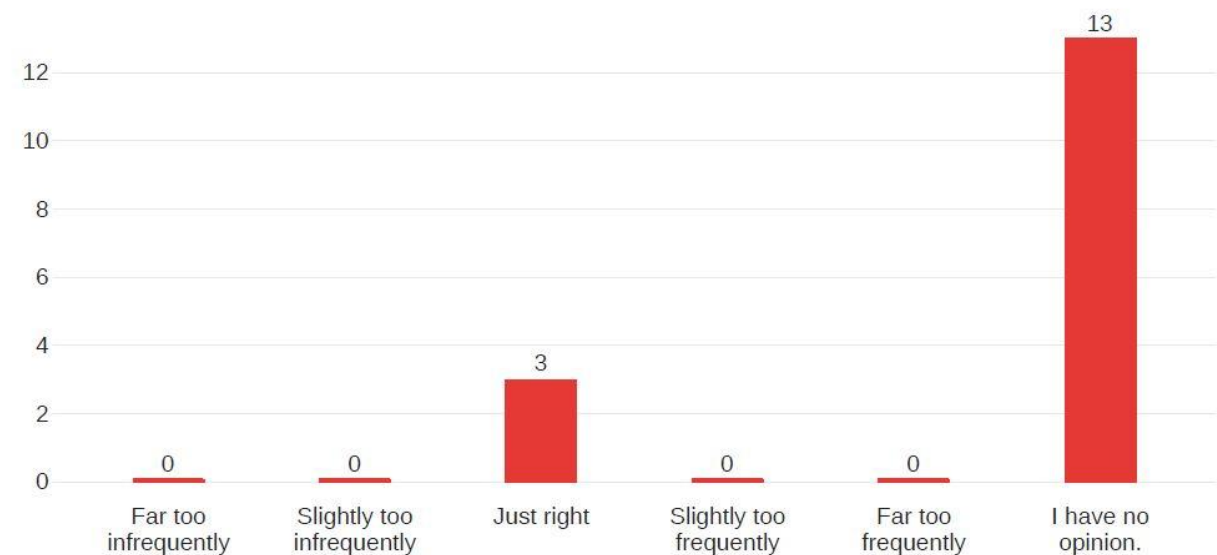
## 4.e.6 USWG Tracking Subgroup

15 Responses



## 4.e.7 USWG Education Subgroup

16 Responses





#### 4.f. Please rate your overall satisfaction with working group meeting formats. (17)

Virtual (11 opinions) – 10 satisfied or extremely satisfied, 1 unsatisfied

In person (12 opinions) – 11 satisfied or extremely satisfied, 1 unsatisfied

Hybrid (9 opinions) – 8 satisfied or extremely satisfied, 1 unsatisfied

#### Comments:

- Like hybrid (2)
- Like in person (3), at least once per year
- More time for discussion and tough questions
- Virtual option is appreciated
- Suggest adding live polling to spark more online discussion from a larger hybrid group



# Additional comments:

- Continue adaptive management and use of surveys to aid it (1)
- More research needed in several areas, more investment in successful actions (1)
- Nutrient loading measures should adopt flow-weighted measures (2)
- Not so much show and tell among partners, more discussion on hard questions (1)
- Hear from other HTF states successes/challenges (1)
- NLRs team is appreciated (1)



# Policy Working Group Survey Summary

1. Initiate move to dashboard. Next steps are to seek PWG input on metrics, accessibility of data.
2. Do not change the interim goal or set a year for the long-term goal until more data is available. More discussion will be needed through the Performance Benchmark Committee and PWG.
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Questions?



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# Updates on phosphorus research to support Illinois NLRs goals

Andrew Margenot, Associate Professor

<https://margenot.cropsciences.illinois.edu/>

2 April 2024

**Illinois Nutrient Loss Reduction Strategy**  
Springfield, IL

# Overview

1. Introduction
  - Phosphorus (P) losses in the Mississippi River Basin and Illinois
  - Terminology
2. Non-point source apportionment: the case of streambank erosion
3. The challenge of legacy P (watershed)
4. Residual P (soils)
5. Ongoing work to improve management and monitoring of P and its losses
  - Illinois Agronomy Handbook – updates to P recommendations
    - Critical values
    - Rates
    - P sorption index (PSI) or degree of P saturation (DPS)
  - Run-off losses: quality data to support modeling and BMPs
  - Manure management



Award #2021-4-360731-469  
Award #2022-3-360731-550  
Award #2023-4-360731-642  
Award #2023-5-360731-527



Award #2125626



Award #2311-212-0101



### Project team:

Shengnan Zhou, Ph.D.  
Suwei Xu, Ph.D.  
Bruce Rhoads, Ph.D.  
Amir Sadeghpour, Ph.D.  
Sheng Wang, Ph.D.

Kaiyu Guan, Ph.D.  
Eric Potash, Ph.D.  
Niranga Wickramaratne, Ph.D.  
Jeff Strock, Ph.D.  
Michael Douglass, B.S.  
Katharine Wiley, M.S.  
Yuhei Nakayama, M.S.

Carlos Murillo, B.S.  
Allison Altschuler, B.S.  
Lenarth Ferrari, M.S.  
Adriana Reconco, B.S.  
Guadalupe Gonzalez, B.S.  
Maia Rothman, B.S.  
Yawen Deng, M.S.



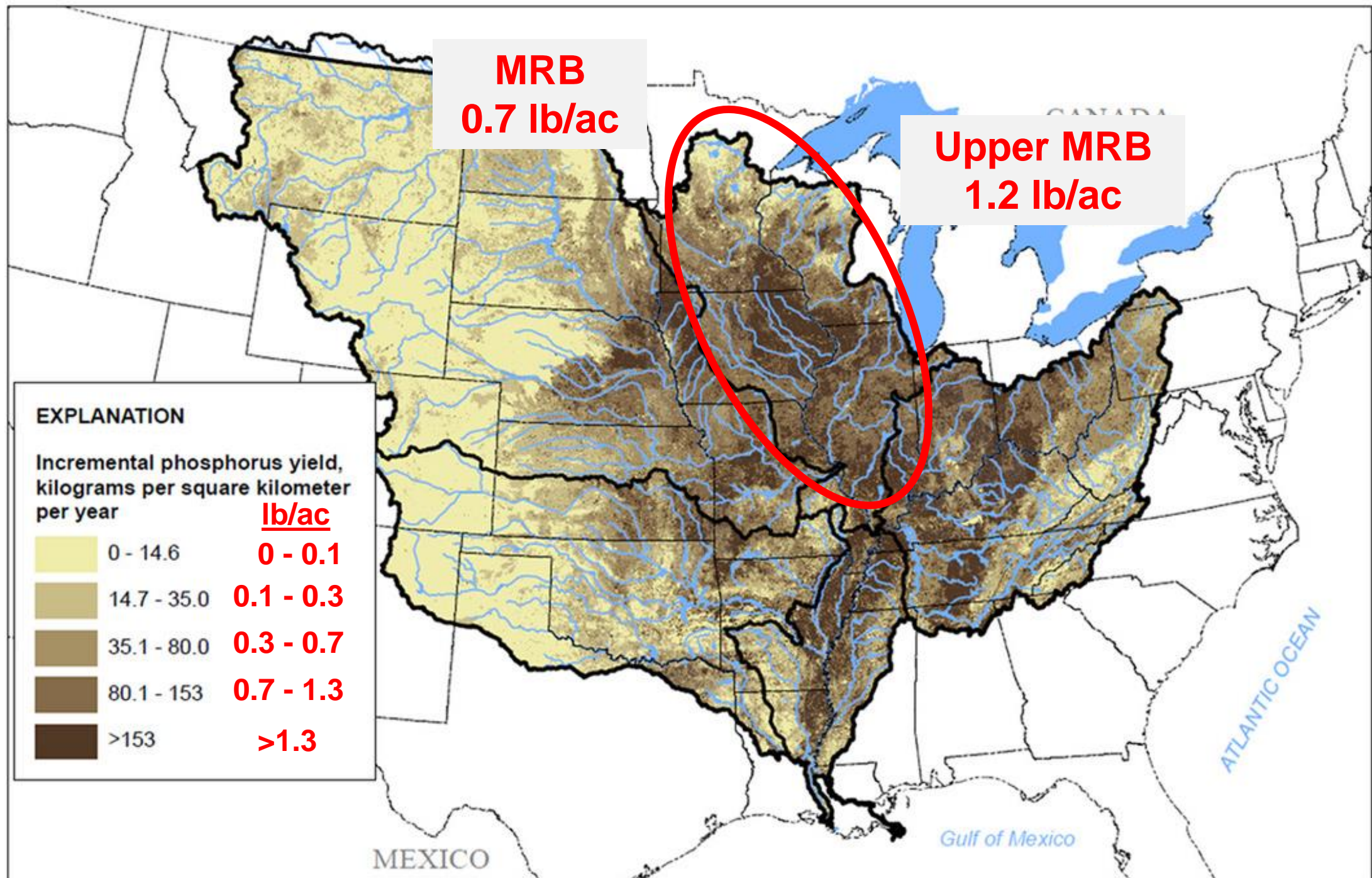
AARHUS  
UNIVERSITY



# The Mississippi River Basin (MRB)





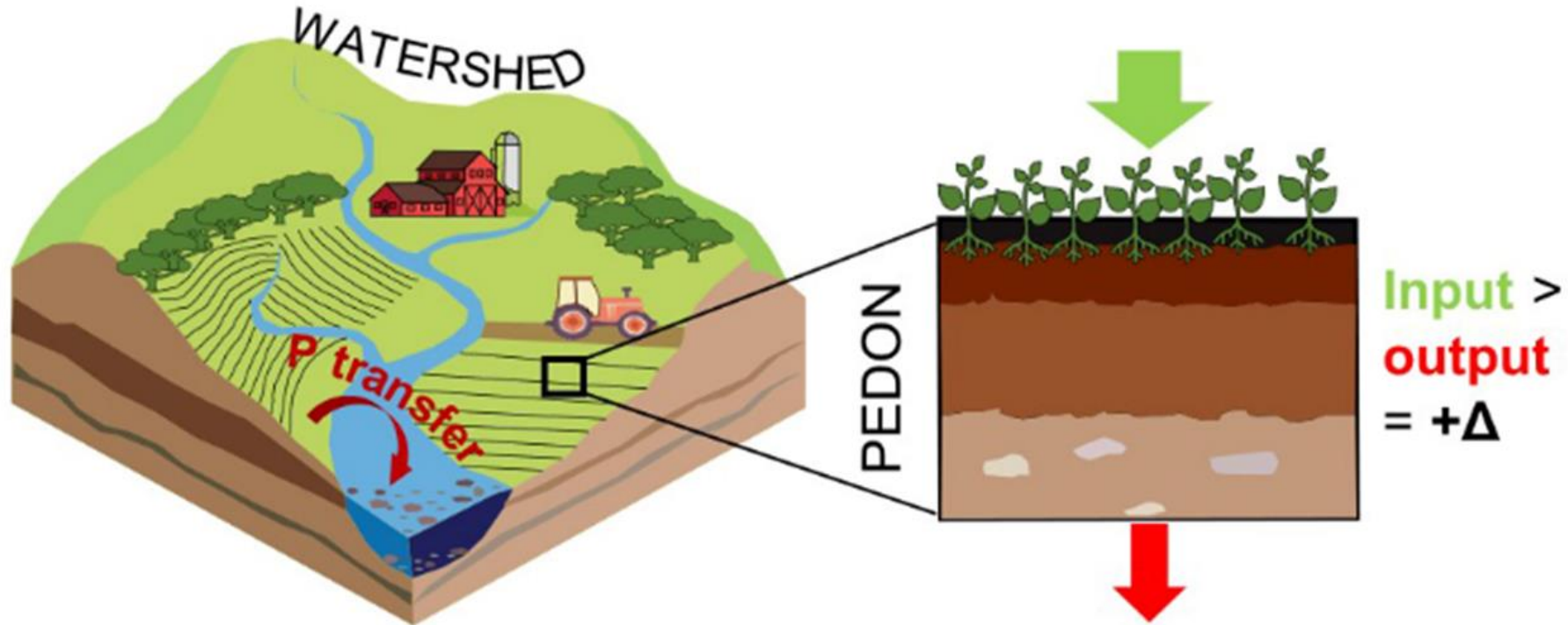


# Both **legacy P** and **residual P** matter for the Illinois NLRs

NREC #2023-4-360731-642



NREC #2021-4-360731-469



**“Legacy P”**: mechanism of **P transfer** across watershed and impact on water quality

**“Residual P”**: magnitude of fertilizer P remains in soil, i.e.,  $+Δ = \text{P input} - \text{P output}$



# Journal of Environmental Quality

NOVEMBER–DECEMBER 2023 | VOLUME 52, NUMBER 6



**On the cover:** Streambank erosion contributes phosphorus to streams and rivers across the Mississippi River basin, as shown here for a loess bluff along a tributary of the Embarras River in Illinois. However, the majority of basin states do not explicitly quantify this non-point, non-agricultural source of phosphorus loss. This review synthesizes the next steps to do so. See A. Margenot et al., “Streambank erosion and phosphorus loading to surface waters: Knowns, unknowns, and implications for nutrient loss reduction research and policy,”

<https://doi.org/10.1002/jeq2.20514>

Photo by Shengnan Zhou.

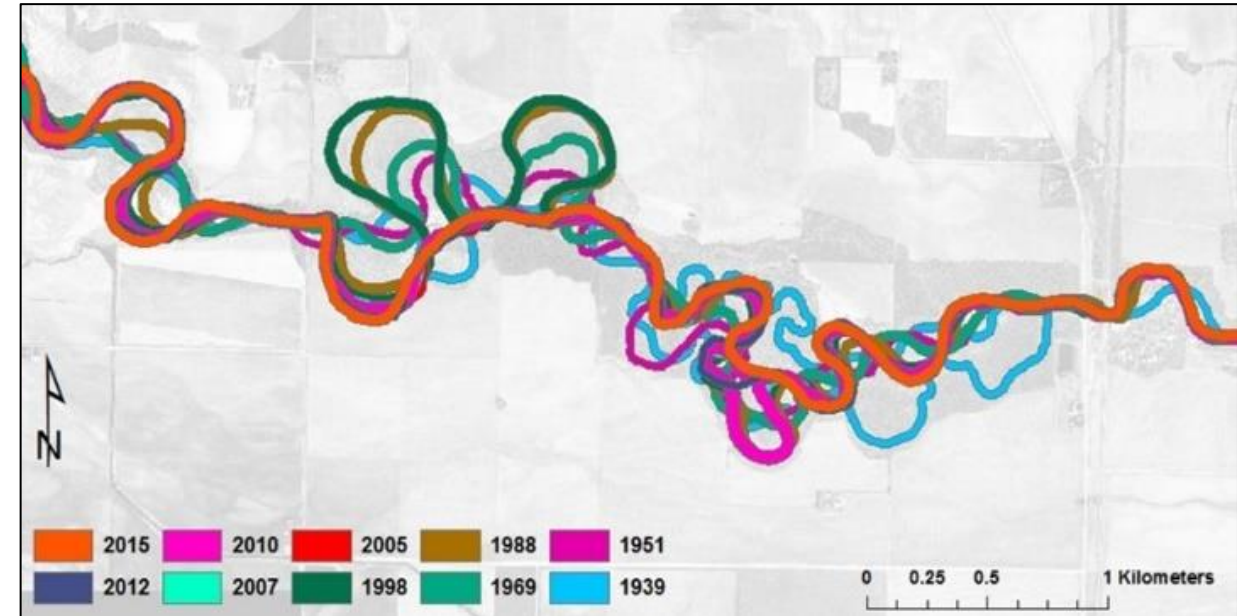
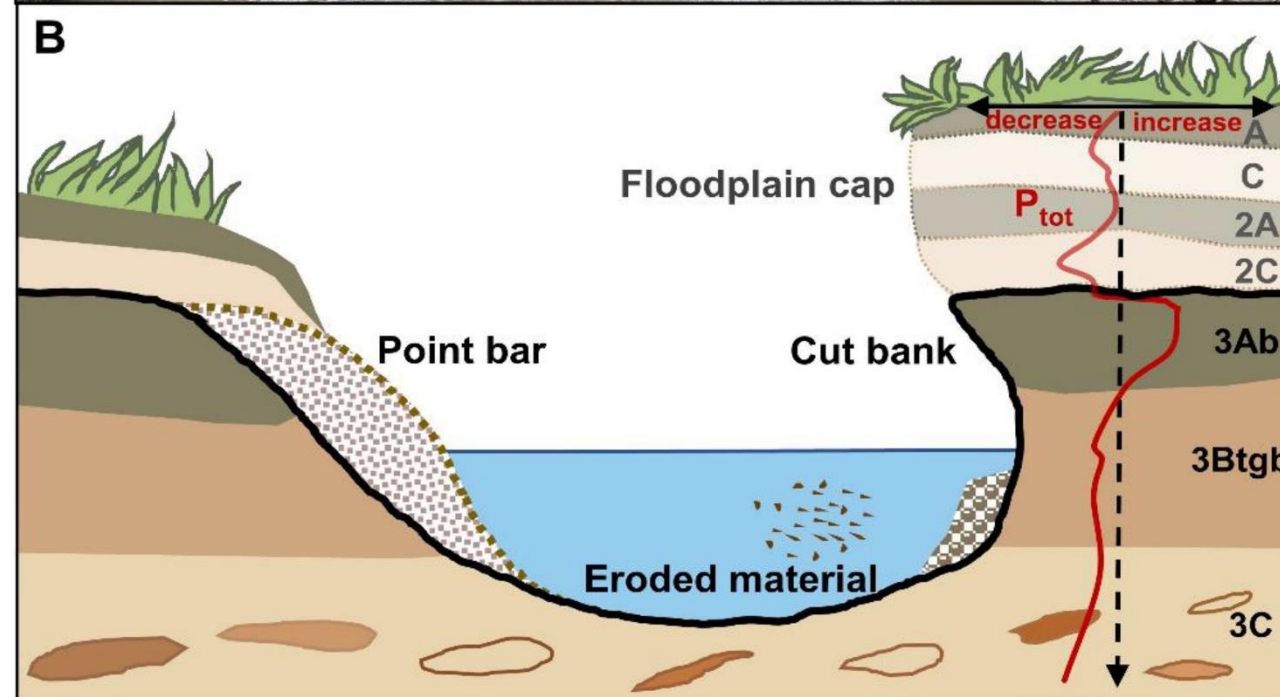








# Streambank erosion: P transfers from land to water

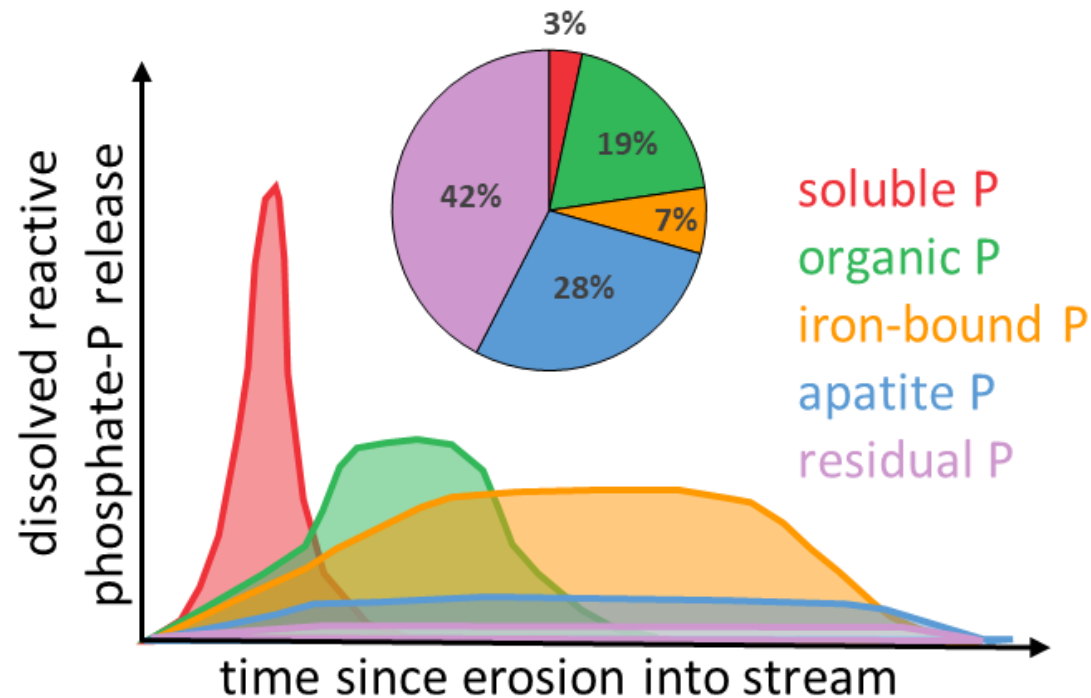


*Mackinaw River (Illinois) migration from 1939-2015  
identified by rectifying aerial imagery*

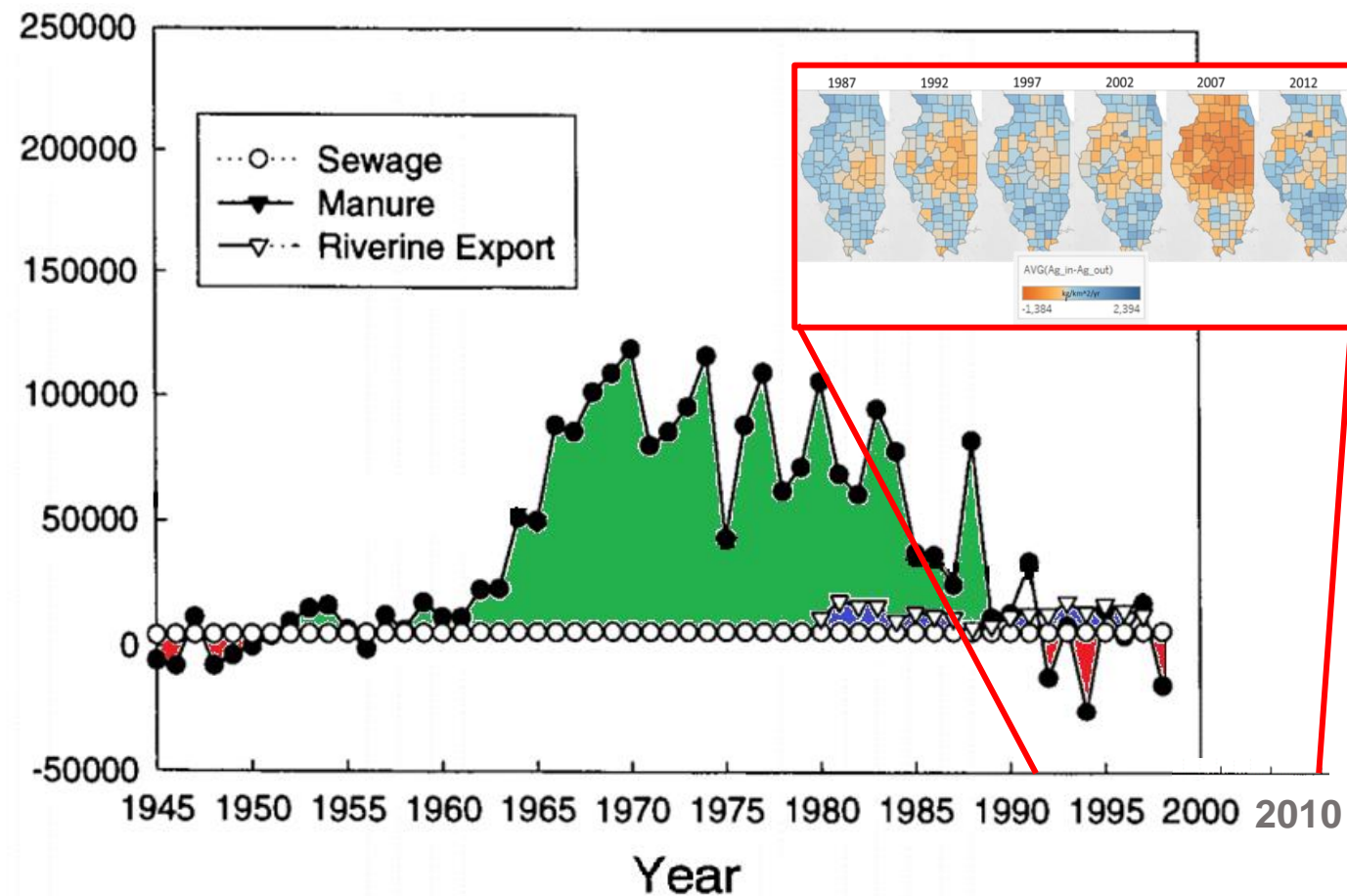
- Meandering streams in flat topography especially prone to erosion
- Loads sediment as streambank soil
- Soils eroded into the stream contain P – most of it is native, from parent material (i.e., *not* fertilizer)

# The form of P is overlooked but entails lag times

- Only a small % of the P eroded with streambanks dissolves into stream
- Majority of eroded P may take years to decades (or more) to exit the stream channel



- Illinois farmland has had a negative P balance since 1990
- Yet, **+35% P loss** as the last 5-year average

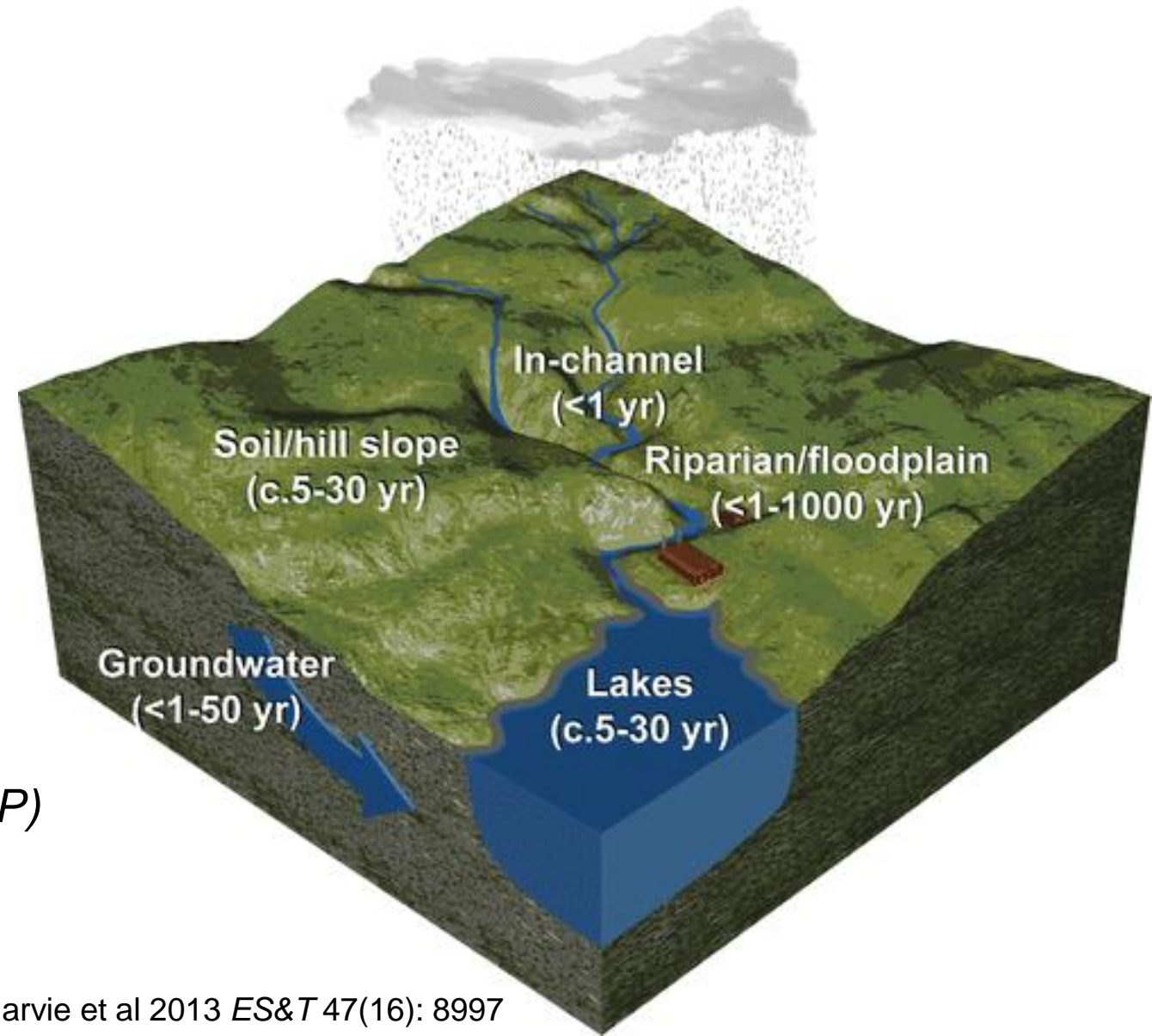




# Result? Legacy P in the water systems have **lag times**

- Measured N or P export (watershed to state) may not reflect *when* the nutrient load was...
  - ...lost from fields, or
  - ...entered waterways
- Confounds attribution of magnitudes with sources
  - “how much” by balance cannot necessarily tell us “from where”

*Lag times for eroded sediment P to manifest as dissolved reactive P (DRP) can be substantial*





# Review of state nutrient loss reduction strategies (NLRs)

## Wisconsin's Nutrient Reduction Strategy

November 2013



Developed by the  
in cooperation with

December 2014



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Illinois  
Department of  
Agriculture

## Executive Summary

### Minnesota Nutrient Reduction Strategy

The *Minnesota Nutrient Reduction Strategy* (NRS) will guide the state in reducing excess nutrients in waters so that in-state and downstream water quality goals are ultimately met.

**Nutrient impacts are widespread.** Excessive nutrients pose a significant problem for Minnesota's lakes, rivers, and groundwater, as well as downstream waters including the Great Lakes, Lake Winnipeg, the Mississippi River, and the Gulf of Mexico. Nutrients are important for human and aquatic life; however, when levels exceed normal conditions, problems can include excessive algae growth, low levels of oxygen, toxicity to aquatic life and unhealthy drinking water.



Figure 1. Major drainage basins in Minnesota.

Substantial nutrient reductions are needed across much of Minnesota. For example, in 433 Minnesota lakes with impairments related to nutrients, an average of 45 percent phosphorus reduction is needed to meet water quality standards. Phosphorus levels in 48 river stretches exceeding the pending river eutrophication standards need an average 41 percent reduction. Many of these rivers flow toward the Mississippi River and into Lake Pepin, where similar levels of phosphorus reduction are needed to achieve a healthy lake. Nitrate, a dominant form of nitrogen in polluted waters, commonly exceeds the levels established to protect drinking water, especially in wells located below sandy soils and shallow soils above fractured bedrock. Nitrate levels are high enough to harm the food chain for fish in some rivers and streams fed by groundwater and drainage ditches.

# Review of *updates* to state NLRS



## 2022 Progress Update Missouri Nutrient Loss Reduction Strategy

The Missouri Nutrient Loss Reduction Strategy (NLRS) is a collection of approaches to reduce nutrient pollution from point and nonpoint sources. The overarching goal is to improve local water quality and reduce statewide nutrient pollution that ends up in the Mississippi River and Gulf of Mexico.

### PRIORITY PROGRESS

#### Priorities Promised in 2020-2021

In continuing to **Implement Numeric Nutrient Criteria for Lakes** in 2020 and 2021, the Missouri Department of Natural Resources conducted 19 watershed models, 43 antidegradation reviews, and identified lakes on the 2020 303(d) list as impaired due to nutrients or chlorophyll-a.

**4R Nutrient Stewardship:** To date, the Soil and Water Conservation Program entered into a total of 5 contracts with cooperators in Randolph County with reduce nutrients from 552 acres.

**Implement Statewide Soil Moisture** department successfully installed soil temperature sensors at 15 sites across the state to help understand and respond to weather affecting nutrient infiltration and runoff.

Prepared by:  
Iowa Department of Agriculture and Land Stewardship  
Iowa Department of Natural Resources  
Iowa State University College of Agriculture and Life Sciences

Updated December 2017

## Implementation Progress Report 2017 – 2019

## Wisconsin's Nutrient Reduction Strategy



April 2020  
Environmental Management  
Wisconsin DNR

EGAD # 3200-2020-15



ILLINOIS  
NUTRIENT LOSS  
REDUCTION STRATEGY

## Biennial Report 2023



# Most states in the MRB do not account for streambank erosion in nutrient loss reduction strategies (NLRs)

State	Streambank erosion recognized as a nonpoint P source?	Description from the strategy	Measures taken to reduce P load from streambank erosion	Reference
Illinois	Yes	<ul style="list-style-type: none"> <li>Addressed under “urban nonpoint sources”.</li> <li>approximately 40% of NPS P loads are estimated to be derived from overland erosion, dissolved reactive P losses, and streambank erosion.</li> <li>Severely eroding streambanks estimated to contribute approximately up to 30%–50% of total sediment entering surface waters in IL.</li> </ul>	<ul style="list-style-type: none"> <li>The Illinois Streambank Stabilization and Restoration Program funds low-cost stabilization of eroding streambanks.</li> <li>In 2004–2012, 93 km of eroding streambanks was stabilized, reducing loads by an estimated 25.9 Mg P.</li> </ul>	(IEPA, 2015)
Iowa	Yes	<ul style="list-style-type: none"> <li>Streambank erosion is a relatively high proportion of P loading to Iowa streams.</li> <li>Accurately accounting for streambank P sources is challenging due to limited methods for measuring beyond a local scale.</li> </ul>	<ul style="list-style-type: none"> <li>Riparian buffers and streambank stabilization proposed.</li> </ul>	(IDALS, 2012)
Minnesota	Yes	<ul style="list-style-type: none"> <li>Streambank erosion is described as a major source of P to surface waters and target for reduction effort.</li> <li>approximately 20% of the total NPS P load from Minnesota to Mississippi River basin likely comes from streambank erosion.</li> <li>Streambank erosion is the main source of P under wet conditions, but it is not significant during dry periods.</li> </ul>	<ul style="list-style-type: none"> <li>Implementing watershed BMPs that promotes the retention or detention of surface runoff and tile drainage will aid in managing downstream flows, consequently reducing streambank erosion.</li> </ul>	(MPCA, 2014)

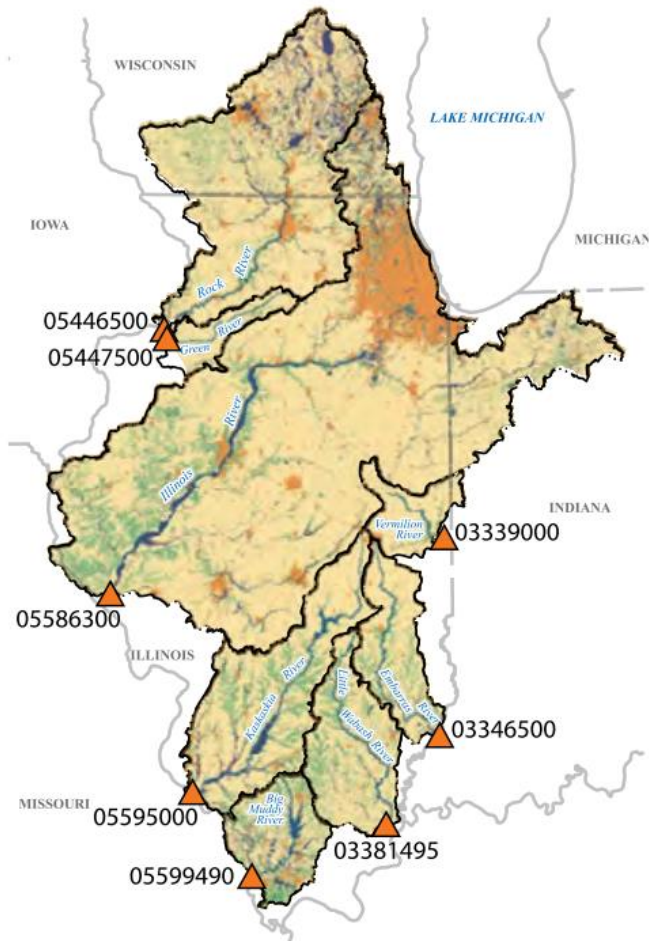
State	Streambank erosion recognized as a nonpoint P source?	Description from the strategy	Measures taken to reduce P load from streambank erosion	Reference
Missouri	Yes	<ul style="list-style-type: none"> <li>Streambank erosion in Missouri is a significant part of P loading to surface waters.</li> </ul>	<ul style="list-style-type: none"> <li>Missouri Soil and Water Conservation Program funds streambank stabilization and grazing management to reduce streambank erosion.</li> </ul>	(MDNR, 20114)
Wisconsin	Yes	<ul style="list-style-type: none"> <li>Streambank erosion is a major nutrient loading source to lakes, streams, and groundwater.</li> </ul>	<ul style="list-style-type: none"> <li>0.3 m tillage setback from the top of a channel should be maintained to maintain streambank integrity.</li> <li>Streambank and shoreline protection are identified as BMPs to manage sediment and nutrient loading and recommended to use.</li> </ul>	(WDNR & UWE, 2013)
Arkansas	No			(NRD, 2014)
Indiana	No			(ISDA, 2008)
Kentucky	No			(KDW, 2014)
Louisiana	No			(CPRA et al., 2014)
Mississippi	No			(MDEQ, 2012)
Ohio	No			(OEWA & OEPA, 2014)
Tennessee	No			(TDEC, 2015)



# Why does this matter?

## Consider how non-point source loads are calculated

- NPS are generally measured indirectly, *by difference*
- This makes discrimination among or partitioning of multiple NPS challenging – many sources are lumped together

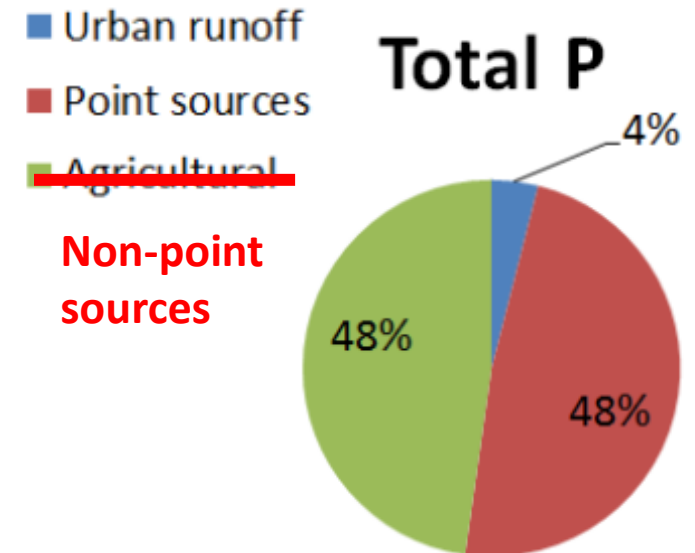


- Total P export calculated using network of USGS “super gages”
- Point source P calculated based on emissions of ~210 point source facilities

Non-point source  
= total export – point source

**Problem:** non-point sources are not further discriminated

### Illinois Nutrient Loss Reduction Strategy



# Not distinguishing streambank erosion within non-point source will incorrectly count it as an agricultural source







DOI: 10.1002/jeq2.20514

## PERSPECTIVE

Journal of Environmental Quality

### Streambank erosion and phosphorus loading to surface waters: Knowns, unknowns, and implications for nutrient loss reduction research and policy

Andrew J. Margenot<sup>1,2</sup>  | Shengnan Zhou<sup>2</sup> | Richard McDowell<sup>3</sup>  | Thomas Hebert<sup>4</sup> |  
Garey Fox<sup>5</sup> | Keith Schilling<sup>6</sup>  | Shawn Richmond<sup>7</sup> | John L. Kovar<sup>8</sup>  |  
Niranga Wickramaratne<sup>2</sup> | Dean Lemke<sup>9</sup> | Kathy Boomer<sup>10</sup> | Shani Golovay<sup>11</sup>

<sup>1</sup>Department of Crop Sciences, University of Illinois Urbana-Champaign, Urbana, Illinois, USA

<sup>2</sup>Institute for Sustainability, Energy and Environment, University of Illinois Urbana-Champaign, Urbana, Illinois, USA

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<sup>4</sup>Agricultural Nutrient Policy Council, Washington, District of Columbia, USA

<sup>5</sup>Biological & Agricultural Engineering, North Carolina State University, Raleigh, North Carolina, USA

<sup>6</sup>Department of Earth and Environmental Sciences, University of Iowa, Iowa City, Iowa, USA

<sup>7</sup>Iowa Farm Bureau, West Des Moines, Iowa, USA

<sup>8</sup>USDA ARS National Laboratory for Agriculture and the Environment, Ames, Iowa, USA

<sup>9</sup>Lemke Engineering and Environmental Services, Dows, Iowa, USA

<sup>10</sup>Foundation for Food & Agriculture Research, Washington, District of Columbia, USA

<sup>11</sup>Illinois Nutrient Research and Education Council, Springfield, Illinois, USA

Contributions of streambank erosion to surface water P loads are...

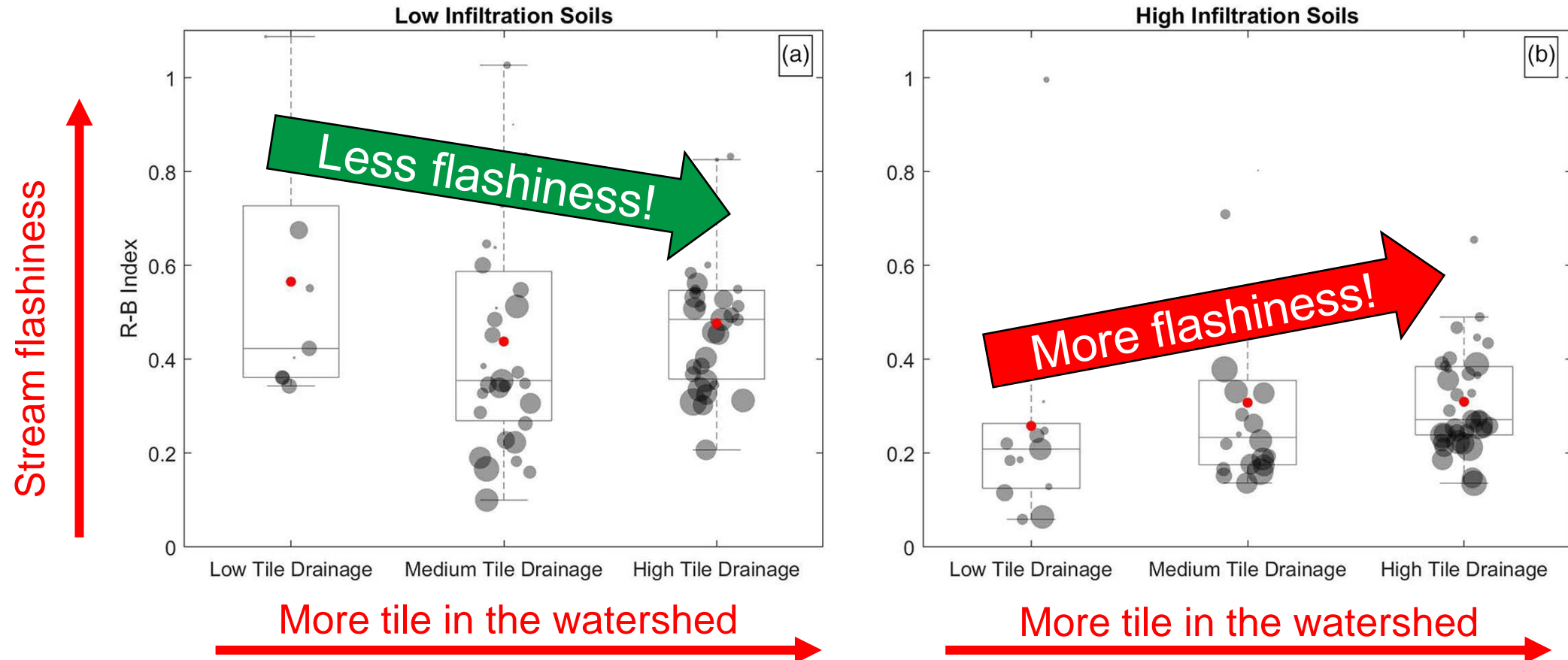
1. ...relatively unquantified
2. ...typically unaccounted for in many nutrient loading assessments/policies

### Consequences:

1. Agricultural P contributions are overestimated
2. Potentially manageable nonpoint source of P is missed in strategies to reduce loads
3. Resources may be misdirected
4. Expectations may not be realistic

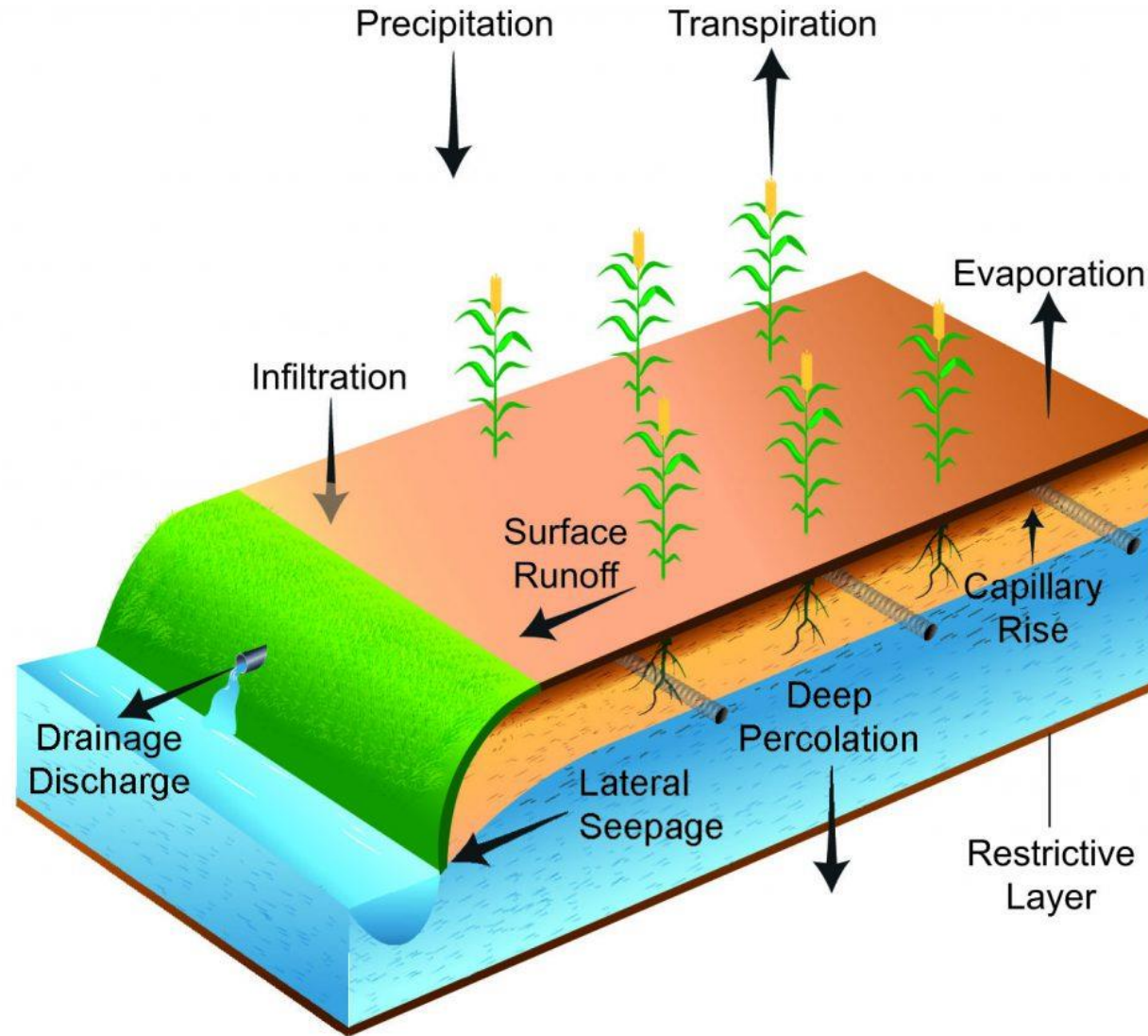
# Could agriculture influence streambank erosion via hydrological effects?

- P from eroded streambanks is *not* due to agriculture **directly** (e.g., fertilizer)
- Might tile drainage be a means by which agriculture could indirectly influence streambank erosion? **It depends**



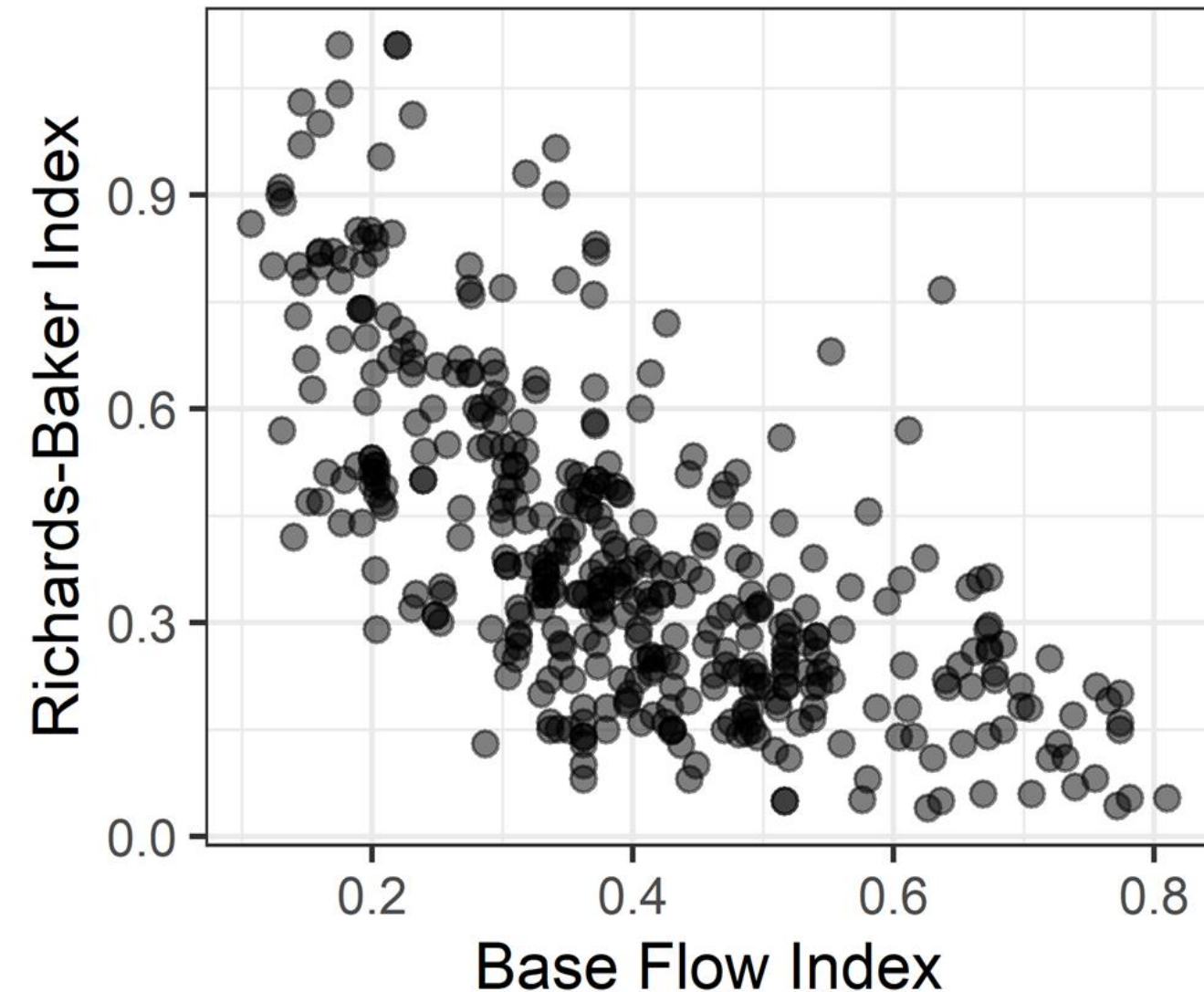
# Net effect of tile drainage on stream power or flashiness and thus potentially on streambank erosion *depends* on several factors

- Depth of water table
- Slope
- Soil texture
- Antecedent soil moisture





# Meta-analysis of stream flashiness and tiling

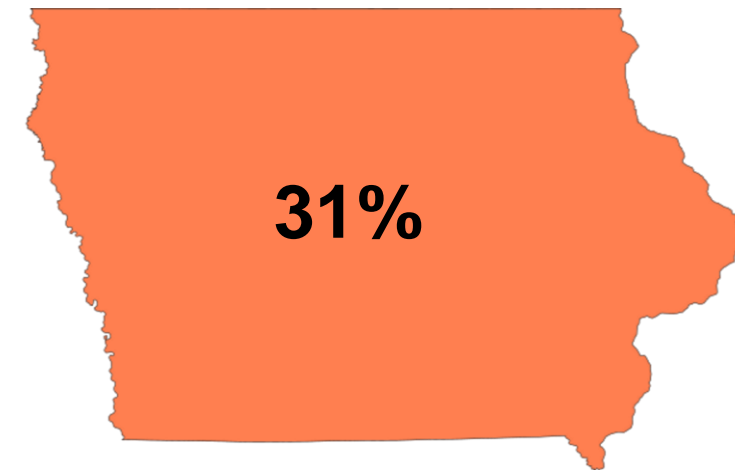
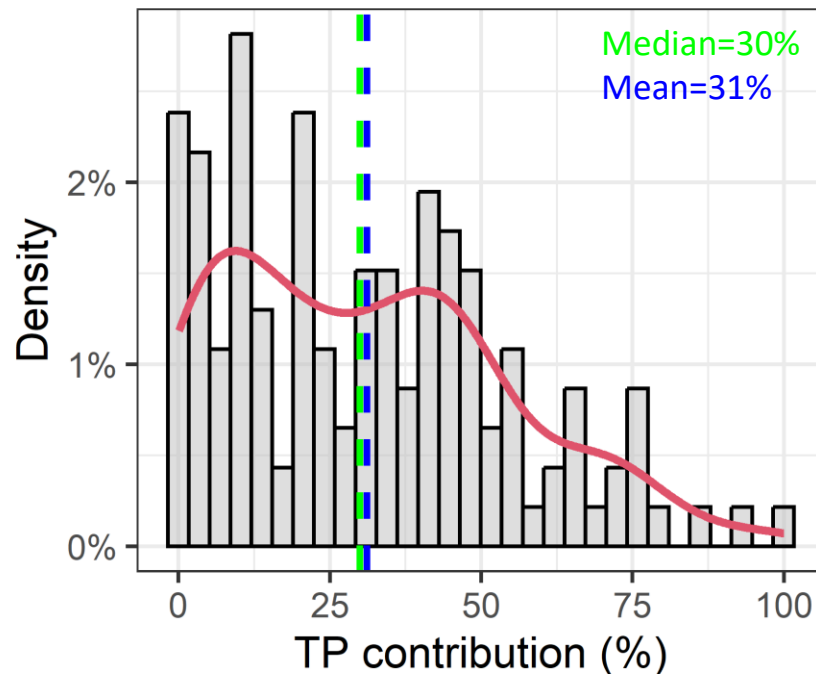
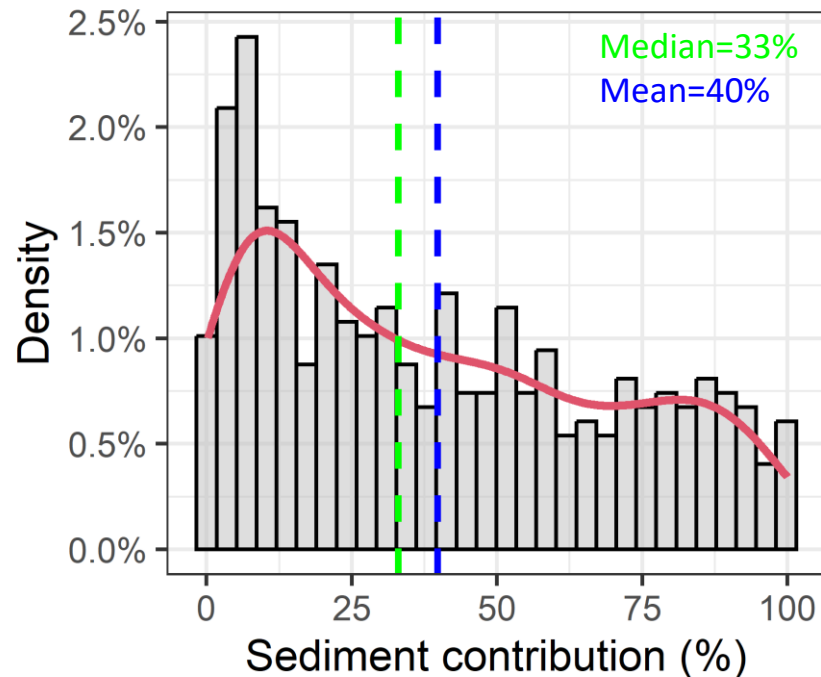


- Streams with *higher* base flow are *less prone* to flashiness
- Flashiness is more common for streams with *lower* base flow
- Basis for field-based project in Green River and Upper Embarras HUC-8s with sister sites in Iowa to quantify tile drainage effects on P loading from field to watershed



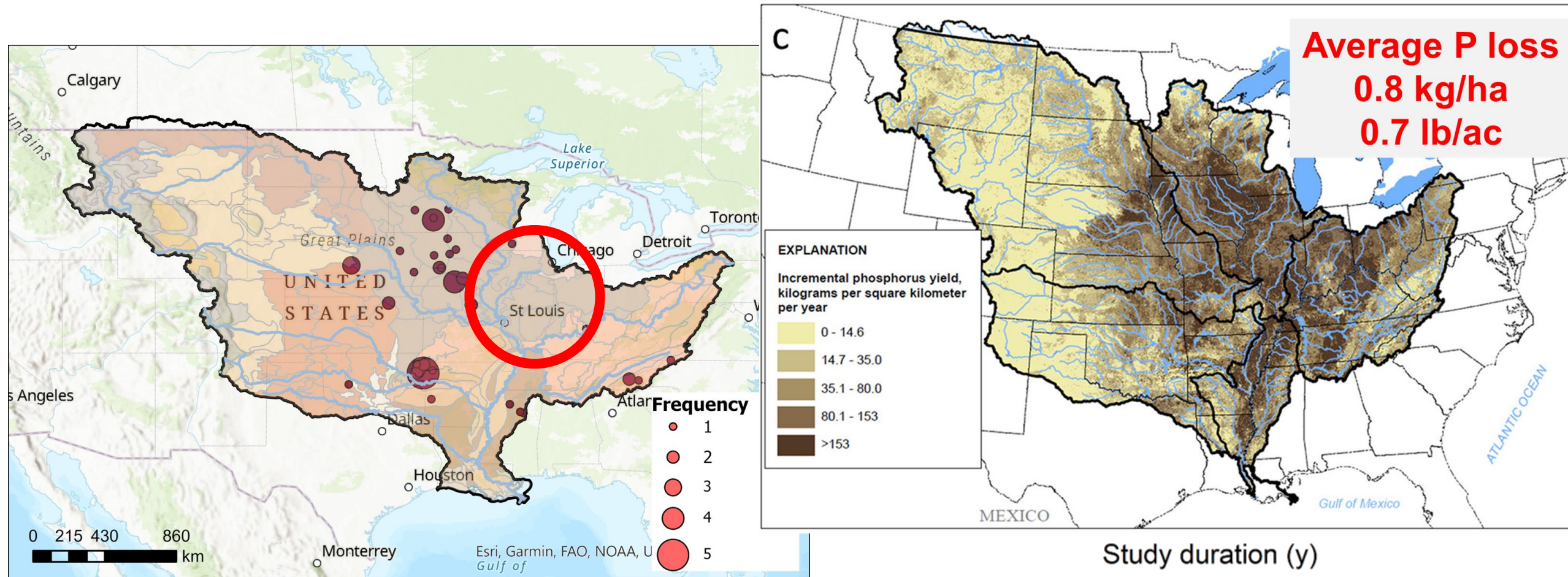
# Streambank erosion contributes substantial riverine suspended sediment and TP export

- **Globally**, bank erosion accounts for an average of
  - 40% riverine suspended sediment export
  - 31% riverine TP export
- Exactly the 31% conservative estimate for Iowa (Schilling et al., 2021)



# What about streambank erosion in the MRB?

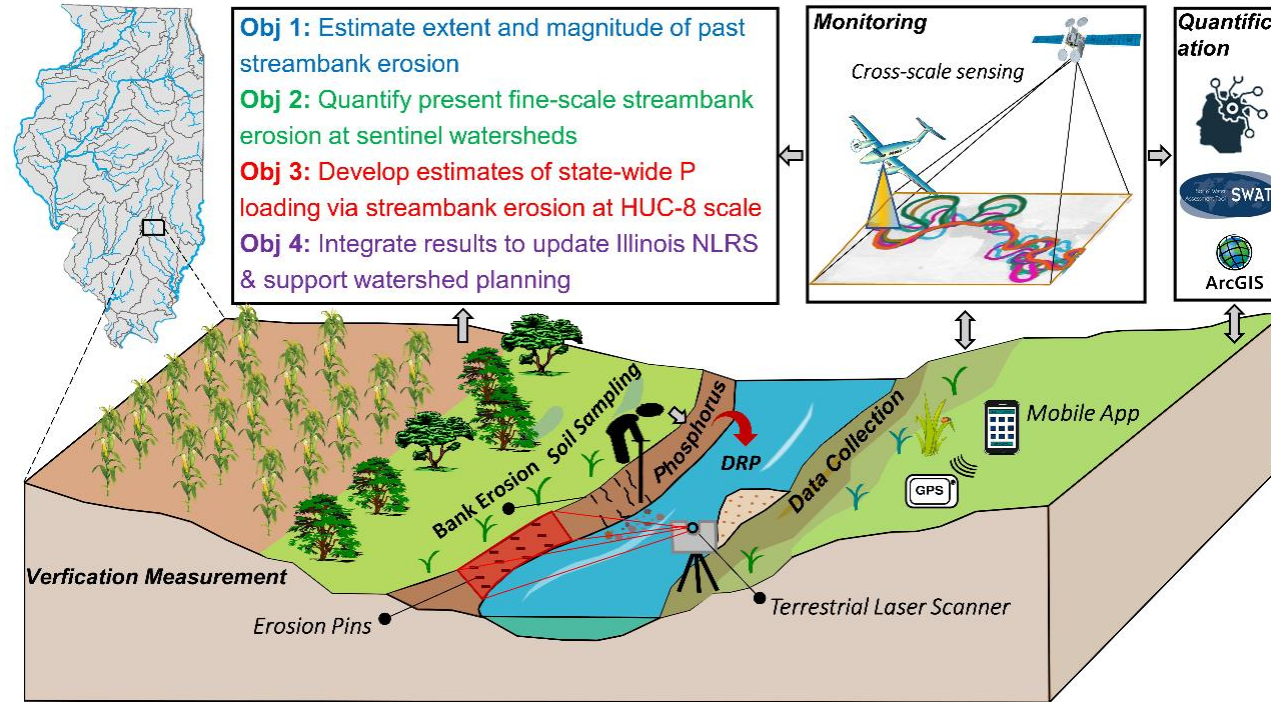
- Only 51 peer-reviewed studies have measured streambank erosion contributions to P loads in the MRB
- Largely <15 years assessments using erosion pints (41%) or aerial imagery (31%)
- **Average TP loads via bank erosion (0.7 lb/ac) align with the average non-point loss in the MRB**





# Fill the gap on streambank erosion contributions to P loading for Illinois (2022 – 2026)

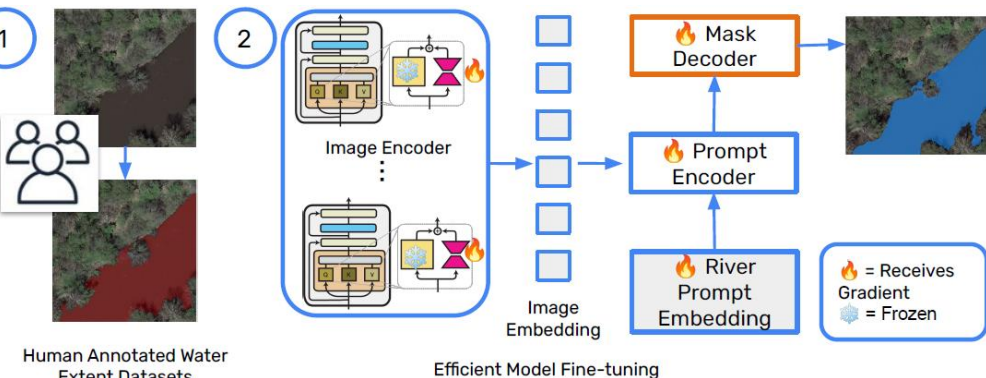
Erosion pins



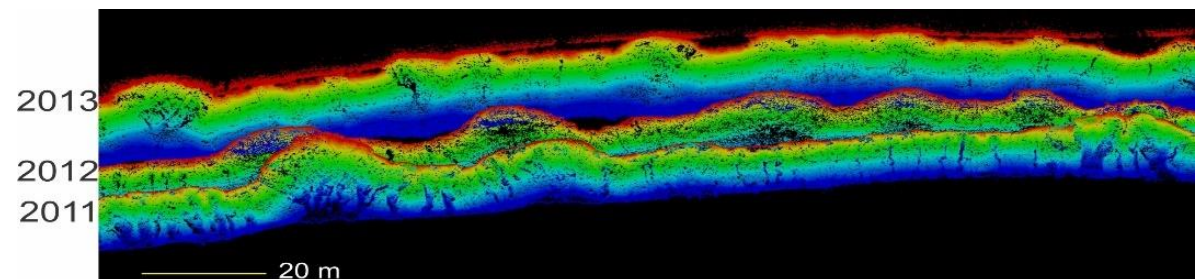
Terrestrial laser scanner



Scaling bank assessments with historical aerial imagery using AI



LiDAR scans to reveal channel bank migration



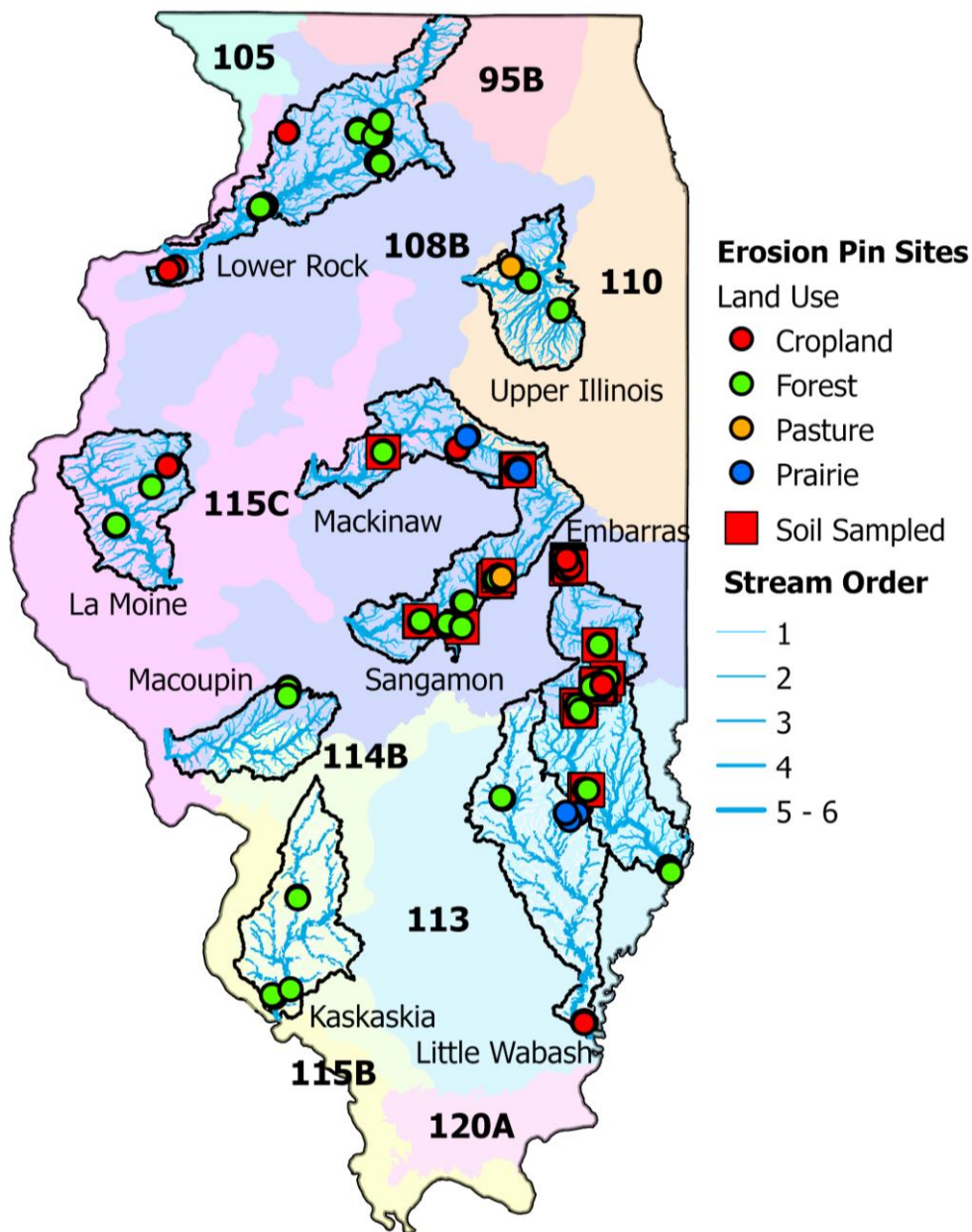


# Erosion pin installation for recession rate

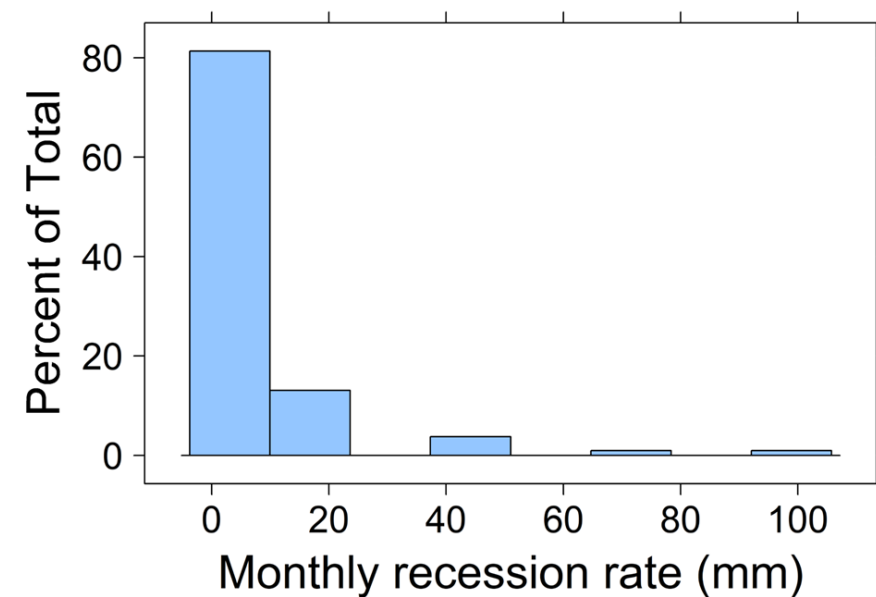
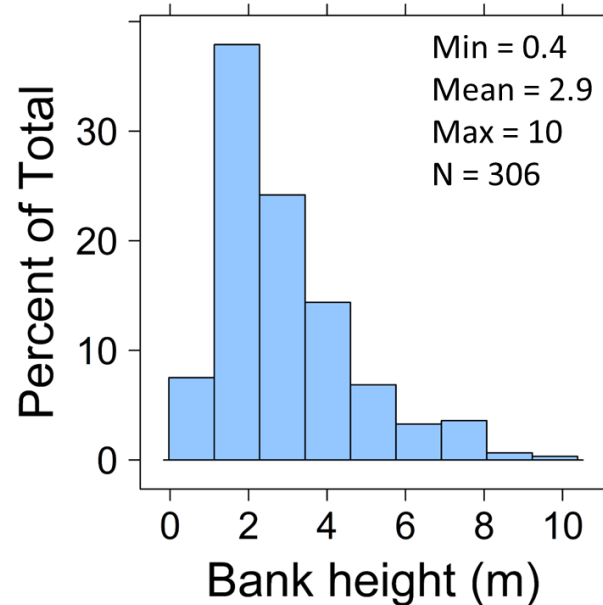




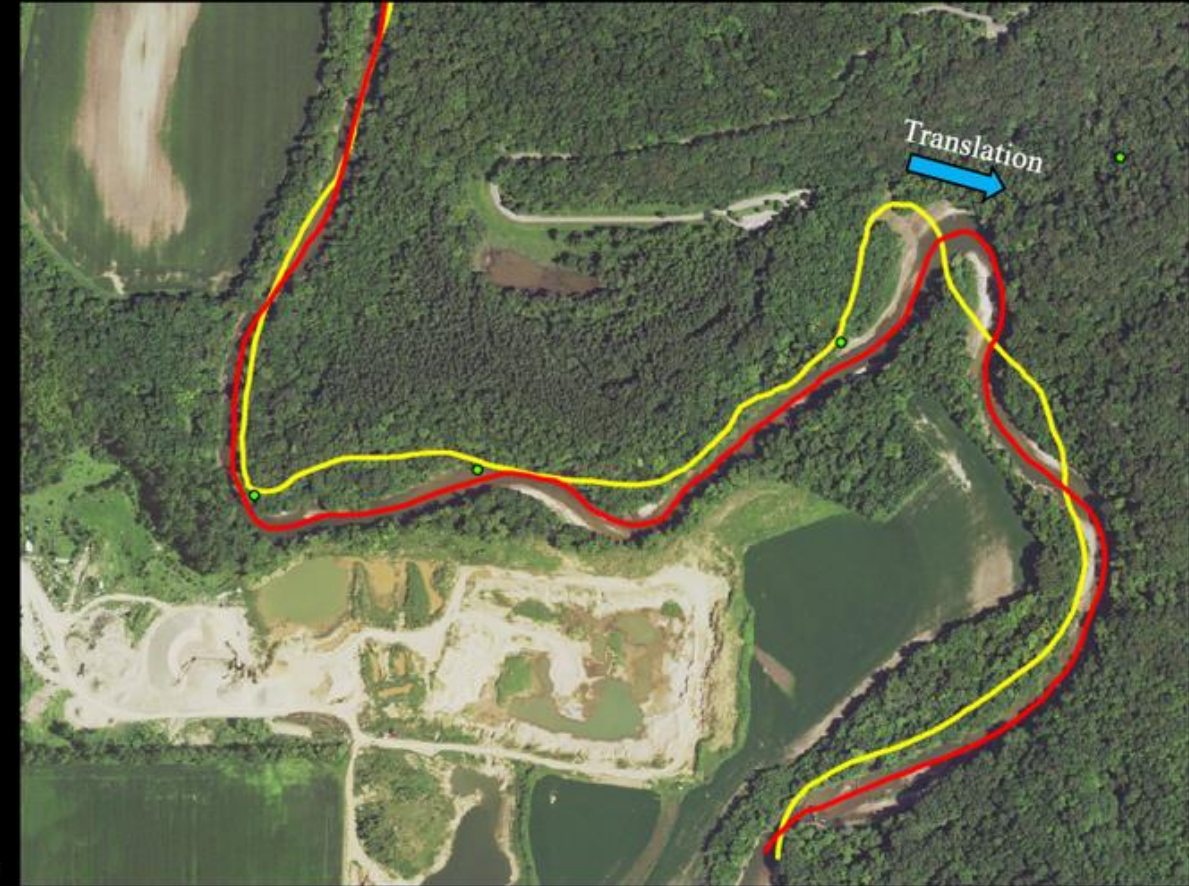
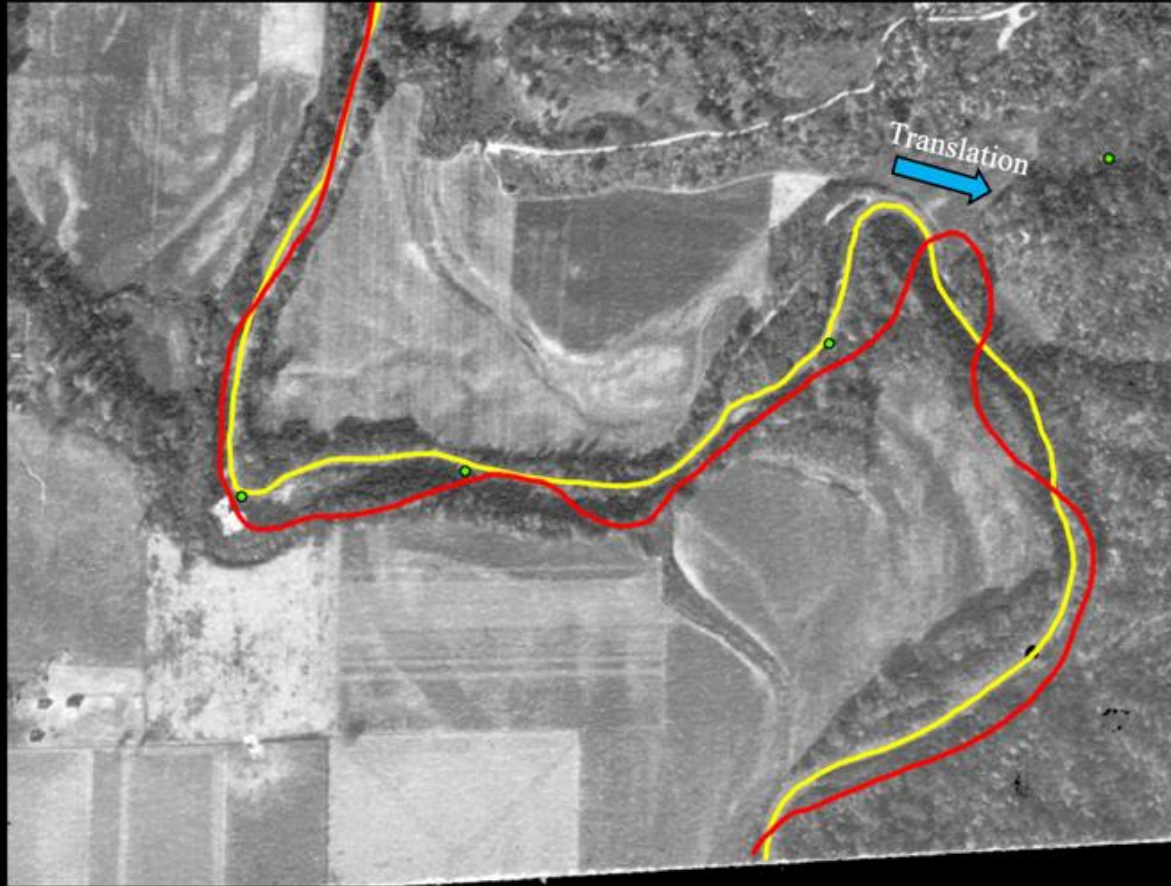
# Updates on Illinois effort to quantify streambank erosion



- 9x HUC-8 watersheds capturing diversity in Major Land Resources Areas (MLRAs)
- **306 sites** monitored by erosion pins to-date
- **At 65 stream reaches**, from *first-to-sixth* order
- Average monthly recession rate of 8 mm (0.3")
- Bank height averages 2.9 m (9.5')



# Remote sensing for historical streambank erosion



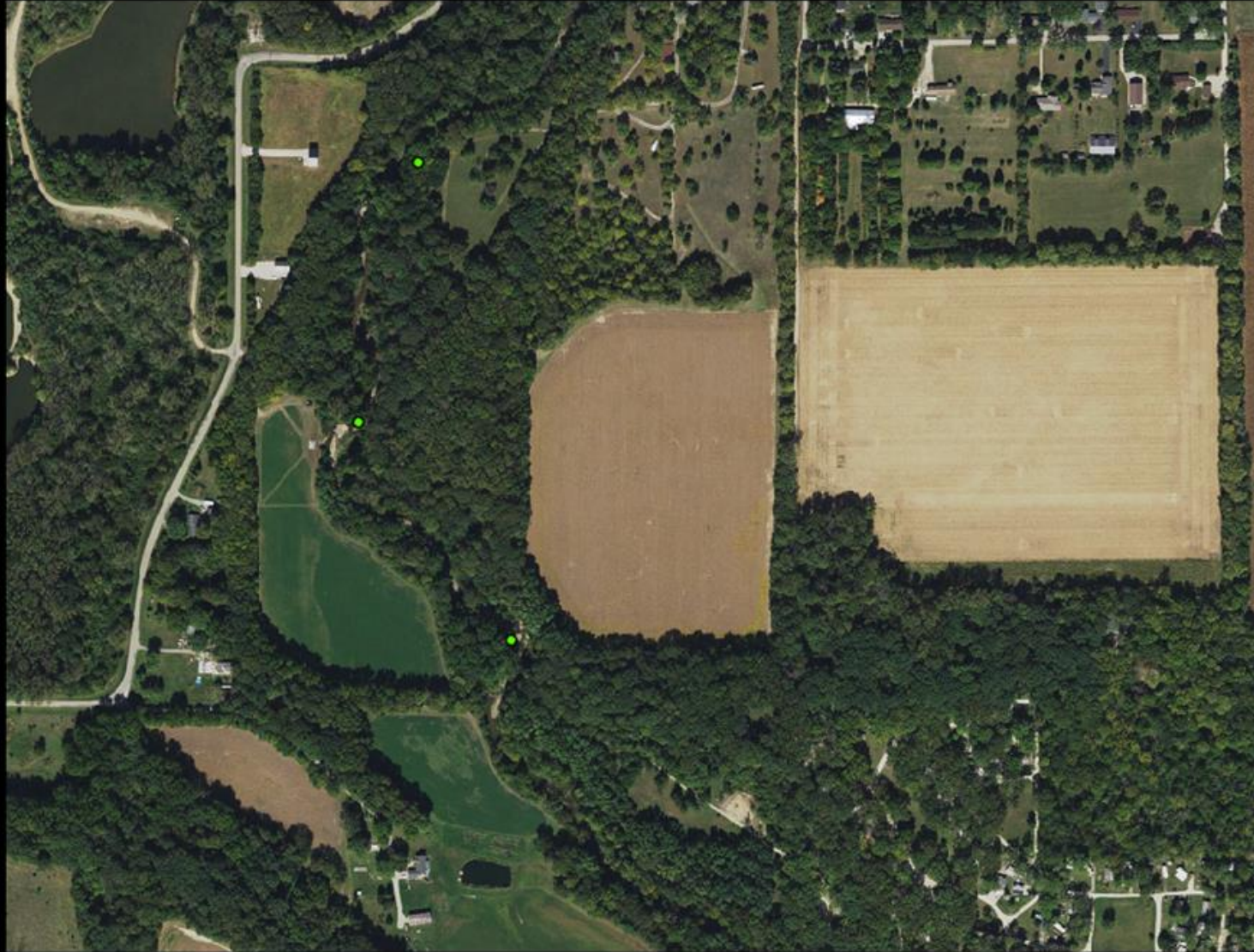
— 1938 centerline

— 2020 centerline

● Embarras River (Charleston, IL) Site Erosion pins



# Using erosion pins to validate remote sensing for upscaling



— 1940 centerline

— 2018 centerline

● Waupecan Creek (Grundy County, IL) Site Erosion pins

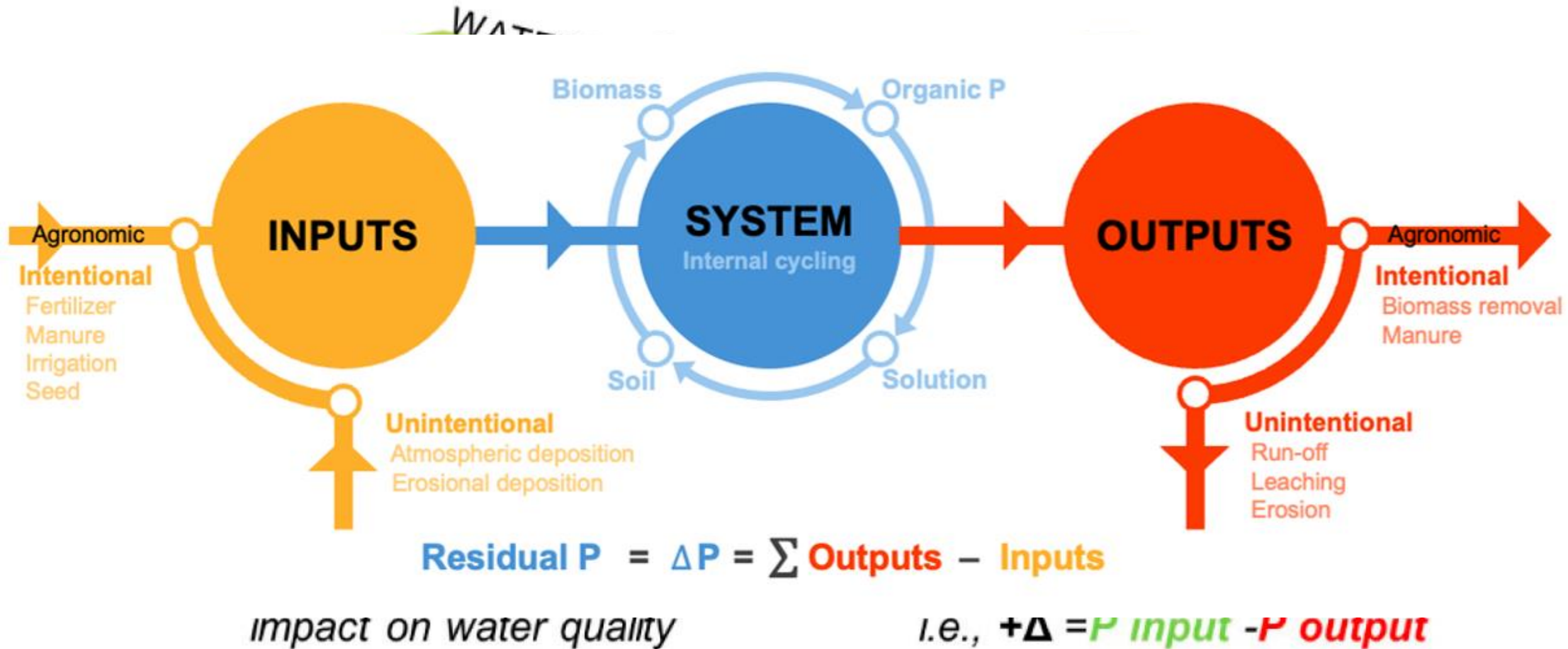


# Scalable assessment of streambank erosion enabled by smartphone-based tools, calibrated to field measurements





# Mass balances: a critical tool to *estimate* residual P





# THE MORROW PLOTS

AMERICA'S OLDEST EXPERIMENTAL FIELD

ESTABLISHED IN 1876

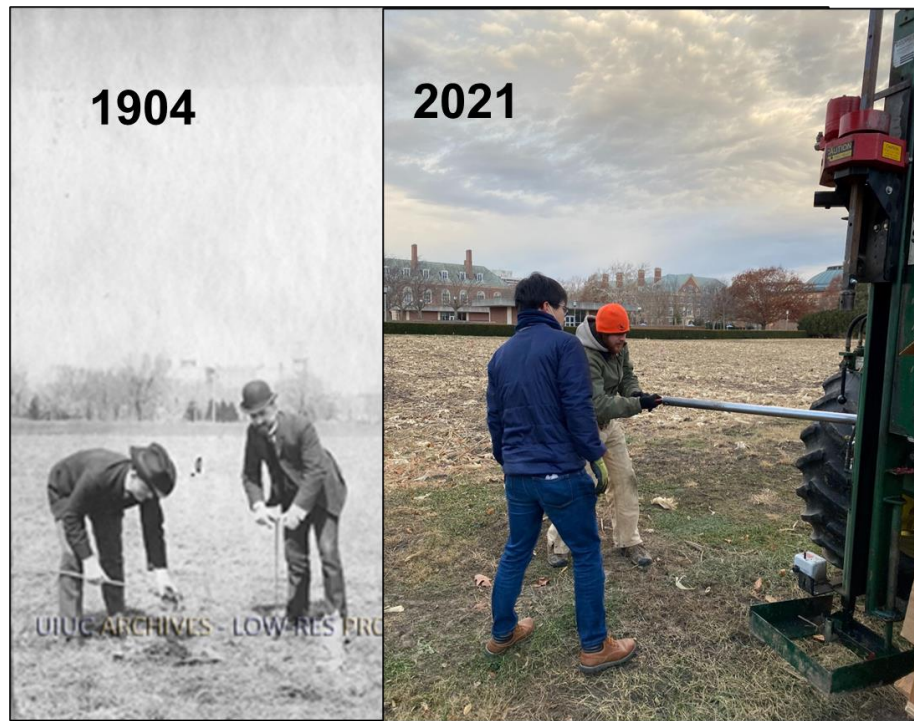
AMERICA'S FIRST EXPERIMENT ON THE  
SUSTAINABILITY OF CROPPING SYSTEMS  
AND FERTILIZATION PRACTICES.



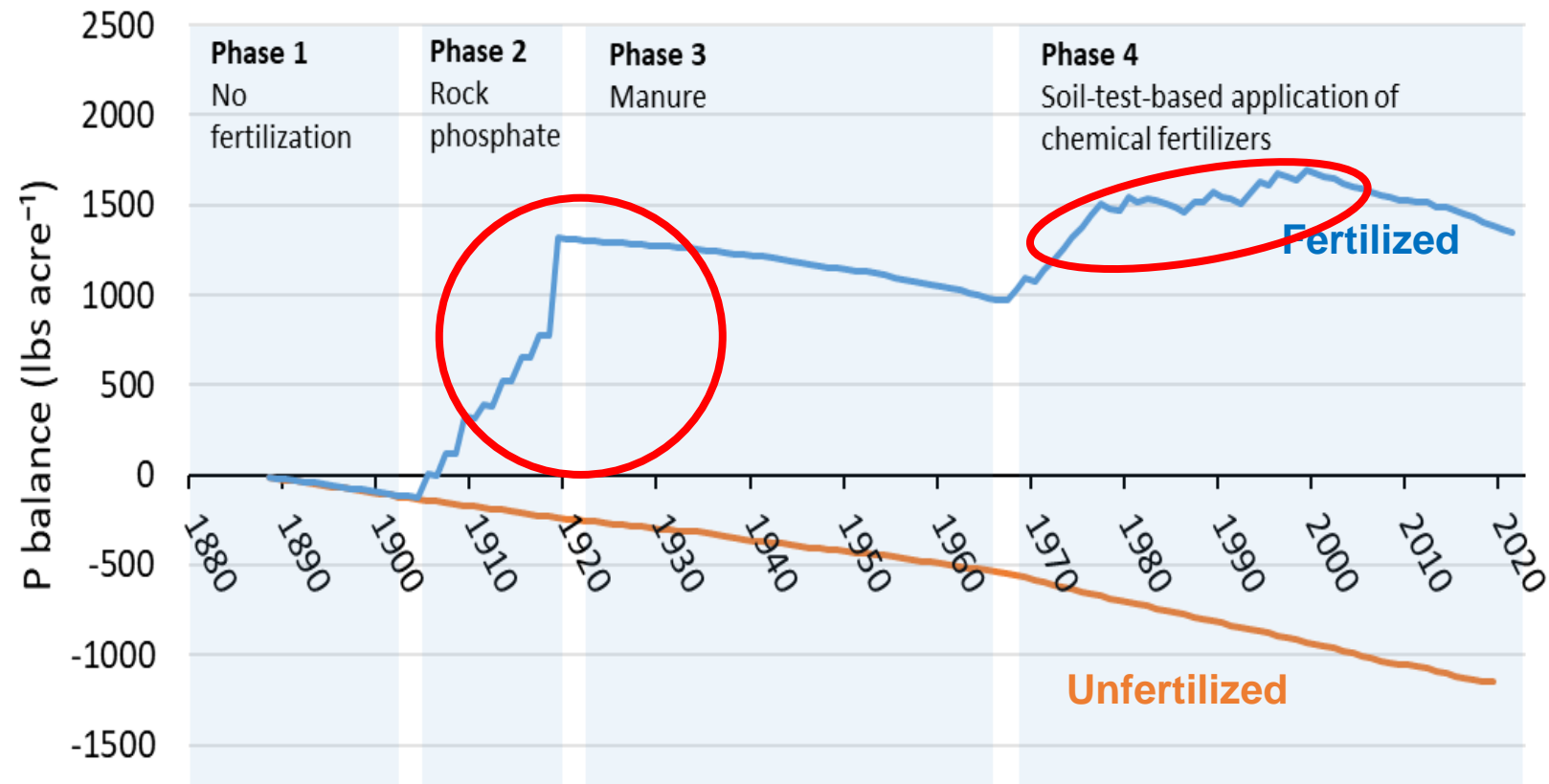


# Legacy P can be built up in a few years or decades

- Morrow Plots: established 1876
- Large positive P balances accrued over 145 years – majority within 15 years
- Unique opportunity to evaluate the form of legacy or residual soil P

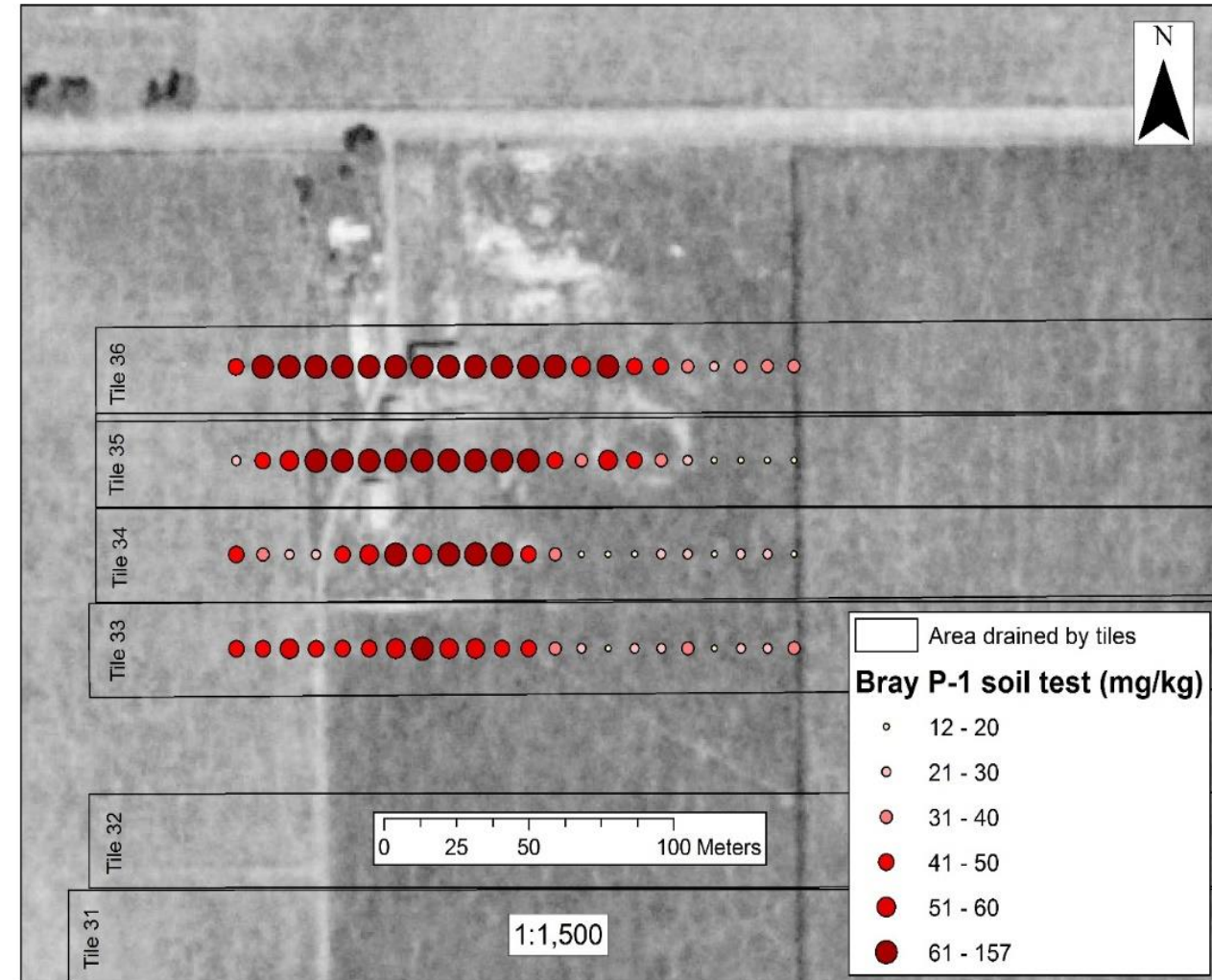
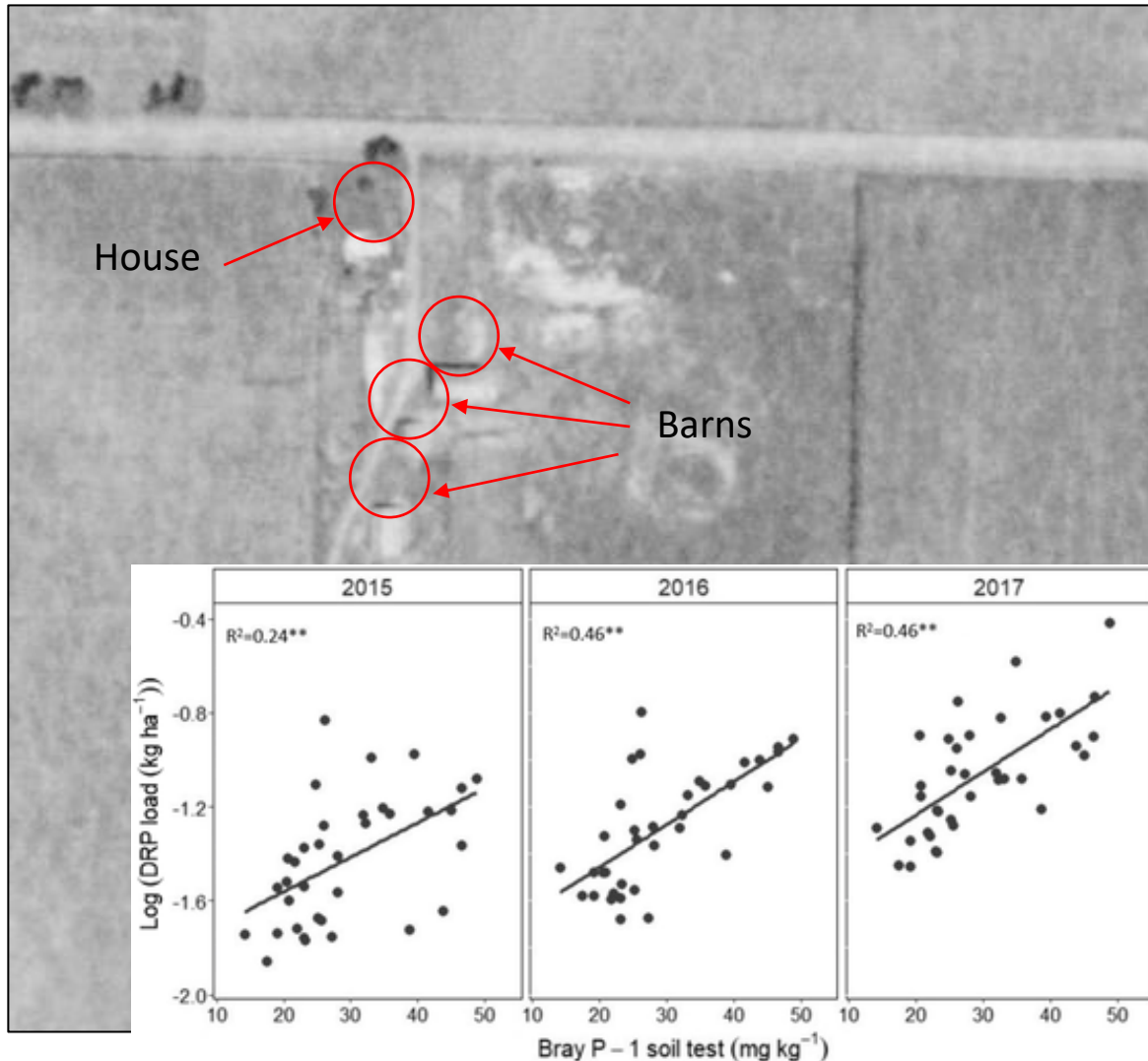


*Soil sampling the Morrow Plots: then and now*

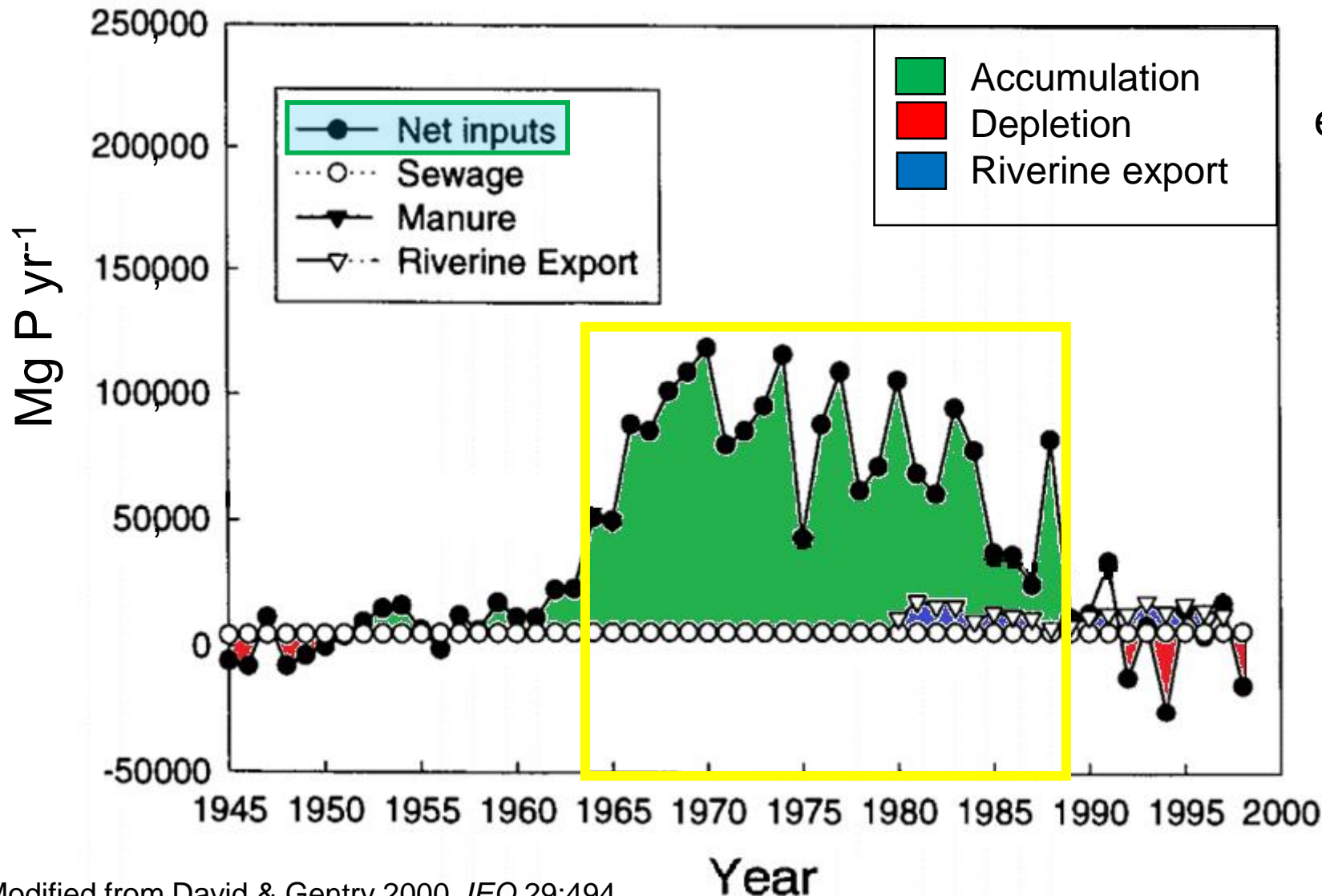


# Residual P in soils can contribute to non-point P losses

Soil P hotspots from former barns partly (24-46%) explains higher DRP loads from tiles



# Balances suggest 4.85 billion lbs residual P in Illinois cropland soils



Large positive balance  
encumbered in  $\approx 25$  year period

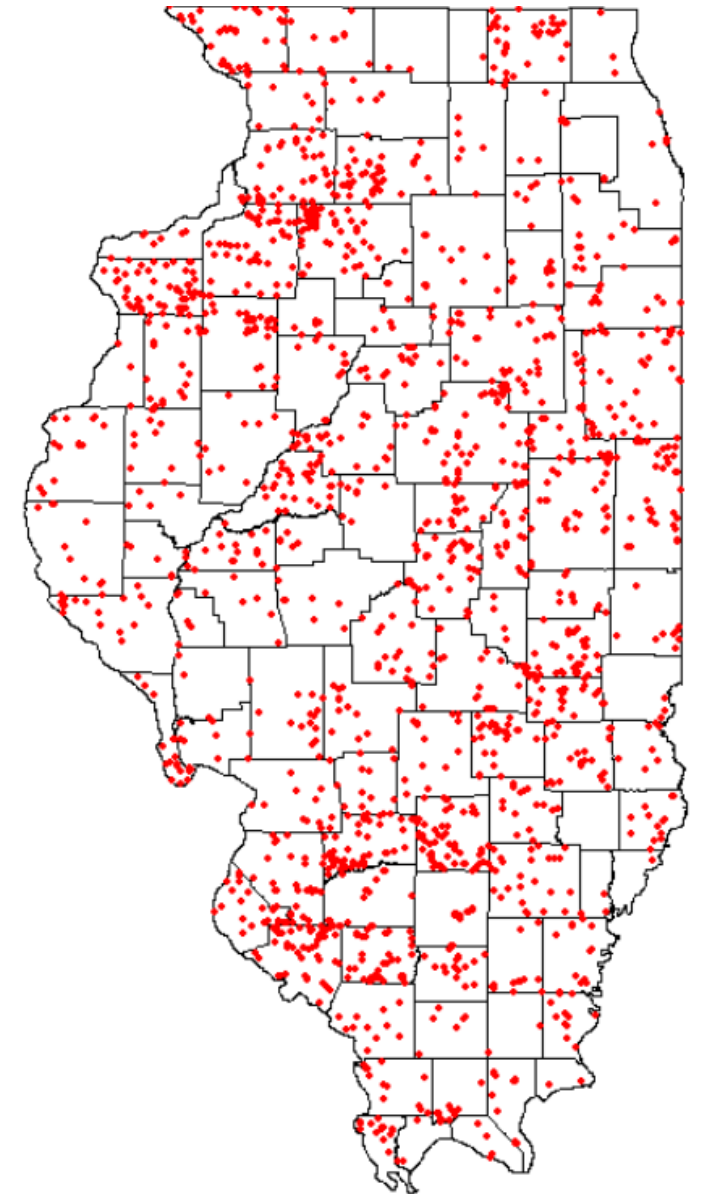
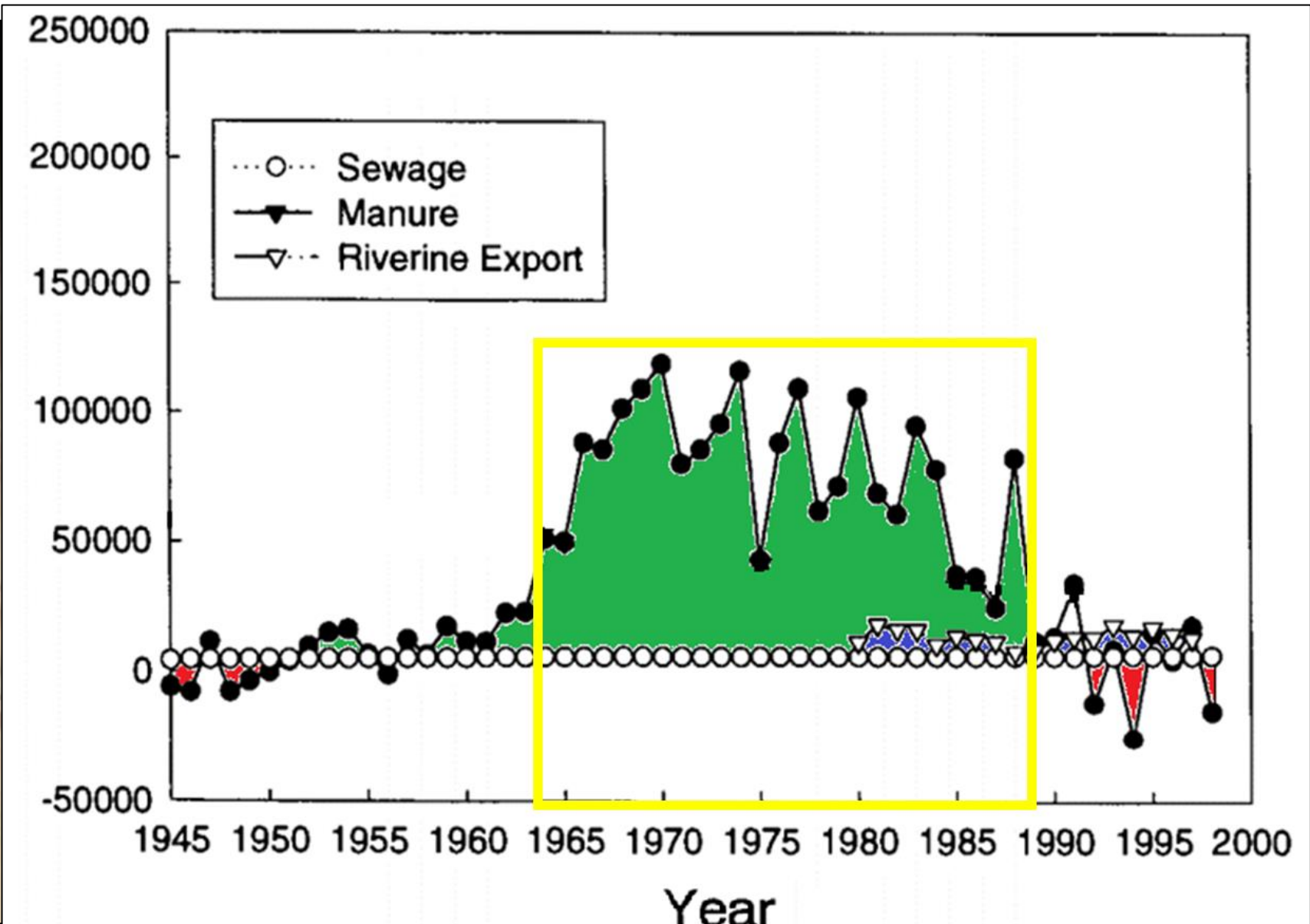
Averages **203 lb P/ac** across  
Illinois croplands

21 million ha of cropland  
Assume 4500 lb P/ac to 3' depth  
=94.5 billion lbs P

$\approx$  **+5% of soil P stocks**



# Validating balances: how much soil residual P is present in Illinois, at the watershed scale?





***Soil sampling in Piatt Co., central Illinois***



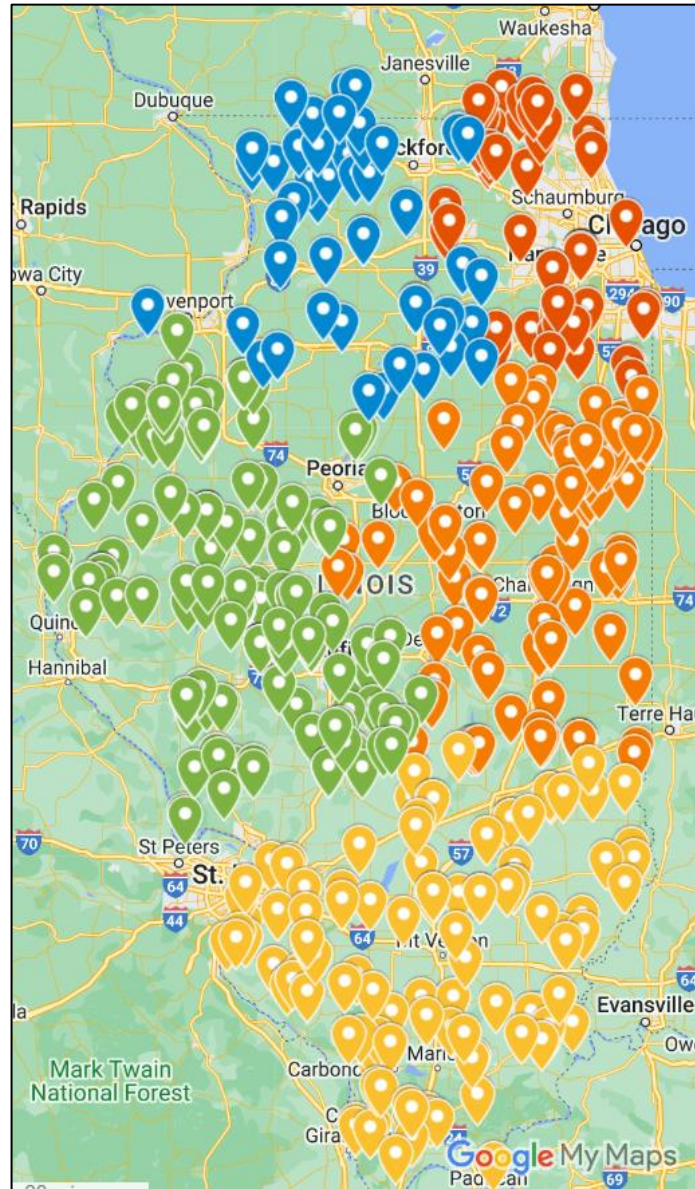


# Within and across field variation in soil cores (0-120 cm depth)

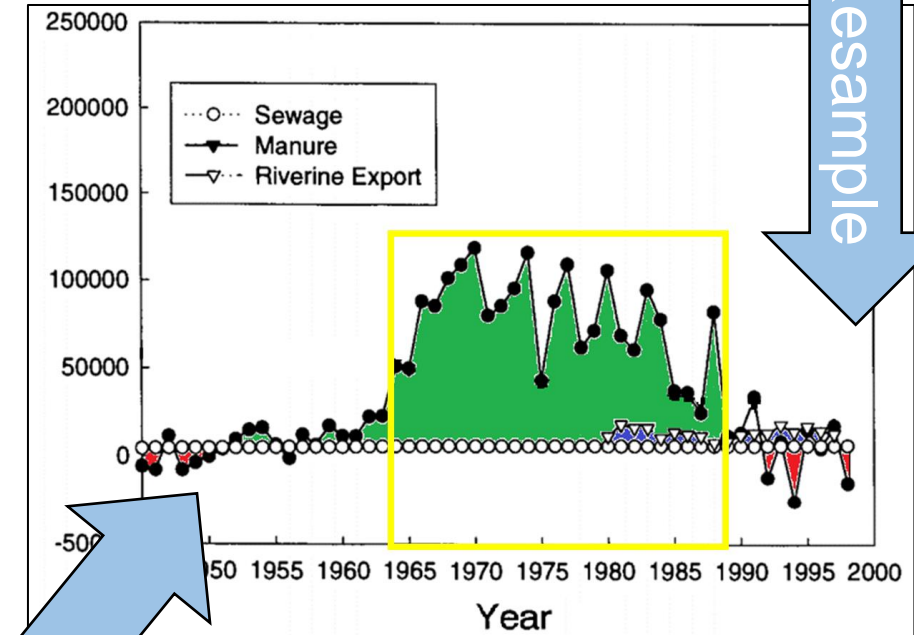
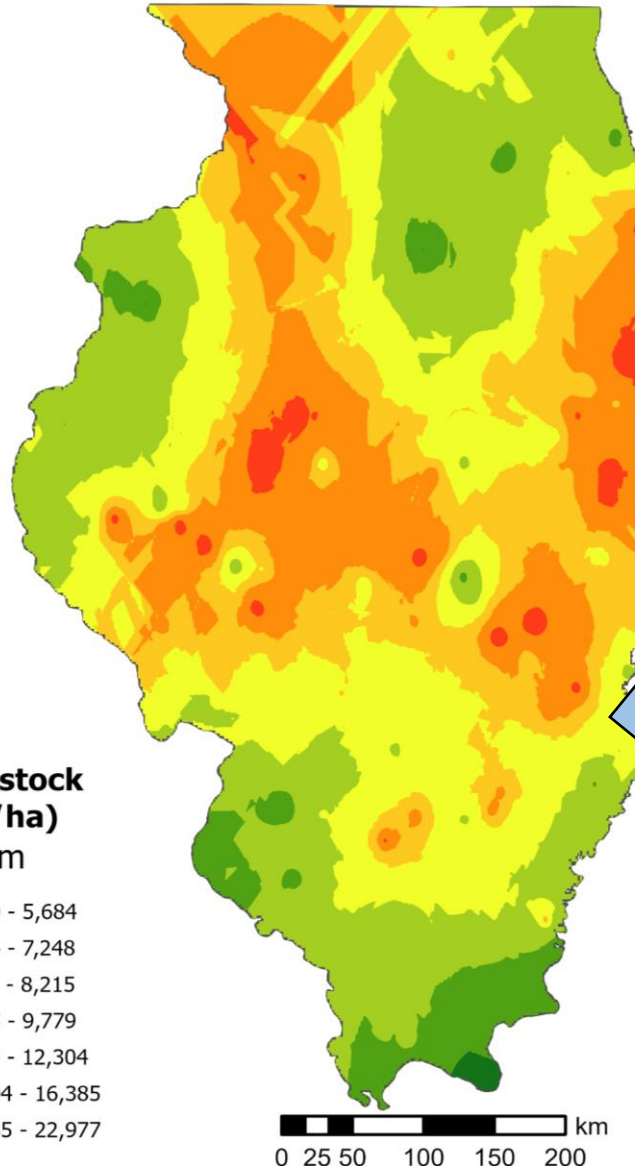
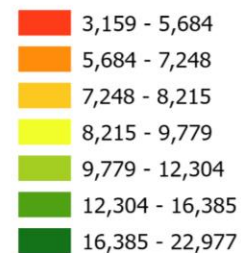




# Soil P stocks to depth: baseline



**Total P stock  
(kg P/ha)  
0-150 cm**



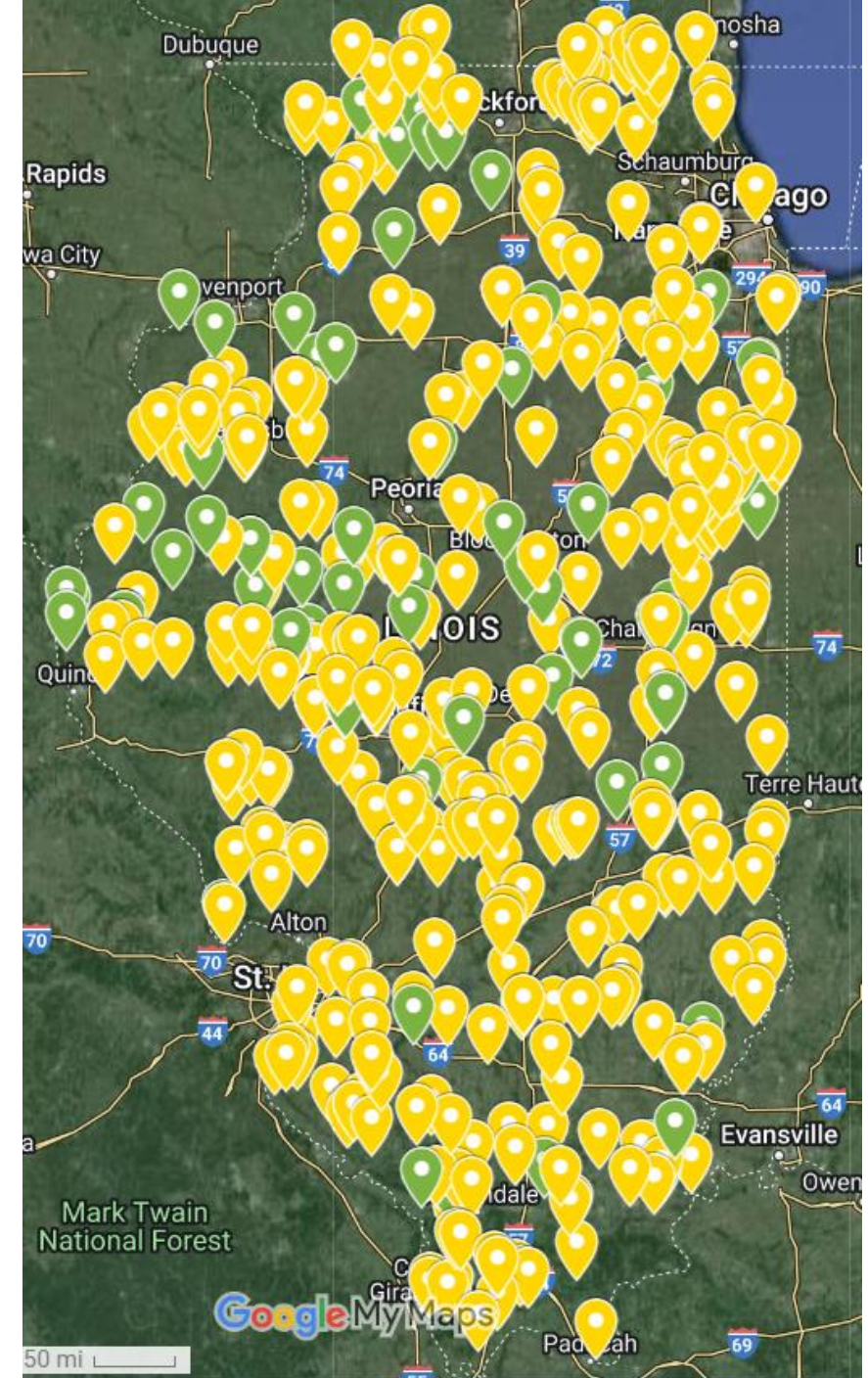
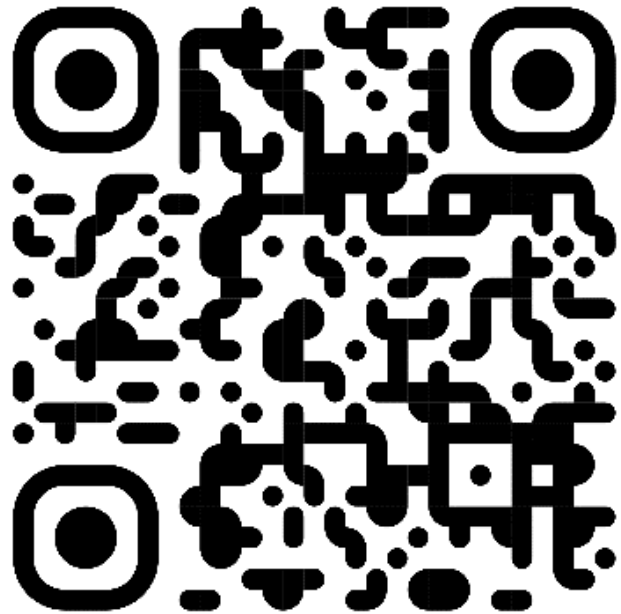
**Baseline: native P  
stocks pre-1965  
residual P**



# Pedon re-sampling effort

## Status

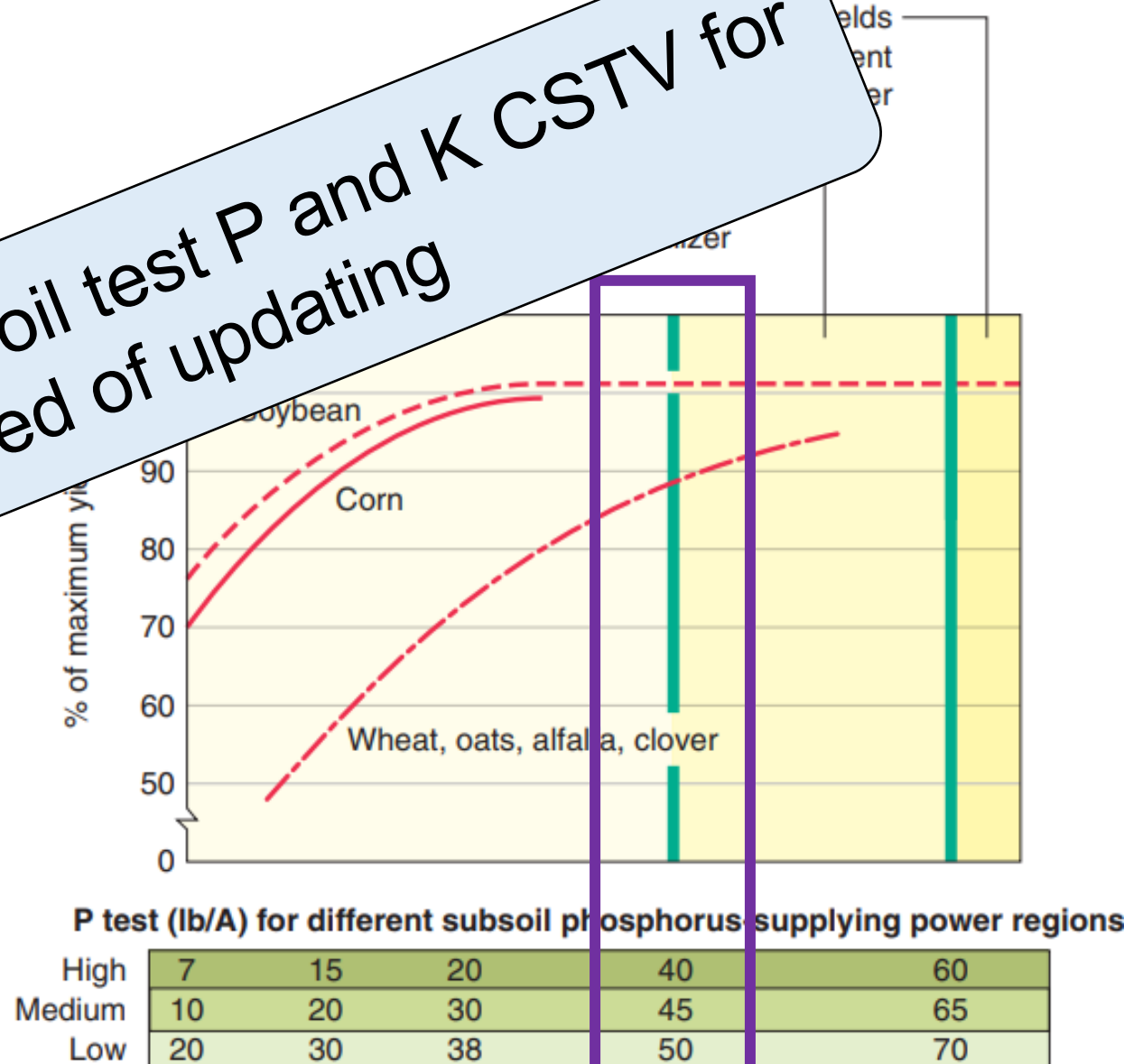
- 453 locations total
- 120 of 453 (**26%**) **identified for landowner**
- 34 of 453 (**7.5%**) sampled in late 2023
- Need landowner help!



# Updating P management recommendations

- Soil testing is 80 years old
- Soil testing for P helps *guide* agricultural P management
- **Critical soil test value (CSTV):** test value above which response does not exceed 90% of maximum yield with additional nutrient additions
- **Clear training and education on soil test theory and interpretation in Illinois**

At least **9 reasons** why the soil test P and K CSTV for Illinois are in need of updating

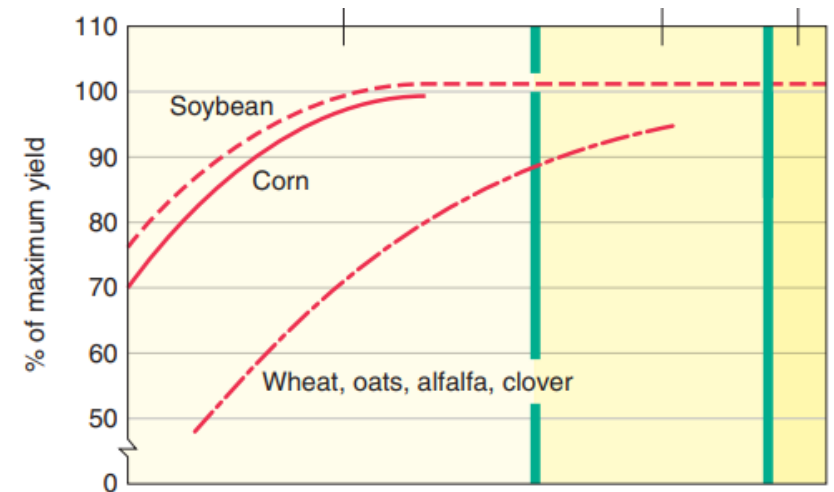
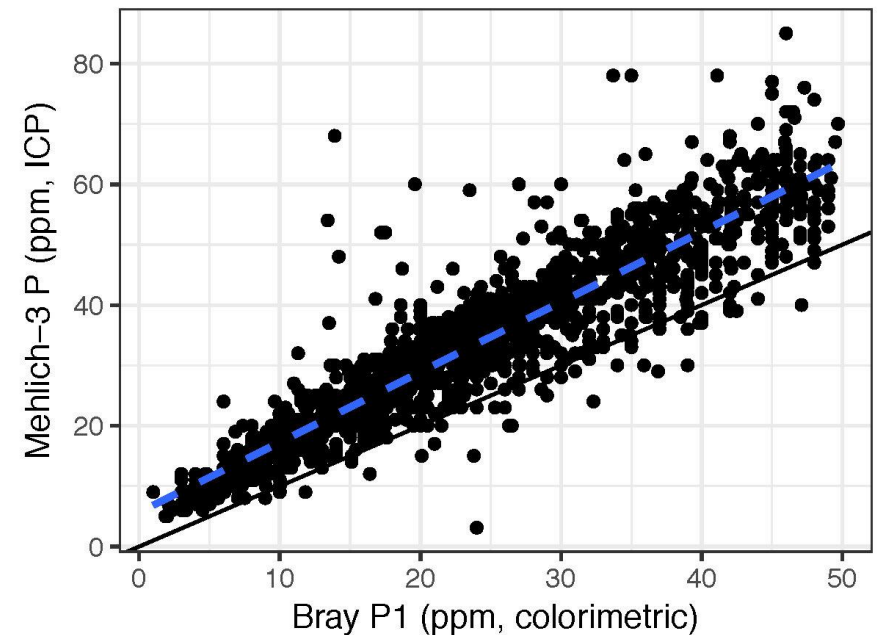


# What are issues with current Illinois recs on CTSV that are being addressed?

## 1. Changes in how we test for soil P

- Commercial labs have shifted from Bray for P to Mehlich-3 as a universal extractant
- Mehlich-3 ICP values are now the norm for P (and K) testing (NCERA-13 recommendations)
- Measured as mg P per kg soil (mg/kg or “ppm”) *not lb/ac*

**Problem:** Soil test P values based on Bray or Mehlich-3 colorimetric values do not give the same numerical values as Mehlich-3 ICP.



P test (lb/A) for different subsoil phosphorus-supplying power regions

High	7	15	20	40	60
Medium	10	20	30	45	65
Low	20	30	38	50	70



# What are issues with current Illinois recs on P & K CSTV?

## 2. Crop-specific needs

## 3. Changes in crop management

- Plant populations, modern hybrids, tillage practices, fertilizer placement have all changed
- Current CSTV assume broadcast application with conventional tillage for full incorporation

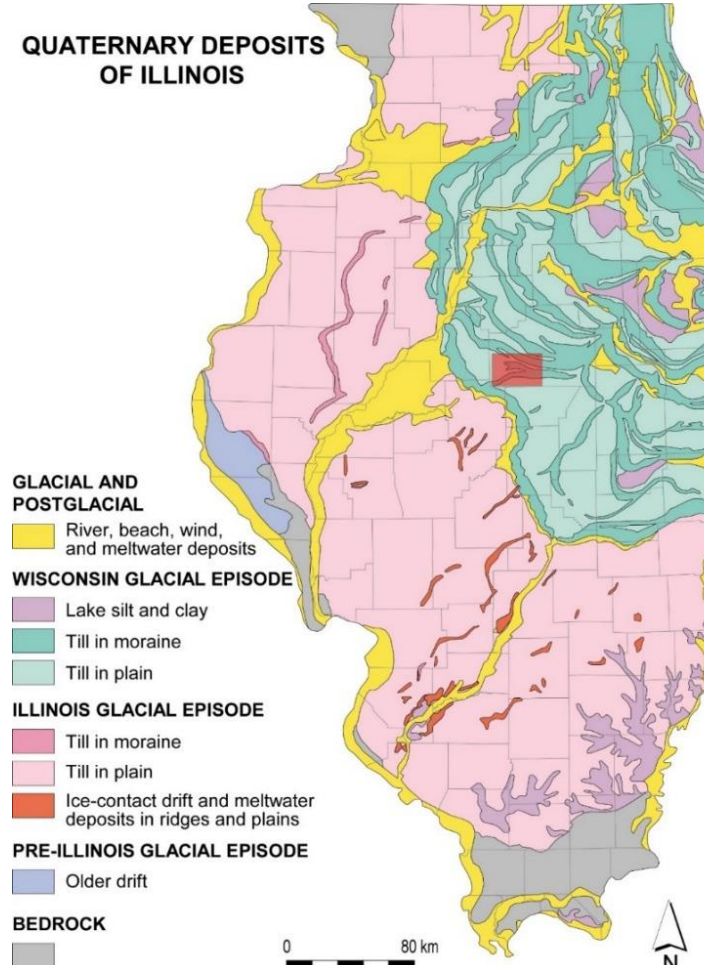
## 4. Changes in how we model the CSTV from field trial data

## 5. Blind to soil types

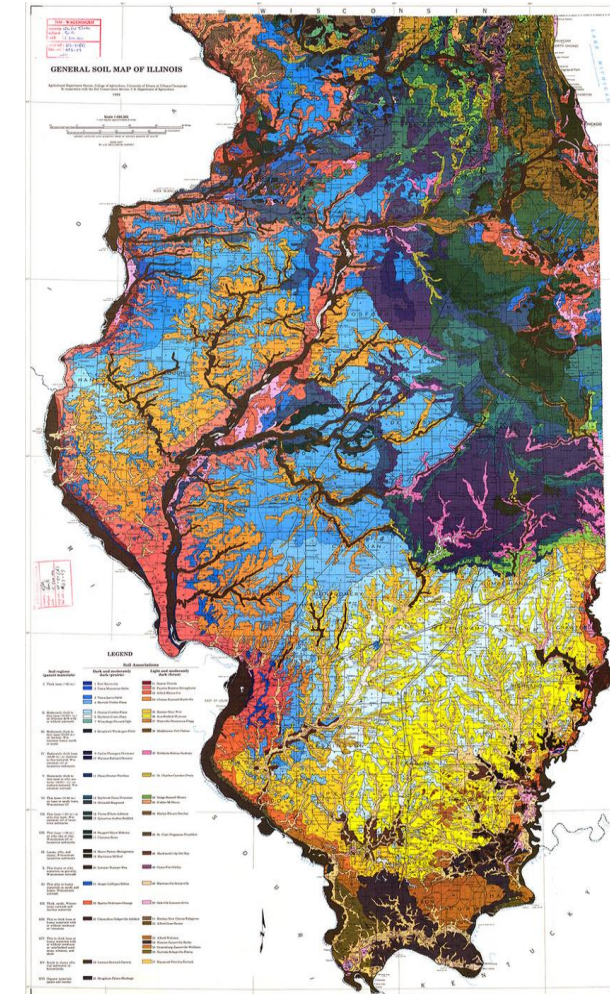
## 6. Transparency & open-access data

## 7. Communication of results

*Distinct geologies...*



*...entail 57 soil “associations”*

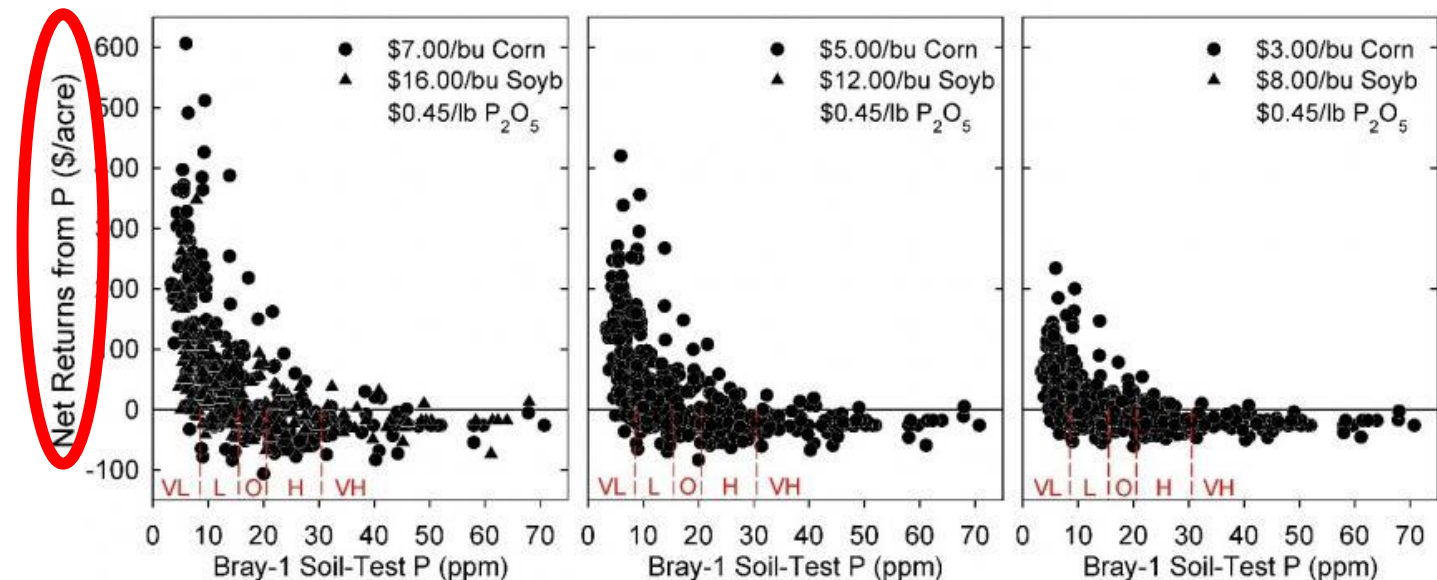


## 8. Does not account for economics

- **Like MRTN:** economic optimum, measurable as \$ per acre return
  - Residuality of P and K complicates this!
  - What about P and K stock valorization?
- **Unlike MRTN:** not about rate response so much as longer-term maintenance
- Why not an MRTP?

Profit-maximizing values in addition to yield CSTV

*Example: as grain prices decrease, P applications are less profitable and few fields 'merit' application*



# 9. Accuracy of “subsoil P supply power”

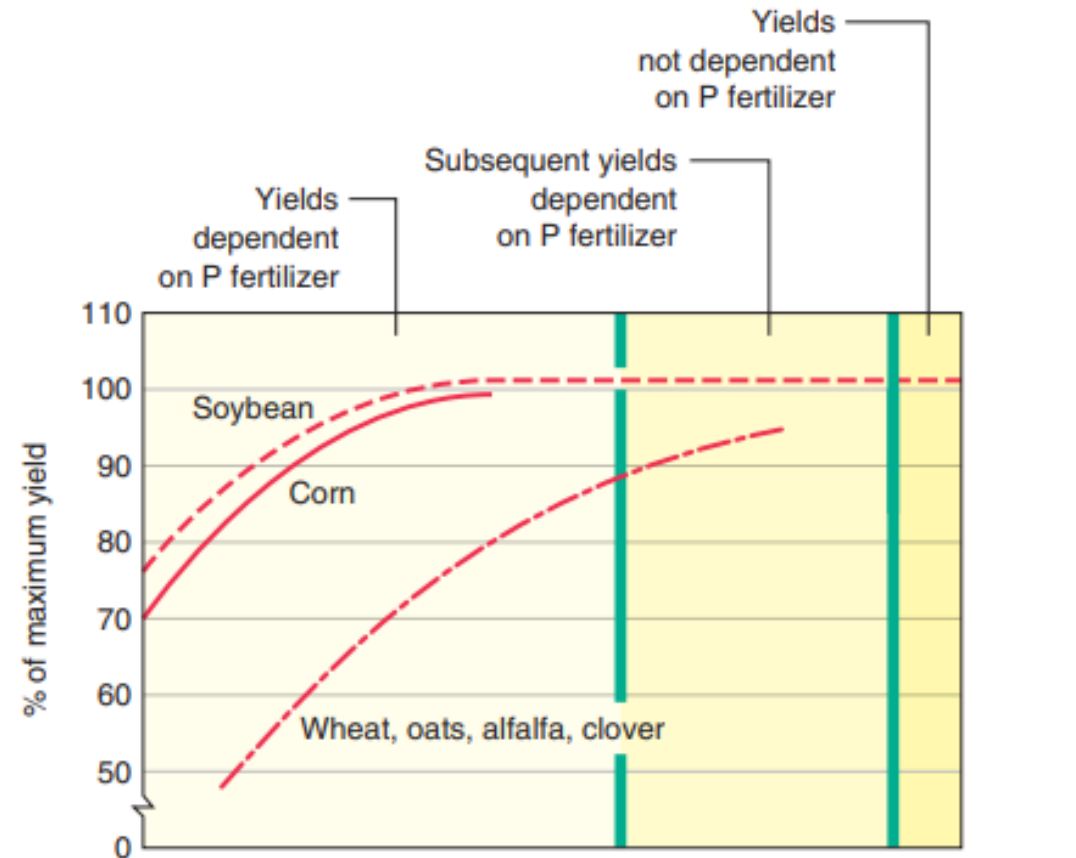
**Concept:** P (and K?) beneath top 12” can contribute to crop needs

- Currently, Illinois CSTV for P depend on the “subsoil P-supply power” region



**Takeaway:**  
Lower CSTV in a  
“High” supply power  
region

25% greater CSTV  
in “Low” supply  
region



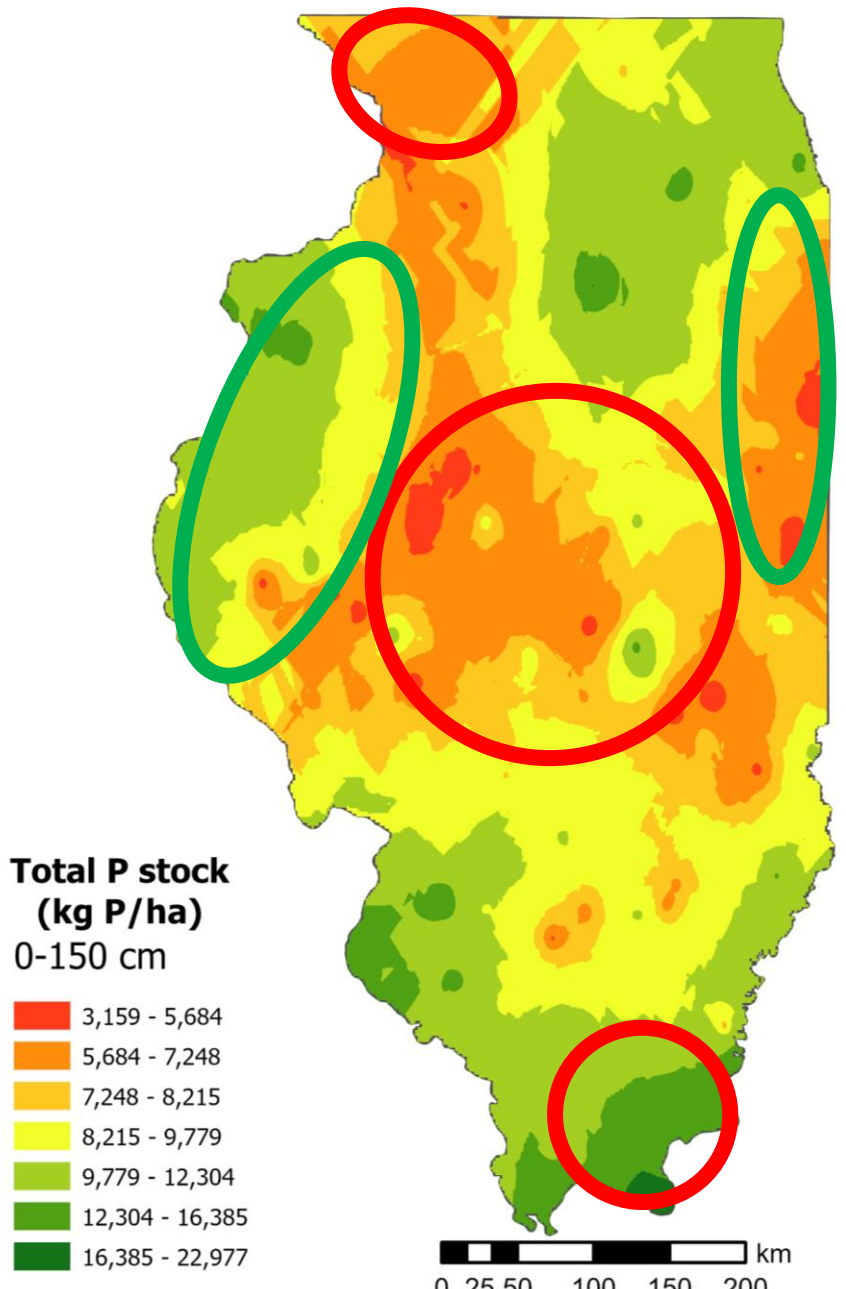
P test (lb/A) for different subsoil phosphorus-supplying power regions

High	7	15	20	40	60
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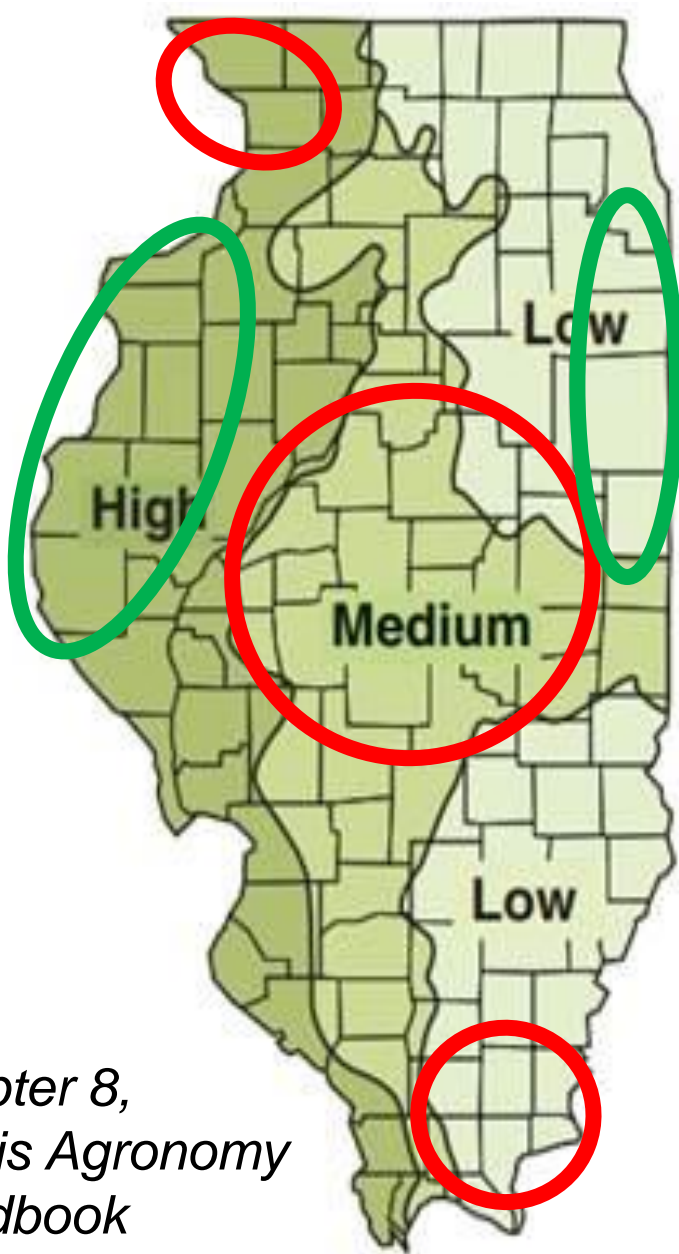
Figure 8.4. Subsoil phosphorus-supplying power in Illinois.



# Disagreement/agreement of soil P stocks with soil P supply power



Chapter 8,  
Illinois Agronomy  
Handbook



**High:** 4-5' loess  
high in P content;  
well-drained

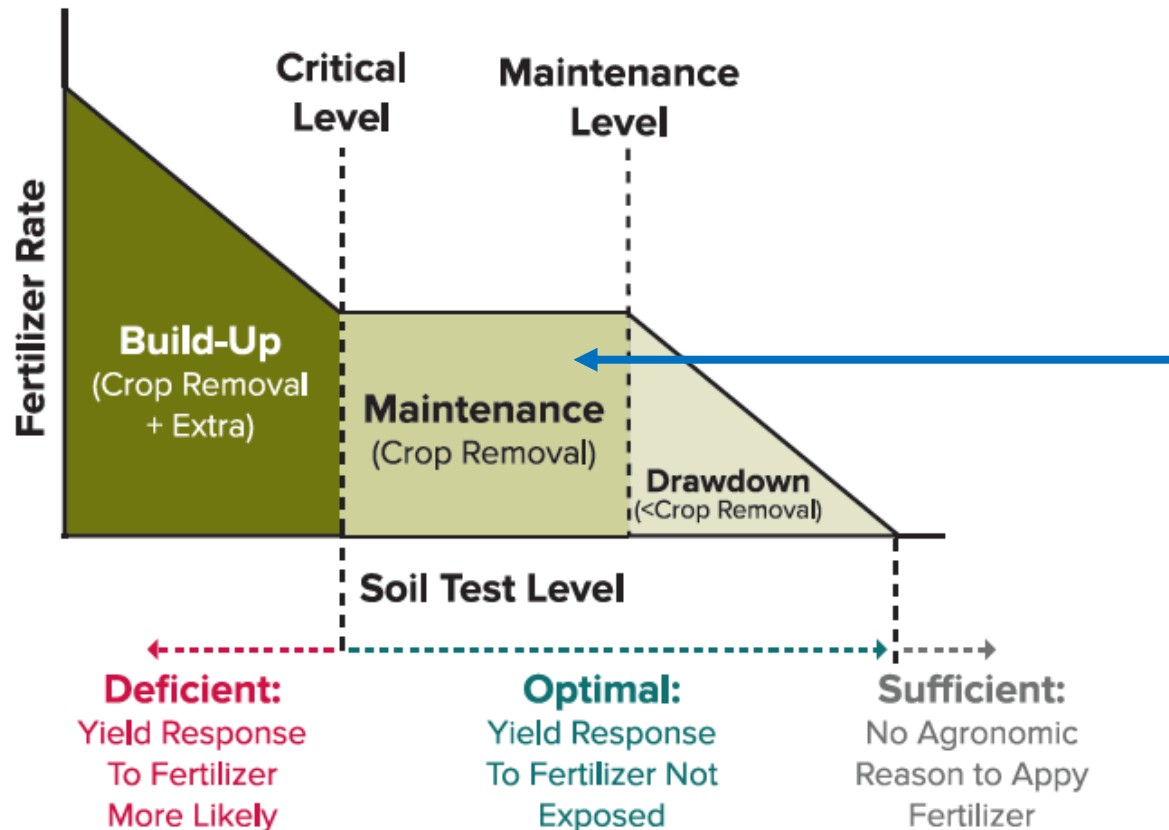
**Medium:** 3-4' loess  
with medium to low  
P content; less well-  
drained

**Low:** 2.5-7' loess  
from sandy deposits  
or older loess  
(Illinoisan) and less  
well drained

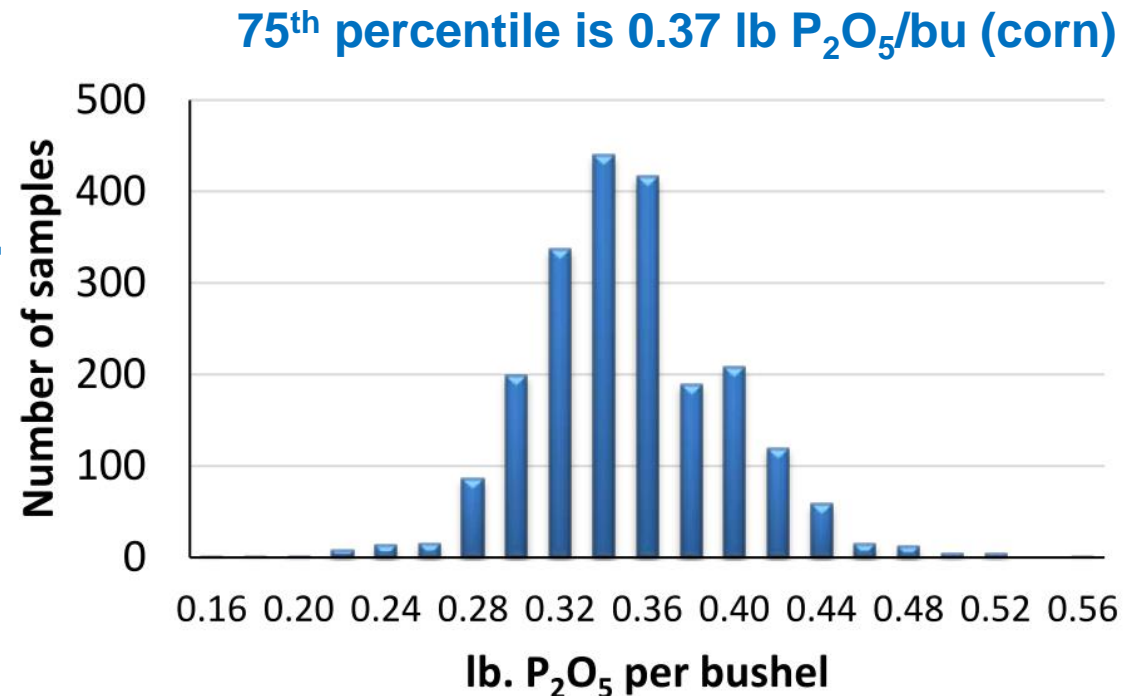


# P application rates

- **Critical soil test values** tell us *when* we should fertilizer, but not *how much*
- Moving towards maintenance based and away from 'build' as a blanket recommendation



- Drawdown: how to do so safely?
- **Rate *and* drawdown trials in Illinois**
  - Y2 of three years of 4 site P rate trials
  - Y6 of P drawdown trial (static plot)
  - Incorporate +50 short-term (1-2 year) drawdown on-farm strips across the state



# P sorption indices: developing an Illinois PSI

- **Concept:** estimate how much of the sol P bindings sites are 'filled up' with phosphate-P
- More binding sites filled = more saturation = higher degree of dissolved P losses

$$DPS = 100 \times \frac{P_{Ox}}{\alpha_m (Al_{Ox} + Fe_{Ox})}$$

$$PSI = 100 \times \frac{P_{M3}}{Al_{M3}}$$

**Degree of P saturation (DPS)** was the original concept, using pedological tests (oxalate extraction)

**P sorption index (PSI)** easily measurable from any commercial lab using Mehlich-3 extraction

## Iowa Technical Note No. 25 Iowa Phosphorus Index

### Purpose

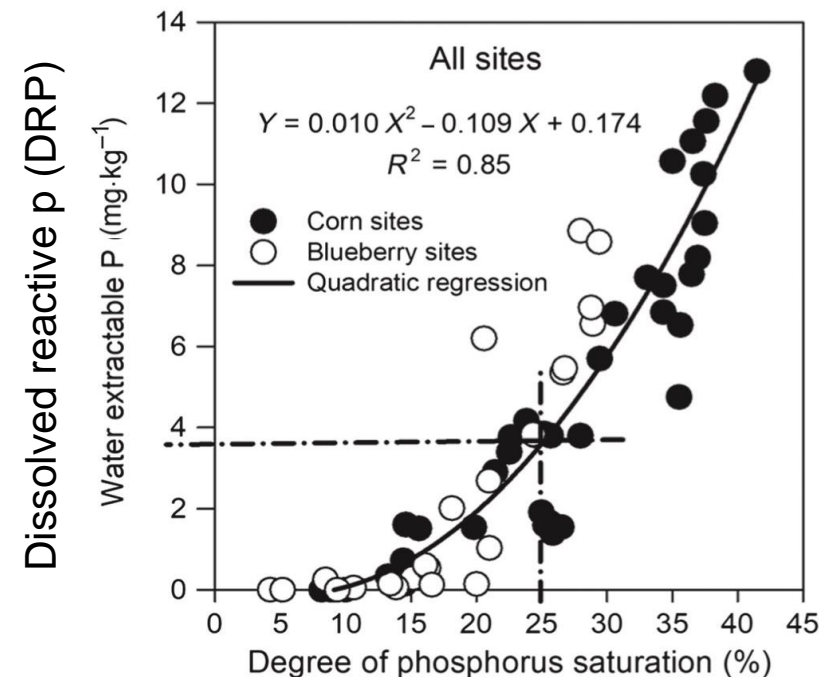
The purpose of Iowa phosphorus (P) index is to assess the risk of P delivery to surface waters. The index is a tool to help conservation planners, landowners/landusers and others to evaluate the current risk from P reaching surface water from a specific site, and to determine factors which dominate the risk due to P transport to surface waters. It will also assist landowners/landusers in making management decisions to reduce the risk.

### Background And Basic Concepts of The Iowa Phosphorus Index

A Support Document to the USDA-NRCS Field Office Technical Note 25  
Revised June 2005

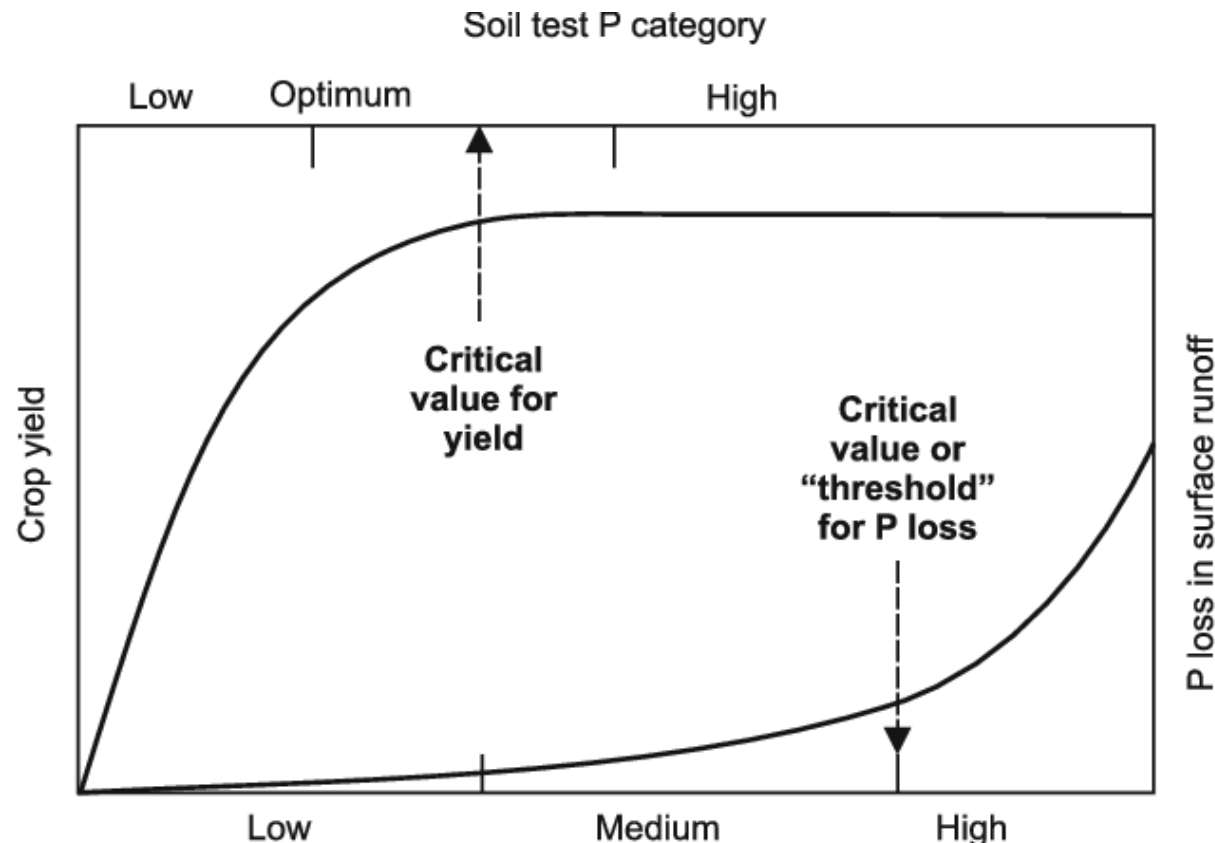
Document prepared by:

Antonio P. Mallarino (Iowa State University), Barbara M. Stewart (Iowa NRCS),  
James L. Baker, John A. Downing, and John E. Sawyer (Iowa State University)

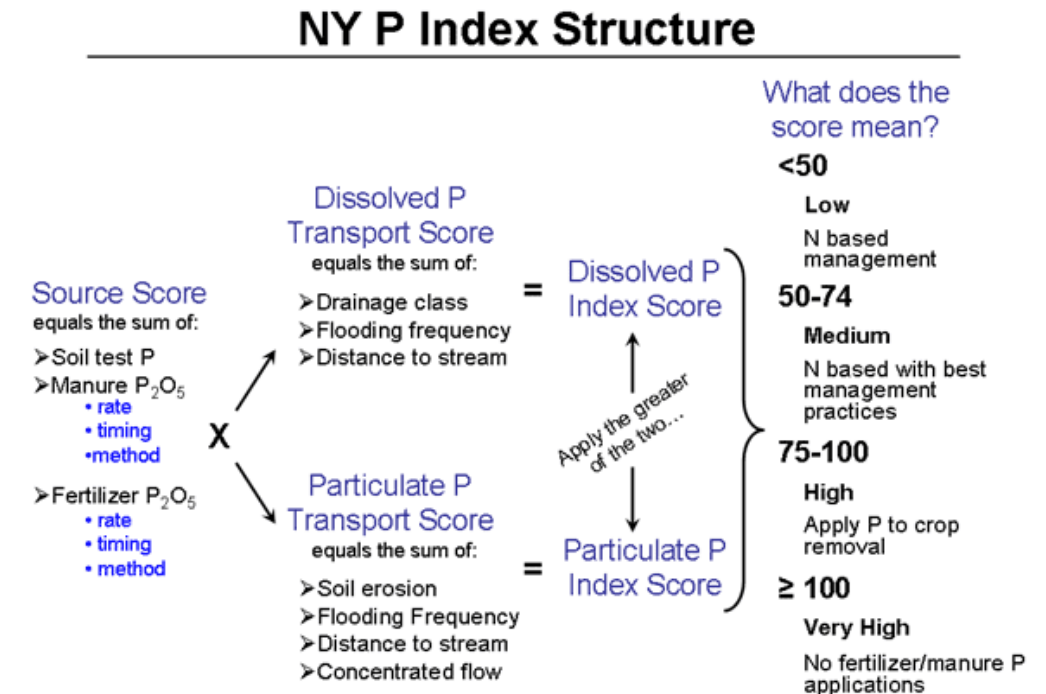


# Updates to Illinois Agronomy Handbook on critical soil test values for P will double for developing an Illinois PSI

- Soil test P is not just for agronomy: also for nutrient loss risk estimation
- PSI highly scalable (data already being collected)



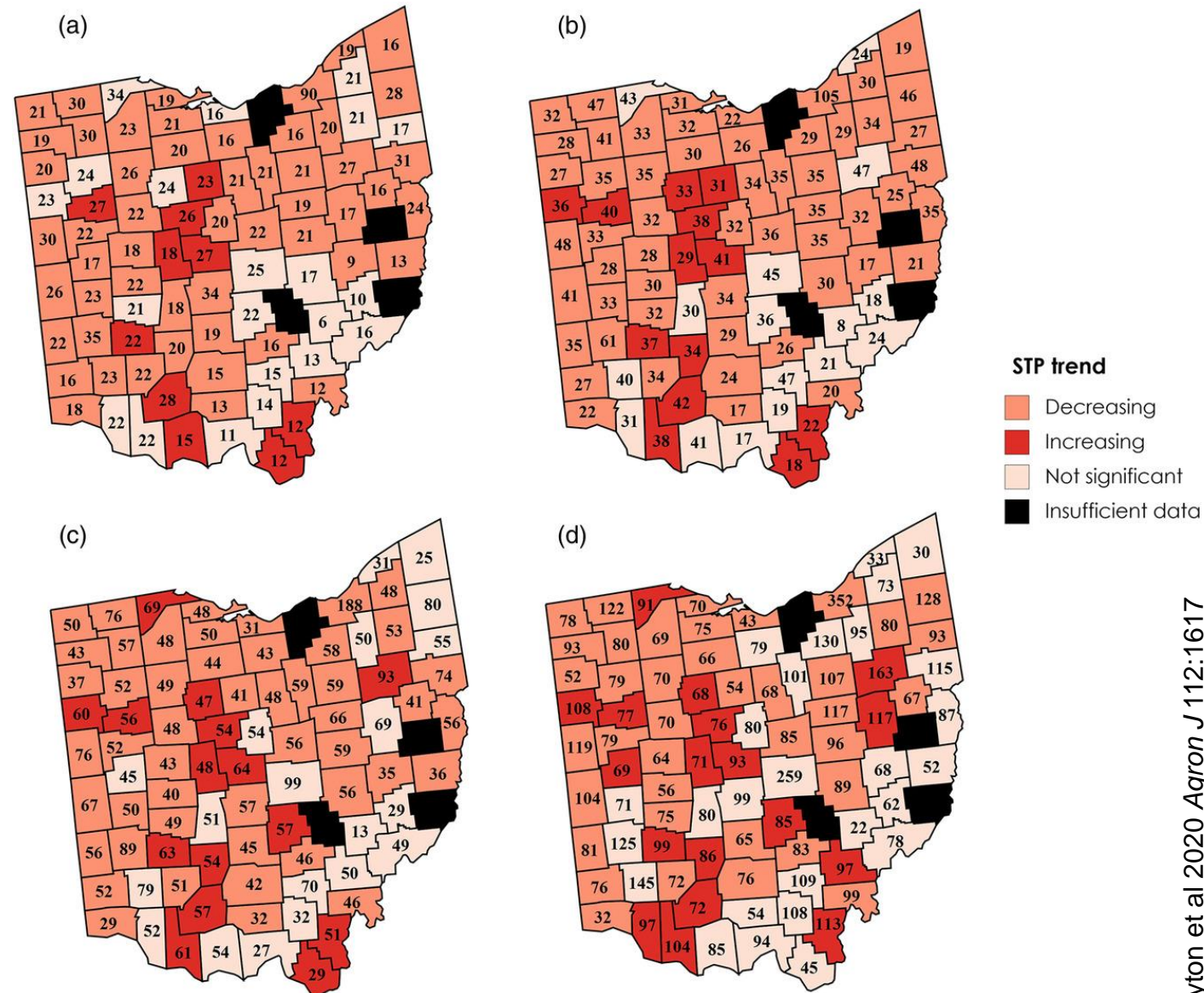
- Calibration with run-off from field and lab experiments to **establish P loss thresholds**
- Can be used with soil type and slope to provide specific recommendations



# Tracking soil test P trends at county level for Illinois (2024-2025)

- Further validate P balances across Illinois
- Link absolute values and changes in soil test P *and* PSI with HUC-8 P load values and changes
- Working with commercial soil testing labs to analyze (anonymized) soil test P data across 98 counties

*Mehlich-3 soil test phosphorus (STP) levels ( $\text{mg kg}^{-1}$ ) by individual county in Ohio. Values in each county represent 25th (A), 50th (B), 75th (C), and 90th (D) percentiles in 2015. Color of county denotes STP trend significance from 1993 to 2015*





# Deliverable: online tool for P management

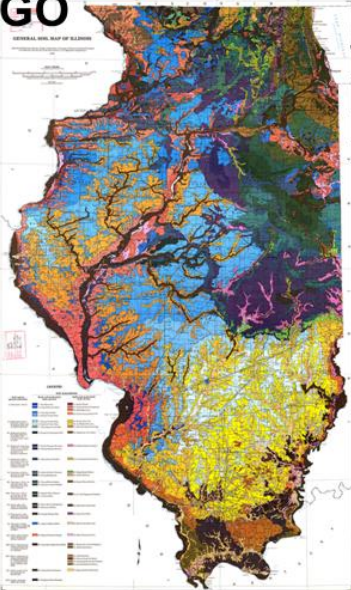
## On-farm trials

Omission strips

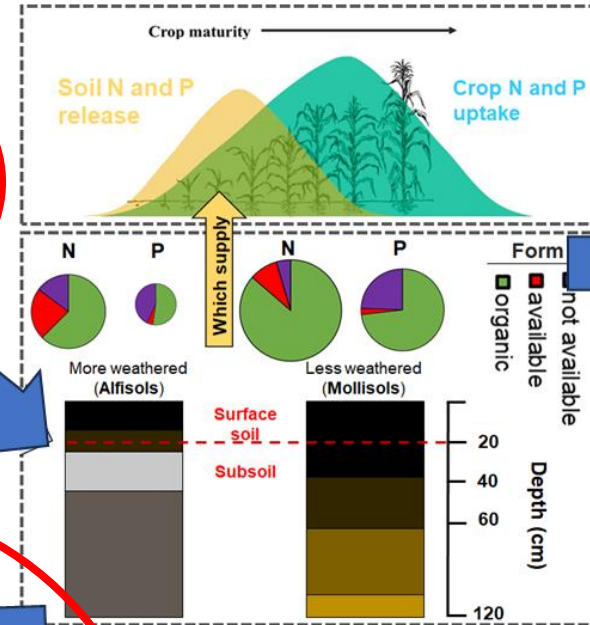
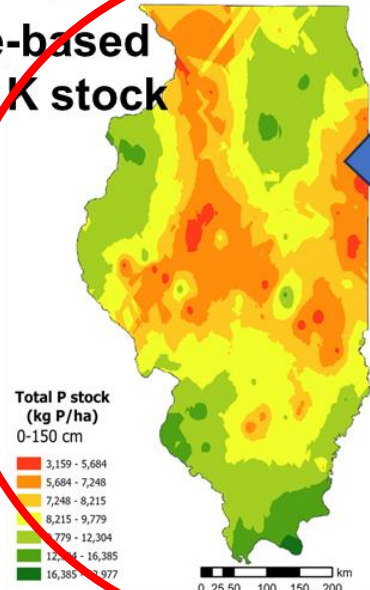


## Soil information

SSURGO maps (soil type)

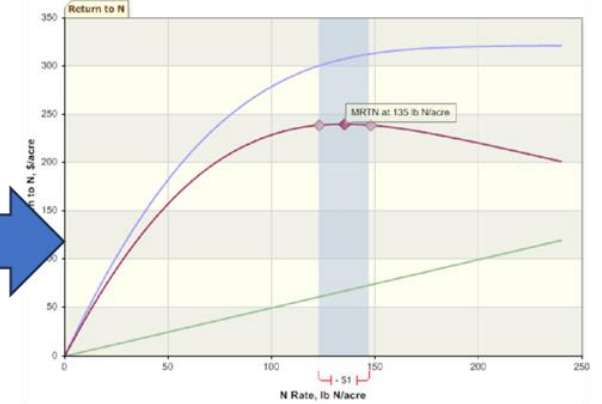


Soil core-based N, P and K stock maps



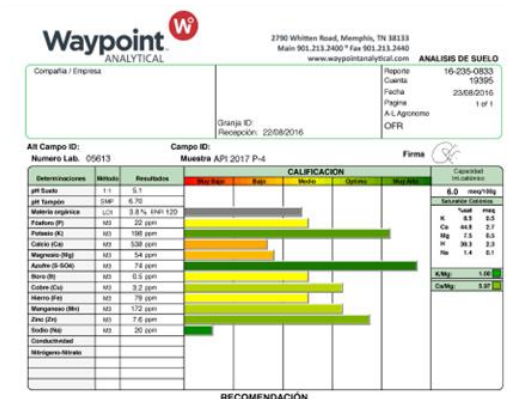
Account for soil contributions of OM (N, P) and subsoil (P, K) to crop uptake

Improve MRTN  
Build MRTN & MRTK



Which can scale by accounting for context

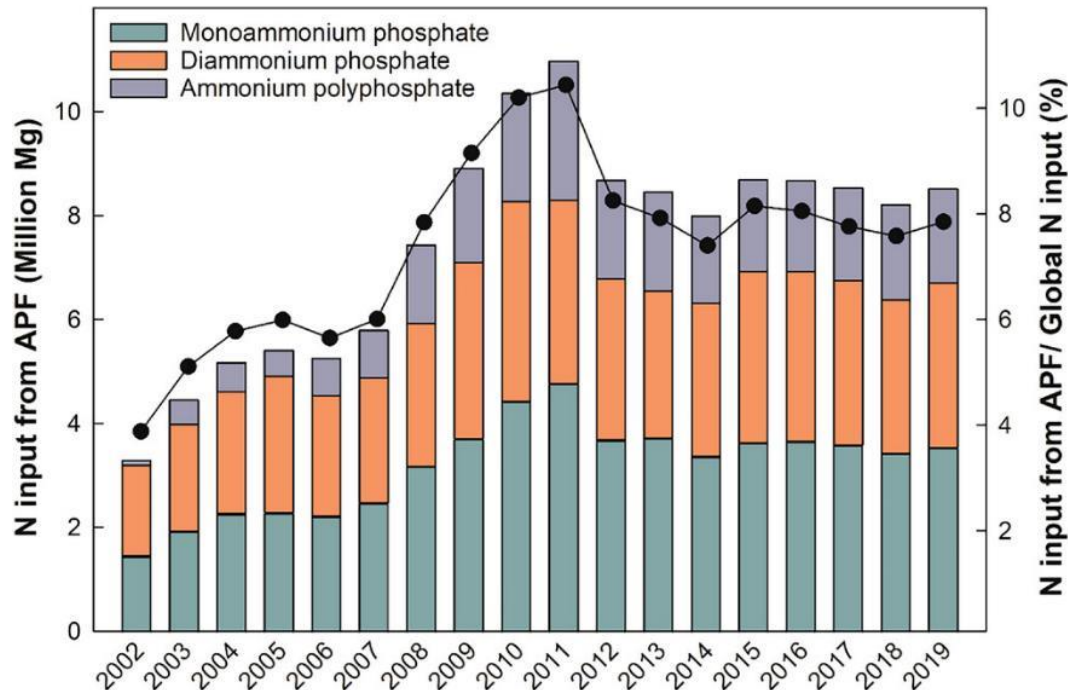
Farmers' soil tests





# BMPs for P can provide N loss reductions

- Much of our MAP and DAP is fall-applied
- However, considered to be *only* a P source by USDA – and most land grant universities, crop advisors, etc



## Mitigating Nitrous Oxide Emissions from Corn Cropping Systems in the Midwestern U.S.: Potential and Data Gaps

Charlotte Decock<sup>\*,†</sup>

University of California – Davis, One Shields Avenue, Davis, California 95616, United States

It has been suggested that annual cumulative  $\text{N}_2\text{O}$  emissions might be higher when N is applied in fall compared to spring.<sup>25</sup> Fall N application can be an attractive management practice, because it simplifies the logistics of farm operations and secures N-inputs for the subsequent growing season in situations where fields risk inaccessibility in spring before planting due to late snow cover and/or waterlogging. In the Cornbelt, USDA-ARMS data indicate that up to 50% of corn cropland received some amount of N in the fall in 2010. This percentage could be even higher in case the USDA-ARMS data did not take into account fall application of diammonium phosphate, monoammonium phosphate, or ammonium polyphosphate, which are sometimes perceived as just phosphorus fertilizers. In this meta-analysis, there was not sufficient data to test whether  $\text{N}_2\text{O}$  emissions are generally greater in systems that receive N applications in fall compared to spring.

# However: little data on N losses from ammonium phosphates

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Agricultural & Environmental Letters



## COMMENTARY

# The fate of nitrogen of ammonium phosphate fertilizers: A blind spot

Andrew J. Margenot<sup>1,2</sup>  | Jeonggu Lee<sup>1,3</sup>

<sup>1</sup>Department of Crop Sciences, University of Illinois Urbana-Champaign, Urbana, Illinois, USA

<sup>2</sup>Agroecosystem Sustainability Center, Institute for Sustainability, Energy, and Environment, University of Illinois Urbana-Champaign, Urbana, Illinois, USA

<sup>3</sup>Department of Applied Biosciences, Kyungpook National University, Daegu, Republic of Korea

### Correspondence

Andrew J. Margenot, Department of Crop Sciences, University of Illinois Urbana-Champaign, Urbana, IL 61801, USA.

Email: [margenot@illinois.edu](mailto:margenot@illinois.edu)

Assigned to Associate Editor Rishi Prasad.

### Abstract

Ammonium phosphate fertilizers are a common phosphorus (P) source for crops, namely monoammonium phosphate, diammonium phosphate, and ammonium polyphosphate. Despite containing appreciable nitrogen (N), ammonium phosphate fertilizers are generally considered P fertilizers. However, the approximately 8.5 million Mg N co-applied with P annually as ammonium phosphate fertilizers represents 8% of global N fertilizer input flux to agroecosystems. Despite this, a systematic review of the literature revealed only one direct assessment of N losses from ammonium phosphate fertilizers. An additional five studies reported NO<sub>3</sub>-N leaching and N<sub>2</sub>O-N emissions from soils fertilized with ammonium phosphates, but inadvertently as observations from failed or control treatments that are confounded (e.g., not accounting for non-fertilizer contributions to N losses). The magnitude and fate of N co-applied with P in ammonium phosphate fertilizers is a blind spot in agroecosystem N budgets and environmental footprints that necessitates quantification.

# Application of fall-applied soluble ammonium phosphates is likely a major contributor to N losses

## MAP

### Chemical Properties

Chemical formula:	$\text{NH}_4\text{H}_2\text{PO}_4$
$\text{P}_2\text{O}_5$ range:	48 to 61%
N range:	10 to 12%
Water solubility (20°)	370 g/L
Solution pH	4 to 4.5

**12% N**

## DAP

### Chemical Properties

Chemical formula:	$(\text{NH}_4)_2\text{HPO}_4$
Composition:	18% N 46% $\text{P}_2\text{O}_5$ (20% P)
Water solubility (20 °C):	588 g/L
Solution pH:	7.5 to 8

**18% N**

## TSP

### Chemical Properties

Chemical formula:	$\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$
Fertilizer analysis:	45% $\text{P}_2\text{O}_5$ (0-45-0) 15% Ca
Water-soluble P:	Generally >90%
Solution pH	1 to 3

**0% N**

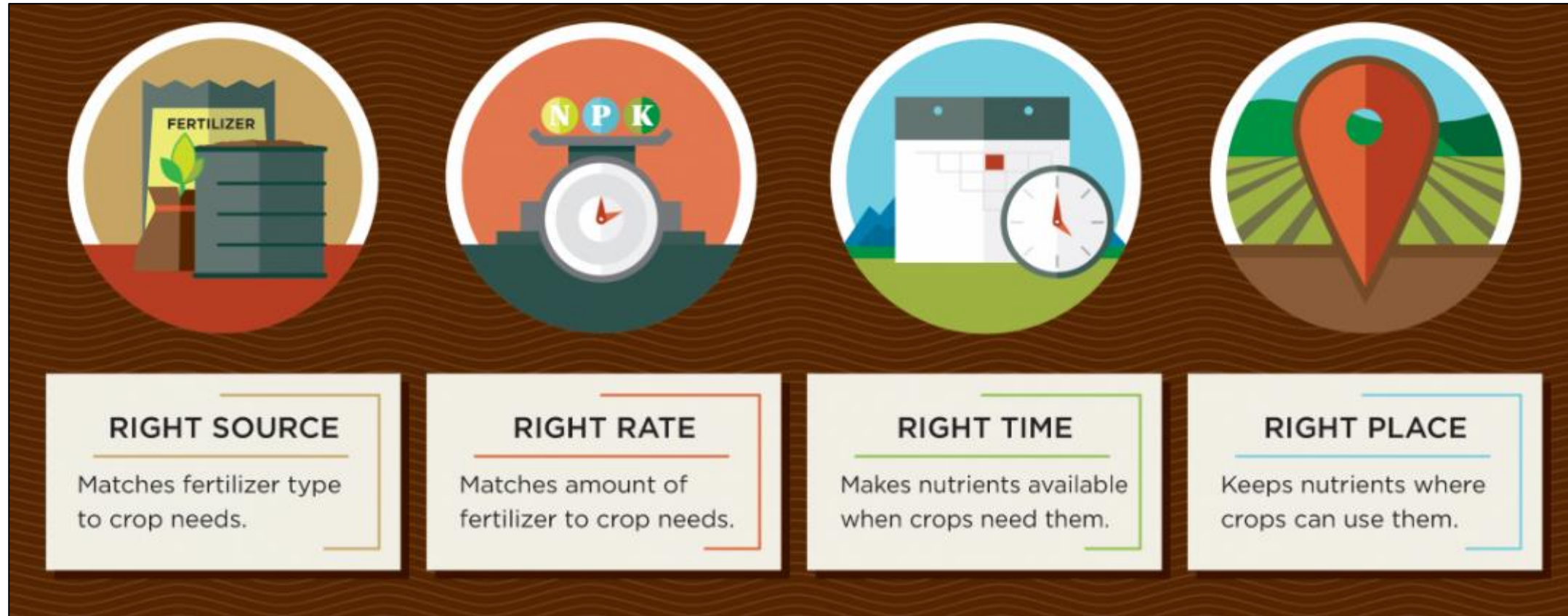
- In particular for fall application, the N of ammonium phosphates presents a nitrate-N loss risk
- Assume that 50% of the 11 million IL acres at the start of a corn-soybean rotation in 2017 received 200 lb ac<sup>-1</sup> of fall-applied DAP
  - Entails **198 million lbs N co-applied with P**
  - = **11% more than** the annual **reduction target** of 178 million lb N from non-point sources

2 peer-reviewed studies in Illinois demonstrate that 60-100% of N of fall-applied MAP and DA is lost by planting in the spring

**If 50% loss = 99 million lbs of nitrate-N loss**



# Application of fall-applied soluble ammonium phosphates is likely a major contributor to N losses





# Run-off losses of P

- How much P is lost via surface run-off?
- How are losses impacted by tillage, cover crop and nutrient practices, and landscape type?
- Trials 2022-2025

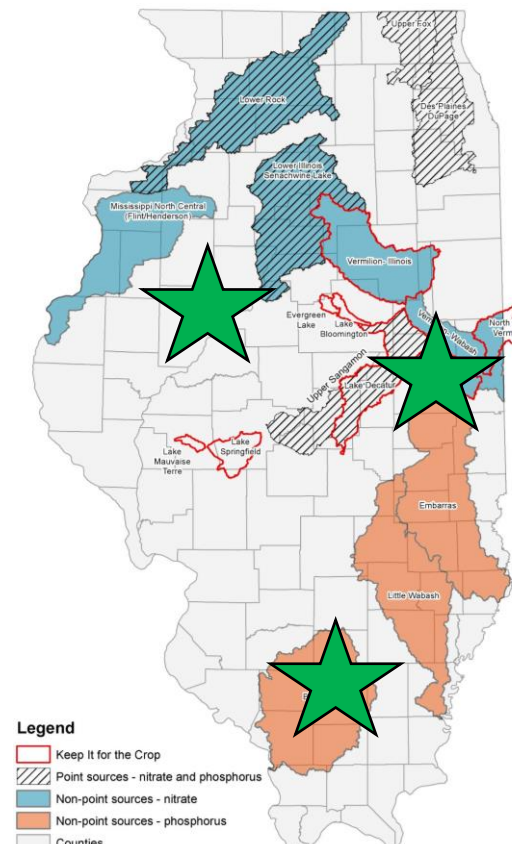
Determine

- Particulate P vs dissolved (DRP) losses
- Total P run-off and leaching

Deliver

- \$/lb P loss reduced via BMPs
- Provide data for modeling (e.g., RUSLE)
- Calibration of soil P loss indices

**72 run-off plot network** to test factorials of management practices with replicated run-off plots: tillage, placement, cover

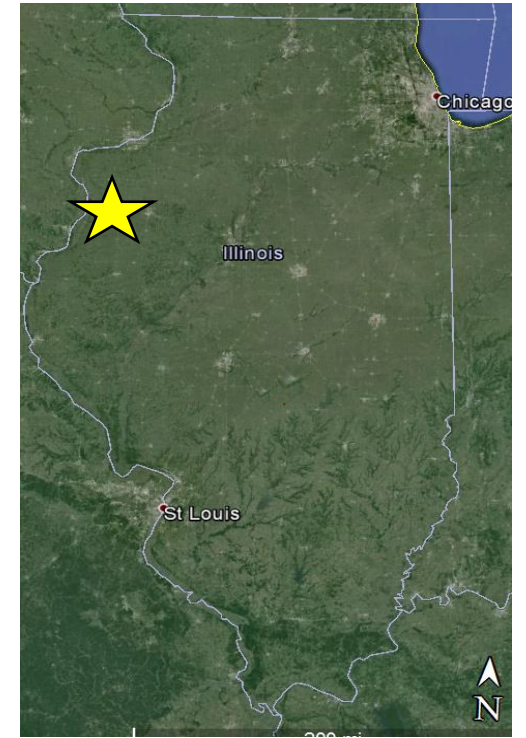




# Manure management

## Study 1 (2024 – 2029): P-based manure management

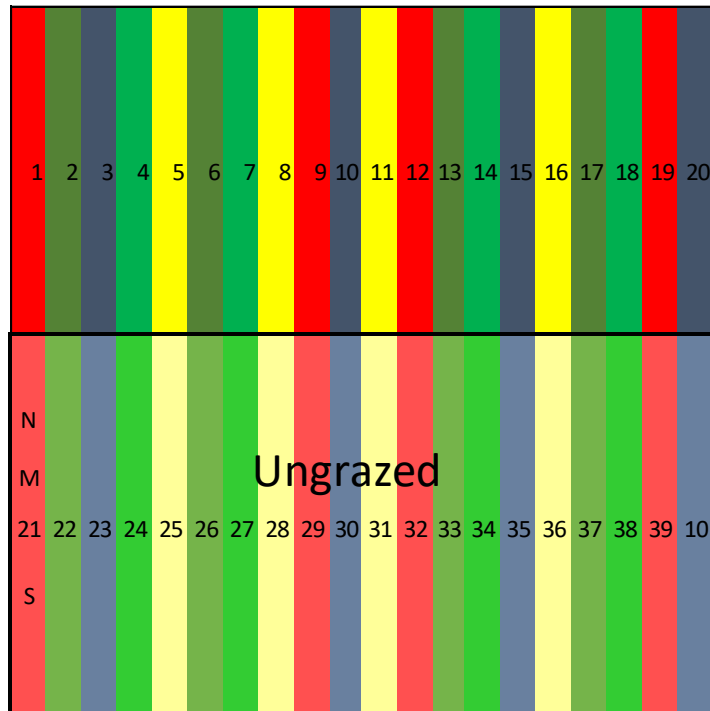
- Orr Agricultural Research & Demonstration Center
- Swine manure trial
  - Demonstrate N- vs P-based application for corn production
  - Evaluate soil health and soil test P levels
- Part of a 10-state consortium with National Pork Board



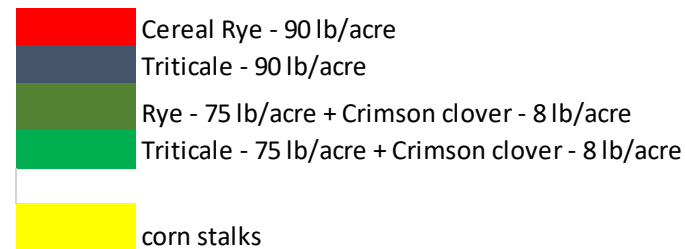


# Study 2 (2022 – 2026): livestock integration

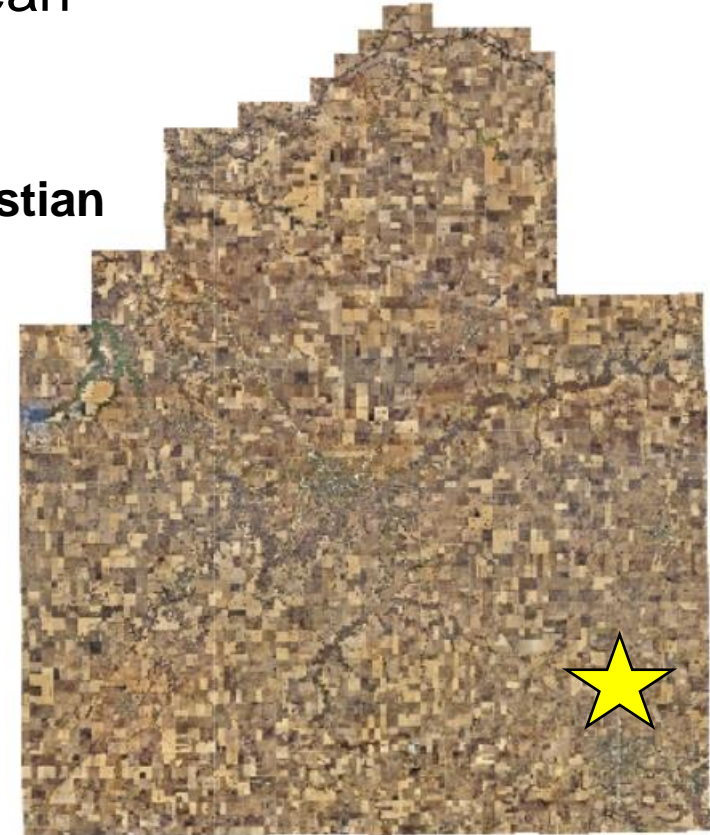
- Dudley-Smith Farm in Christian Co., central IL
- 2x cattle grazing × 5x cover crop treatments
  - With or without grazing
  - Control (no cover crop), cereal rye, triticale, rye+crimson clover, triticale+crimson clover
  - Strip plot-split block design in a 40-acre field
- 2020-2021 season: following corn → cover crop → soybean



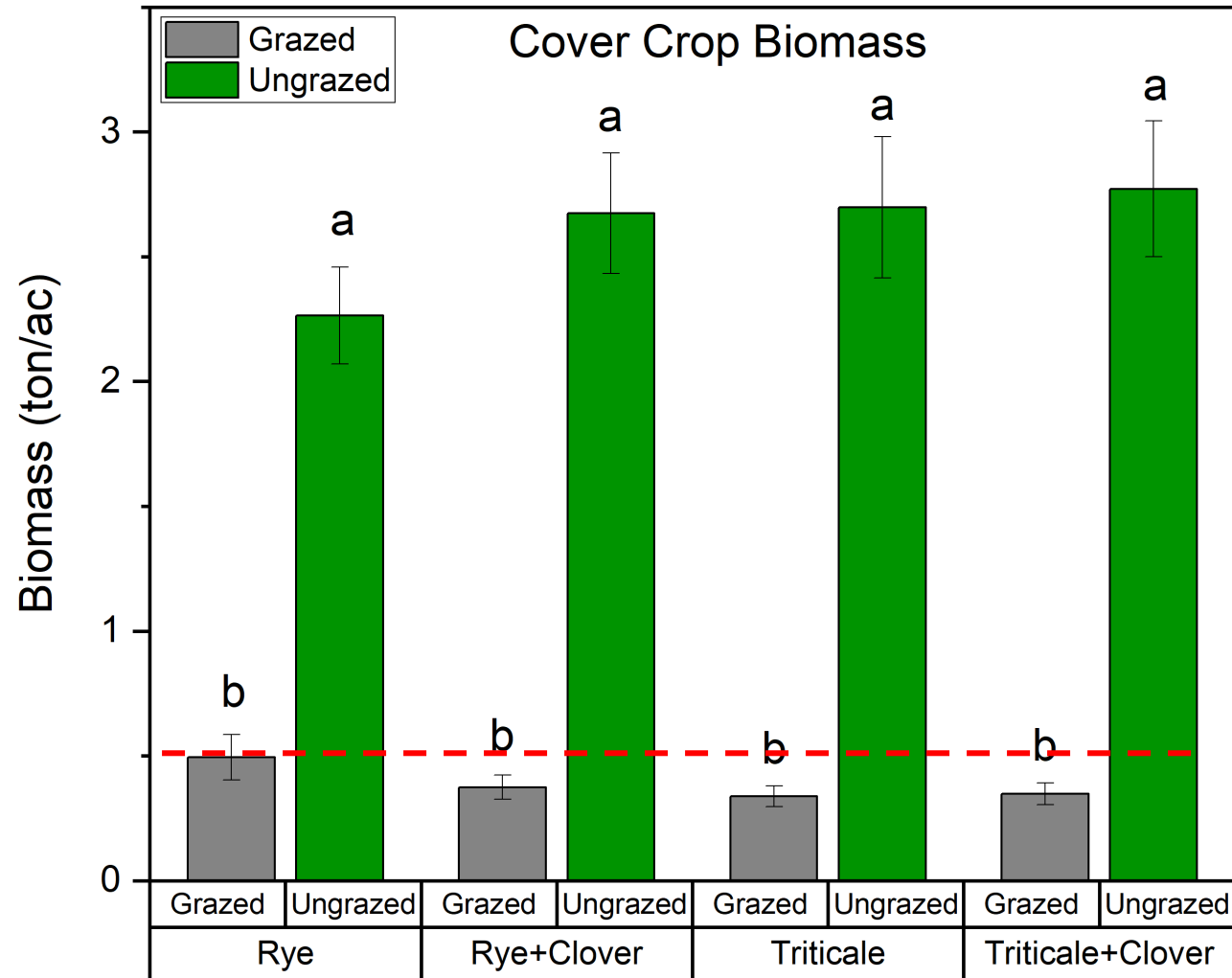
*Plot layout and cover  
crop seeding rates*



**Christian  
Co.**



- **Cover crop biomass** similar among species and species mixtures
- Consistent with evidence that total biomass, not diversity, of cover crops matter most
- Grazing reduced cover crop biomass by 5x

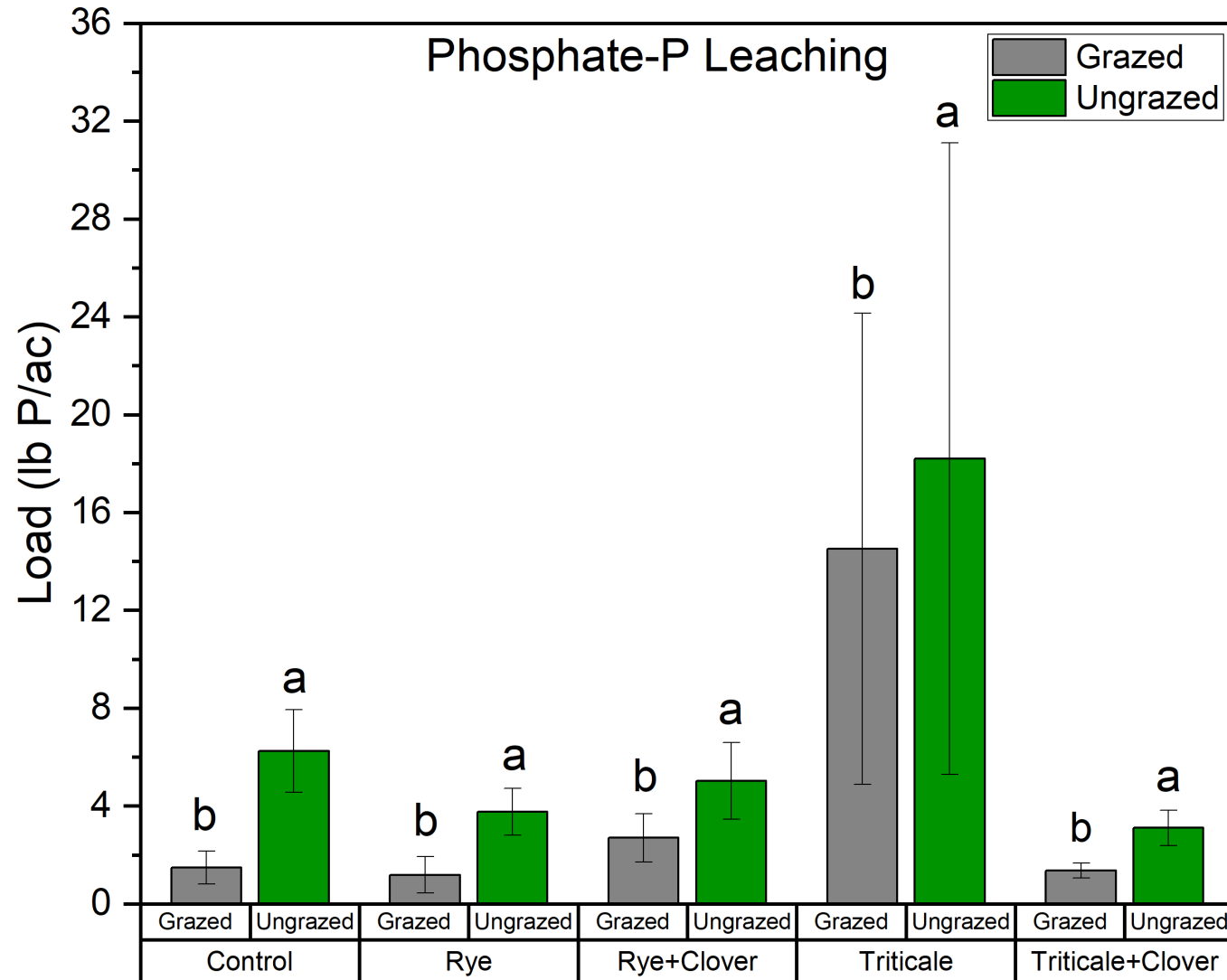


- Benefits of cover crops achieved at ~0.5 ton/ac (above ground)
- **Minimum 0.5 ton/ac** met by grazing



Sampling cereal rye ("rye") with 0.25 m<sup>2</sup> quadrats

- Grazing consistently decreased **phosphate-P leaching** across treatments, including no cover crop treatment (corn residues only)
- Higher but variable P leaching for triticale



- Higher P leaching without grazing could reflect corn P residues
- Based on 200 bu/ac corn, there are  $\approx 5.2$  lb P/ac in residues
- Approximately 2-5 lb P/ac leached without grazing
- Magnitude of mitigated P leaching with grazing aligns with corn residue removal (urine?)
- **5x decrease in nitrate-N leaching with cover crops *regardless of grazing***



# Updates to Illinois Agronomy Handbook on soil P testing have direct implications for updating manure management

## Joint Committee on Administrative Rules

## ADMINISTRATIVE CODE

### TITLE 35: ENVIRONMENTAL PROTECTION

### SUBTITLE E: AGRICULTURE RELATED POLLUTION

### CHAPTER I: POLLUTION CONTROL BOARD

### PART 502 PERMITS

### SECTION 502.635 MANURE AND SOIL SAMPLING AND ANALYSIS

#### SPECIAL CONDITION 4: Nutrient Management Plan

- a. The quantity of livestock wastes applied on soils shall not exceed a practical limit as determined by soil type (particularly soil permeability), the condition of the soil (e.g., frozen, saturated, ice or snow covered, or unfrozen), the slope of the land, cover mulch, proximity to surface waters, rate of soil erosion, potential to contaminate groundwater and other relevant considerations, so as to prevent discharge of livestock waste to waters of the State.
- b. The permittee shall practice odor control methods during livestock waste removal and field application so as not to affect a neighboring residence or populated area by causing air pollution as described in 35 Ill. Adm. Code 501.102(d). Odor control methods include but are not limited to: soil injection or incorporation of livestock waste, consideration of wind direction and velocity, humidity, day of week; and distance to neighboring residences and populated areas.
- c. Livestock wastes shall be applied to land within the following guidelines:
  - i. Livestock wastes shall not be discharged to waters of the State.
  - ii. Livestock waste application shall not be permitted upon land that has been saturated by rainfall within the 24 hour period preceding the time of application.
  - iii. Livestock waste application shall not be permitted on land with ponded water.
  - iv. Livestock waste application shall not be permitted on land during precipitation when the land is saturated or when precipitation will produce runoff of livestock waste.
  - v. Livestock wastes shall not be applied to land where the Bray P1 or Mehlich soil test for elemental phosphorus is greater than 300 pounds per acre for the top 7 inches of the soil profile. Livestock wastes may only be applied to land at rates not to exceed the agronomic phosphorus demand for the crops grown in multiple years at the land application site. If livestock wastes are land applied at rates in excess of the agronomic phosphorus demand for the next crop grown, as a multi-year phosphorus application of livestock waste, additional phosphorus shall not be subsequently land applied to that land until either, the applied phosphorus amount has been removed from that land via harvest or

#### Section 502.635 Manure and Soil Sampling and Analysis

- a) Soil Phosphorus Sampling. Soil samples must be obtained and analyzed from each field of the land application area where applications are planned. Fields where livestock waste is applied must be sampled twice for each field during the permit's term. Soil testing must be conducted as follows:
  - 1) Soil sampling for phosphorus must follow the sampling protocols in Chapter 8 of the Illinois Agronomy Handbook, 24<sup>th</sup> Edition, incorporated by reference at 35 Ill. Adm. Code 501.200. Laboratory analysis for soil phosphorus (Bray P1 or Mehlich 3) must be in accordance with Recommended Chemical Soil Test Procedures for the North Central Region, incorporated by reference at 35 Ill. Adm. Code 501.200;
  - 2) Soil samples must be at the same time in the cropping cycle and rotation so that results are comparable year to year; and
  - 3) The two required soil samples for each field must be taken at least one year apart.

**Bray P1 or Mehlich-3 colorimetric or Mehlich-3 ICP?**

**Easily 25% different in values**

# Summary

1. Quantifying legacy and residual P contributions to P losses is needed to refine source apportionment and reduction timelines
  - Multiple Illinois-wide projects to deliver information on streambank erosion P loads and residual soil P at HUC-8 scale
  - Run-off losses as particulate-P vs DRP under BMPs
2. P fertilizer and manure management
  - Updates to CSTV and rates for Illinois Agronomy Handbook
  - Online P management tool: mean return to P (MRTP)
    - Critical values (CSTV)
    - Rates
    - P sorption index (PSI)
  - Manure and residue grazing studies – small but important start

**In the coming 2-5 years, these research projects will provide tools and understanding to manage and monitor P in Illinois to support meeting P loss reduction goals of Illinois NLRs**

# Illinois NLRs Policy Working Group Meeting

## BREAK

Start back at 10:35 am



Illinois Environmental  
Protection Agency



**Illinois**  
Department of  
**Agriculture**



**Illinois Extension**  
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



**ILLINOIS**  
**NUTRIENT LOSS**  
REDUCTION STRATEGY



# Fall Covers for Spring Savings

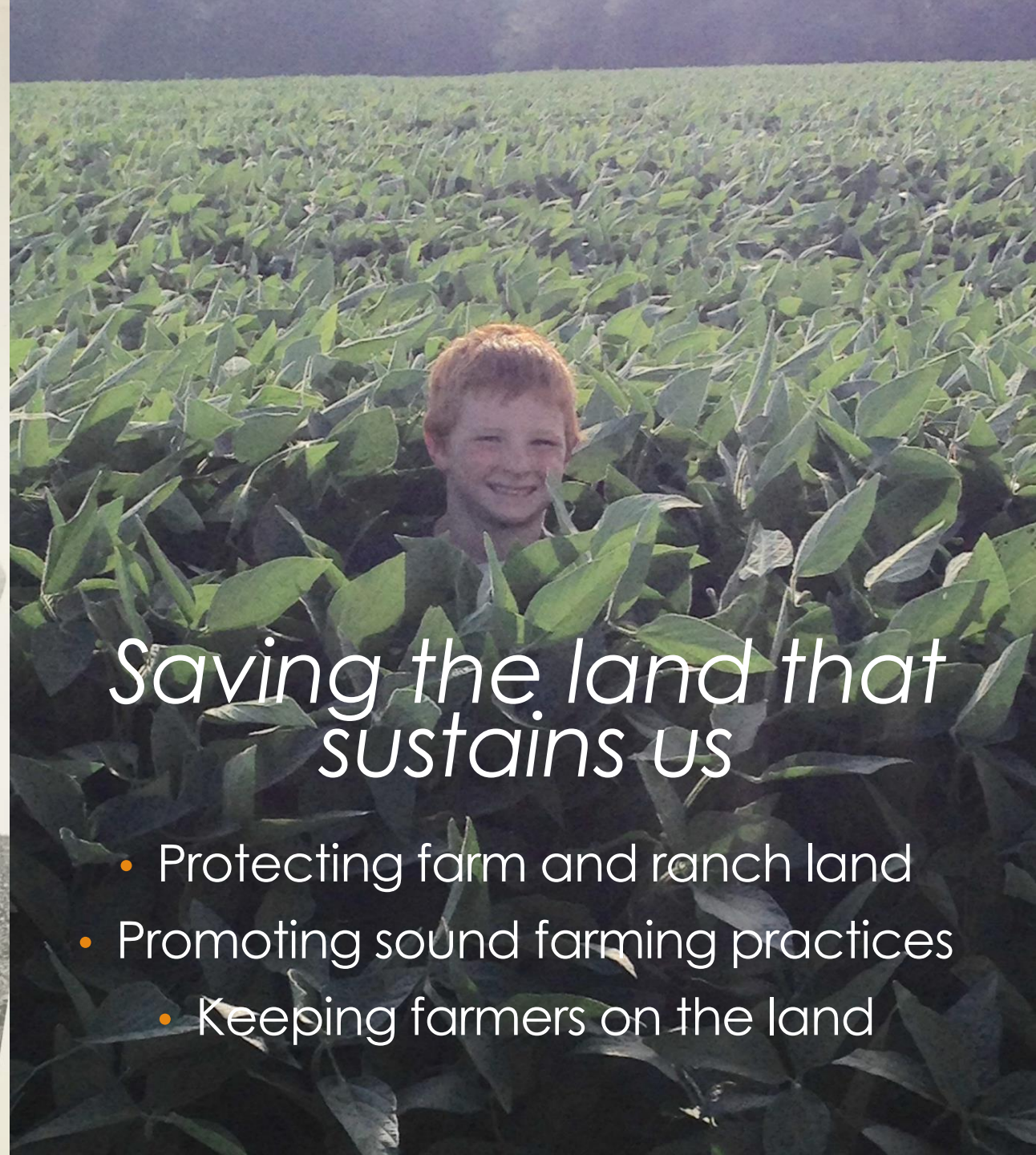
COVER CROP PREMIUM DISCOUNT PROGRAM



Kris Reynolds, Midwest Director







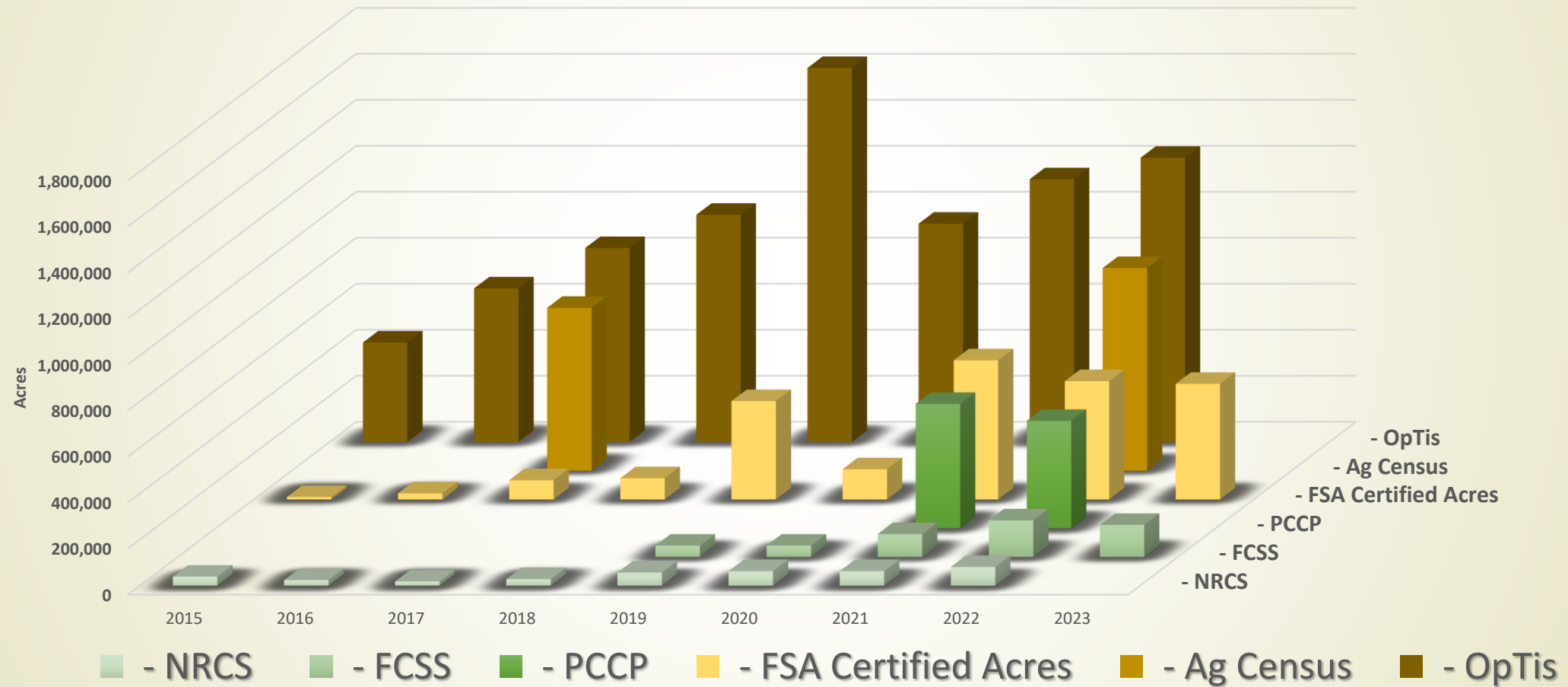
## *Saving the land that sustains us*

- Protecting farm and ranch land
- Promoting sound farming practices
- Keeping farmers on the land



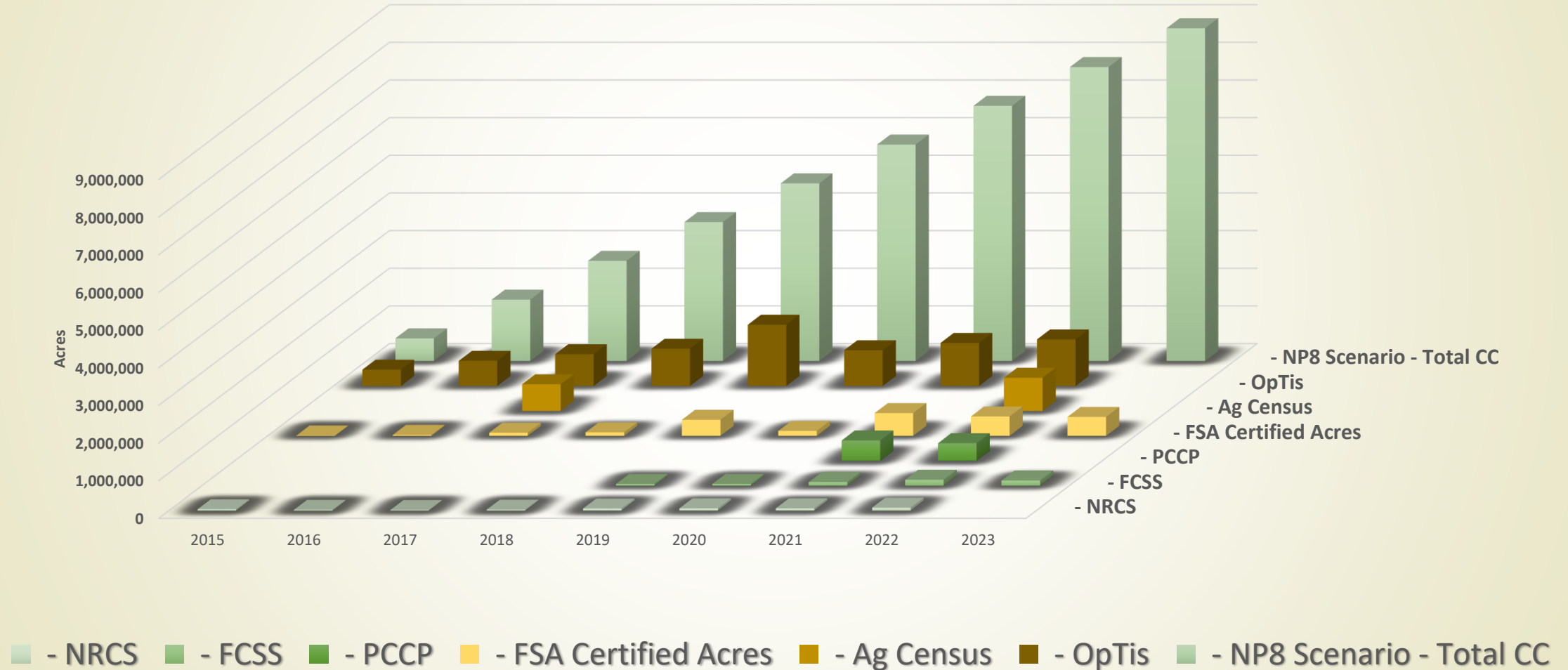
# Cover Crop Adoption in Illinois

2015 - 2023






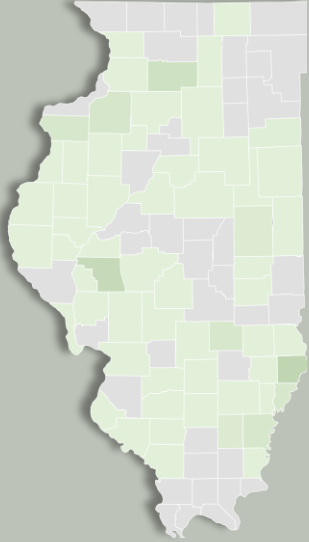
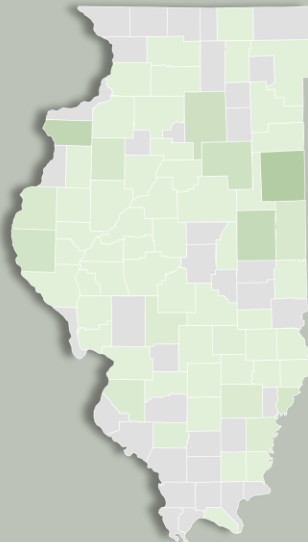
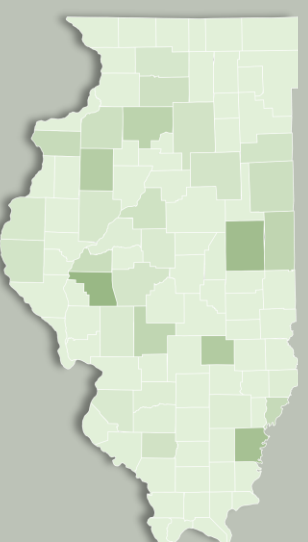
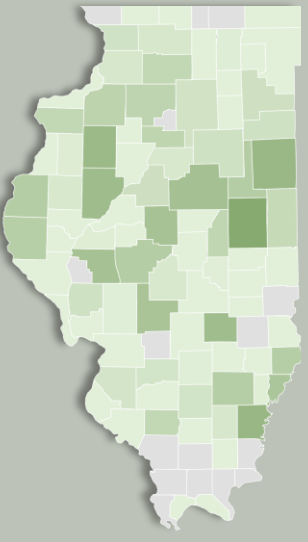
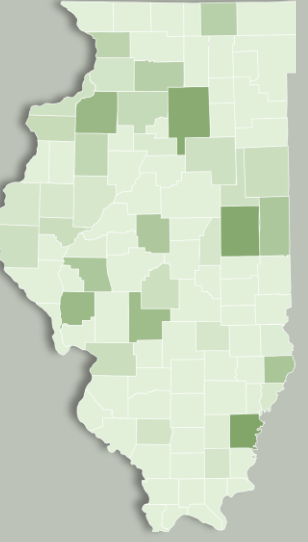
# Cover crop adoption necessary to reach NLRs Scenario NP8 treatment acres by 2035



# **Fall Covers for Spring Savings Goals and Benefits**


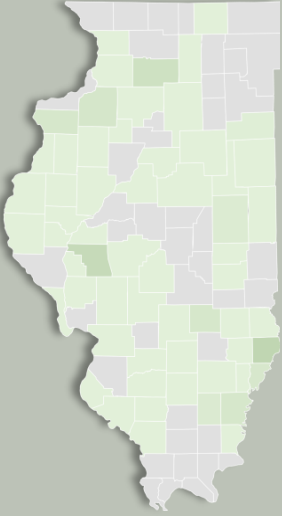
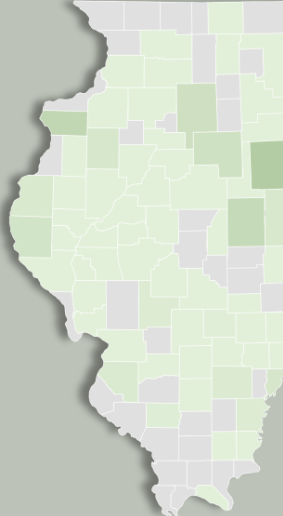
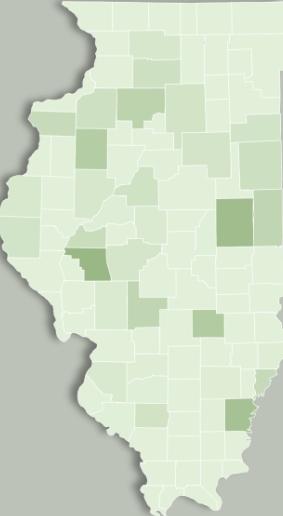
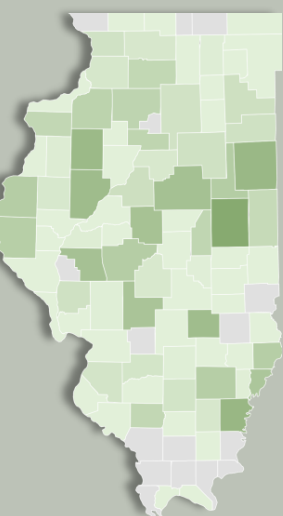
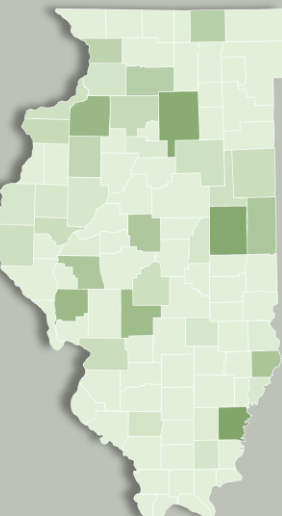
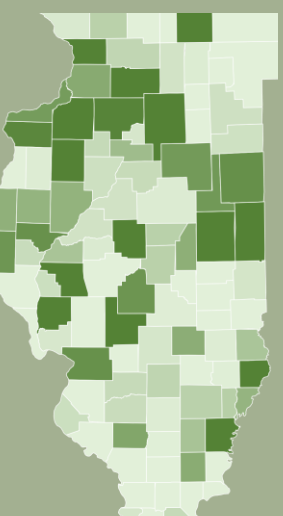
- Increase Cover Crop Adoption in Illinois!
- Improve water quality and meet NLRS goals
- Lower cost than current cost-share programs
- Cover crops as a risk reduction tool
- Improved soil health, carbon sequestration and climate resiliency

# FCSS Outcomes 2020-2024

Crop Year	2020	2021	2022	2023	2024
Program Acres	50,000	50,000	100,000	160,000	140,000
Participating Counties	60	65	81	86	87
<p>*Outcomes modeled with PCOC, using data from the 2019 NLR Science Assessment, geospatial data gateway, transect survey and Ag Census.</p> <p>Acres:</p>  <p>1,000 10,000</p>					
Nitrogen Load Reduction (lbs/yr)	145,045	166,813	281,463	466,900	410,121
Phosphorus Load Reduction (lbs/yr)	13,760	14,769	25,460	42,985	34,652
Sediment Load Reduction (tons/yr)	56,264	52,529	107,237	170,466	148,836

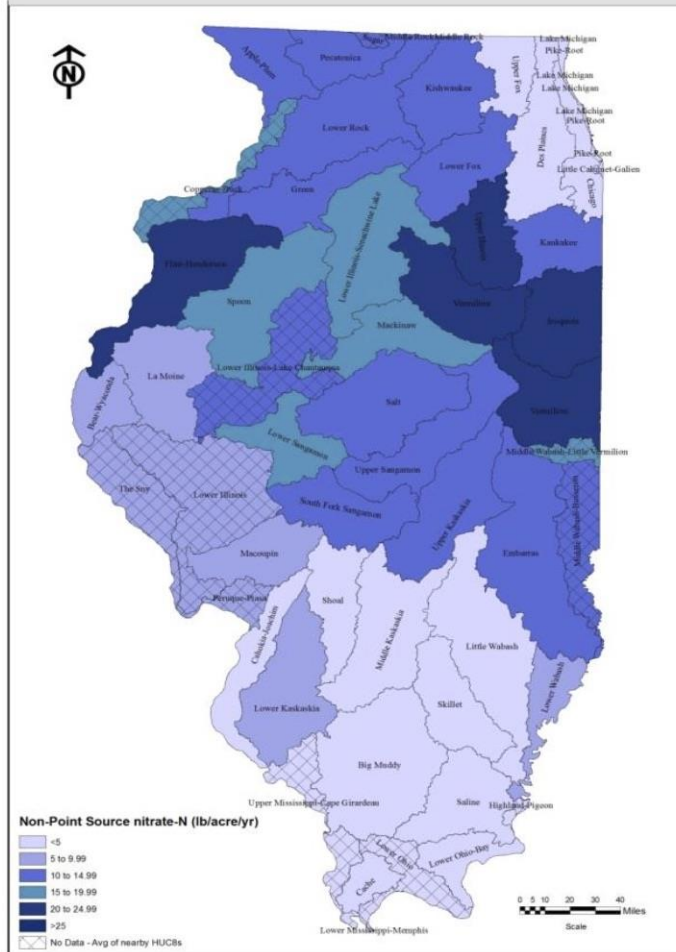


# FCSS Outcomes 2020 – 2025\*

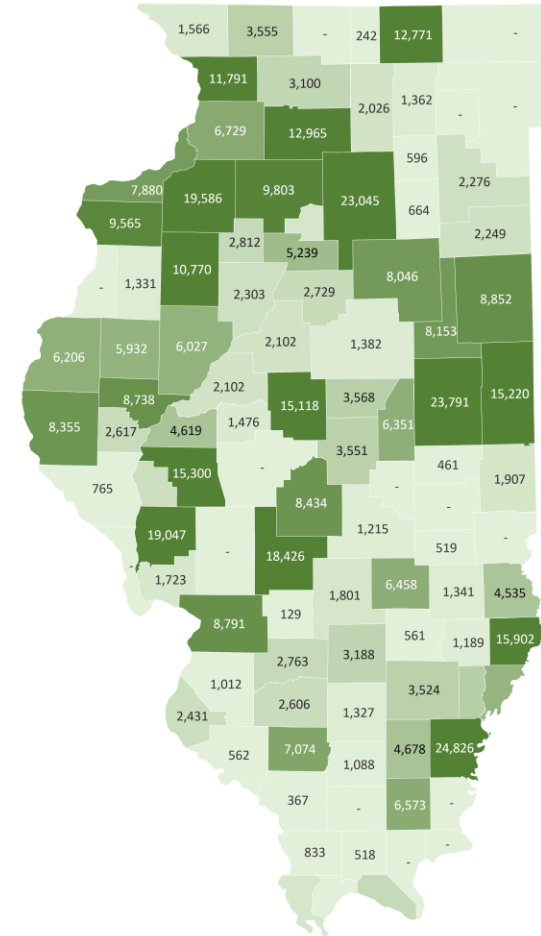
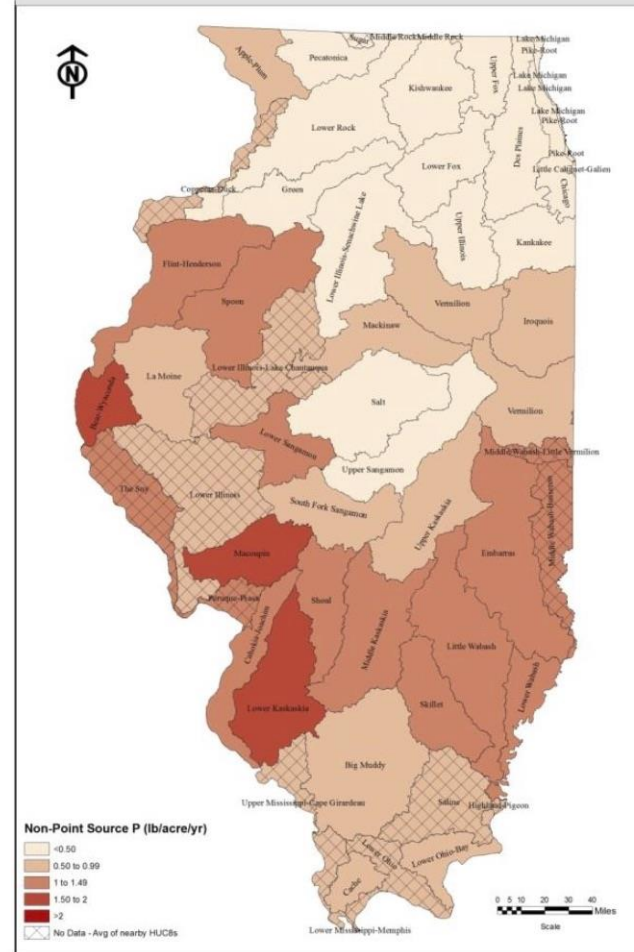
Crop Year	2020	2021	2022	2023	2024	2025*
Program Acres	50,000	50,000	100,000	160,000	140,000	500,000*
Participating Counties	60	65	81	86	87	101*
<p>*Outcomes modeled with PCOC, using data from the 2019 NLR Science Assessment, geospatial data gateway, transect survey and Ag Census.</p> <p>Acres:</p> 						
Nitrogen Load Reduction (lbs/yr)	145,045	166,813	281,463	466,900	410,121	1,352,139*
Phosphorus Load Reduction (lbs/yr)	13,760	14,769	25,460	42,985	34,652	147,818*
Sediment Load Reduction (tons/yr)	56,264	52,529	107,237	170,466	148,836	602,229*

# Projected distribution of 500,000 Acres\*

HUC8 Non-Point Source nitrate-N Yields



HUC8 Non-Point Source P Yields



## NLRS Estimated Costs – Scenario NP8

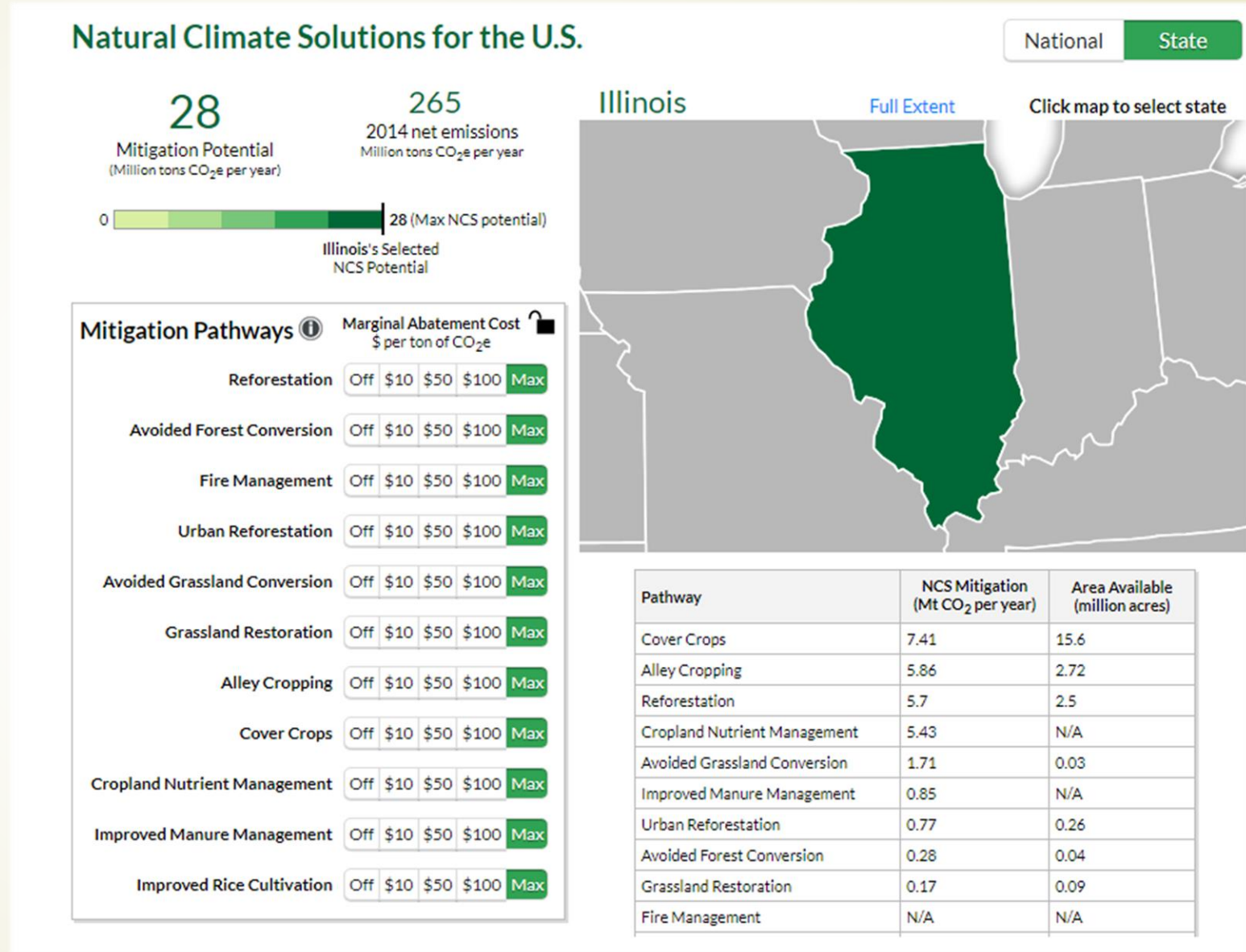
- **Scenario NP8:** estimates the Net Equal Annualized Costs for Agriculture at \$14/acre.
- **Fall Covers for Spring Savings** operates at \$6 per acre, less than 40% of NEAC!





# Co-benefit: Cover Crops are a Natural Climate Solution

- **U.S. Climate Alliance:** cover cropping is the natural climate solution with the greatest carbon gain potential in IL.
- Potential 7.41 Mt CO<sub>2</sub> per year.
- **500,000 acres** enrolled in Fall Covers for Spring Savings would reduce GHGe emissions from working lands by **180,000 Mt per year**.
- EPA equivalent of removing 37,830 cars from the road for a year.



# Co-benefit: Data to inform crop insurance reforms

- ▶ **AGree Coalition:** Across the 6-state region, consistent use of cover crops and no-till resulted in a 24% reduction in the odds ratio of prevent-plant loss in 2019.
- ▶ Increased acres in the Fall Covers for Spring Savings program will provide increased exposure to varying conditions – weather patterns, topography, crops – building necessary datasets.

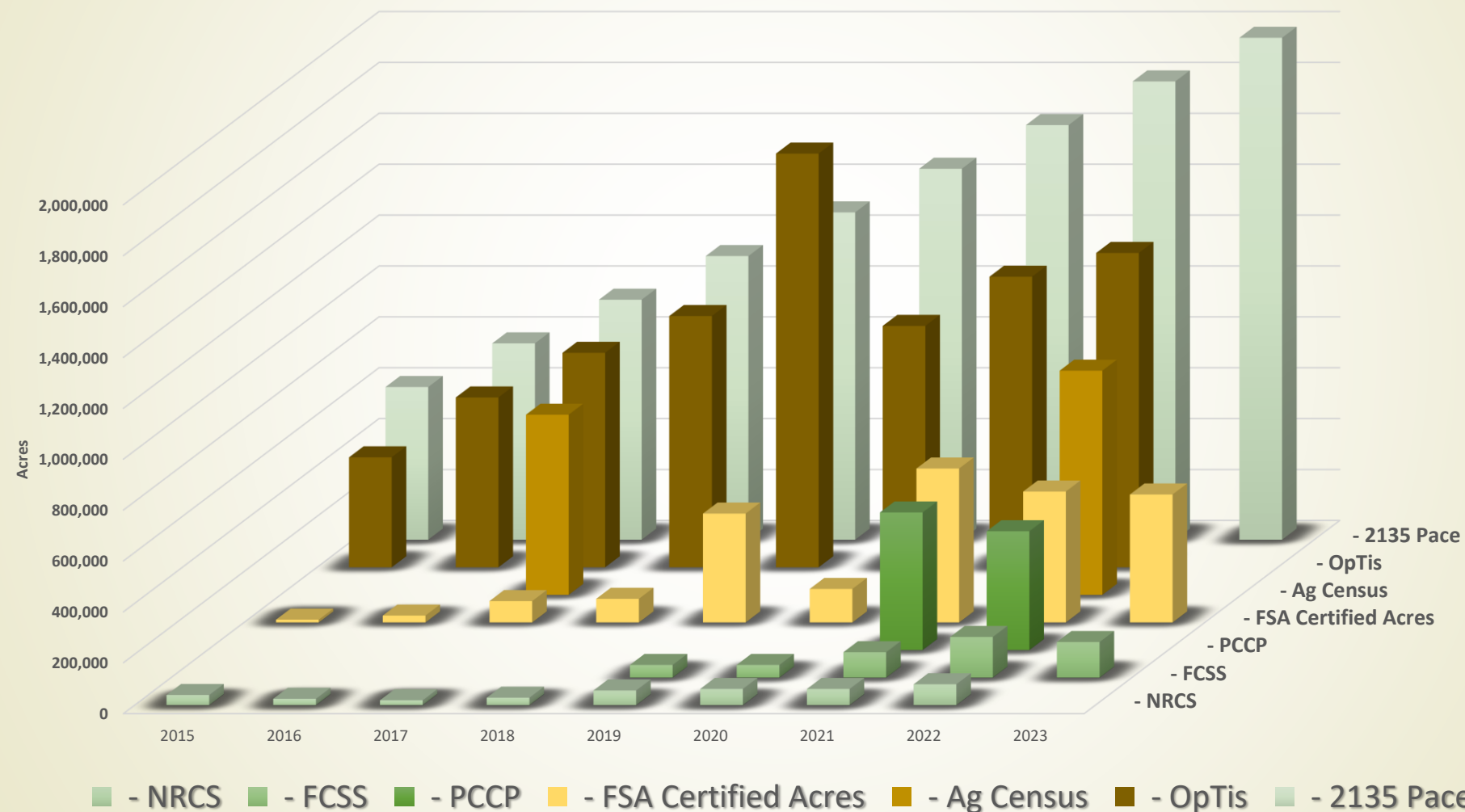


## Conservation and Crop Insurance Research Pilot





# Cover Crop adoption necessary to reach Scenario NP8 treatment acres by 2135





# Fall Covers for Spring Savings Appropriation

## HB5757

Rep. Yang Rohr  
Rep. Rosenthal  
Rep. Blair-Sherlock  
Rep. Kifowit  
Rep. Hernandez

## SB3814

Sen. Joyce  
Sen. Doris Turner  
Sen. Holmes  
Sen. Faraci  
Sen. Glowiak Hilton  
Sen. Anderson  
Sen. Jones, III  
Sen. Sally Turner  
Sen. Curran  
Sen. Bennet  
Sen. Chesney  
Sen. Bryant  
Sen. Stoller  
Sen. Halpin

AN ACT concerning appropriations.

**Be it enacted by the People of the State of Illinois, represented  
in the General Assembly:**

Section 5. The amount of \$3,100,000, or so much thereof as may be necessary, is appropriated from the General Revenue Fund to the Department of Agriculture for costs associated with the Crop Insurance Rebate Initiative to provide incentives for at least 500,000 acres of eligible land.

# Supporting Partners:





Saving the Land that Sustains Us

[www.farmland.org](http://www.farmland.org)

[kreynolds@farmland.org](mailto:kreynolds@farmland.org)



# April 2024 NLRs Policy Working Group Update



**ILCORN**  
[WWW.ILCORN.ORG](http://WWW.ILCORN.ORG)

Megan Dwyer, CCA- Director of Conservation & Nutrient Stewardship

# General IL Corn Updates

- Nitrate Testing Kits
- Lease Addendums
  - <https://farmdoc.illinois.edu/agricultural-law>
- Crop Insurance
  - PACE- Post Application Coverage Endorsement
  - Continued focus on 508(h) process
- Cover Crop Coupon
  - 24,956 acres
- SAF, 45Z, ESA, LCFS
  - Capacity, incentives







# PCM- Precision Conservation Management

- ✓ 519 Farmers
- ✓ 8,573 Fields
- ✓ 513,893 Acres

## **2023 Total Impacts in Illinois:**

Nitrate-N Loss Reductions	1,154,702 lbs NO <sub>3</sub> -N loss reductions
Phosphorus Loss Reductions	174,983 lbs P loss reductions
Sediment Loss Reductions	258,963 tons sediment retained

## **2023 PCM Acres-Illinois:**

Reduced Tillage	247,391
Nitrogen Management	257,009
Cover Crops	84,614







Recent farmer meetings

- Central IL ~40 attendees
- NW IL ~200 attendees

## Why Boots on the Ground Matter:

### \*PRILIMINARY PCM SURVEY DATA\*

- Top 3 Most Important Conservation Program Factors:
  - >Payment Rate
  - >Flexibility in Practice Standards
  - >Simple Contract
- 92% Agree/Strongly Agree they will apply information from their personalized RAAP within the next 12 months
- Of those currently not doing no-till or reduced till on their **whole farm**, 70% likely to adopt based on the information they've received
- Of those currently not doing cover crops on their **whole farm**, 68% are likely to try or expand cover crop usage based on the information they've received
- Of those not already utilizing MRTN, 65% agree they are likely to switch to using MRTN rates based on the information they've received



# Questions?

Megan Dwyer, CCA

Director of Conservation & Nutrient Stewardship

[mdwyer@ilcorn.org](mailto:mdwyer@ilcorn.org) 309-557-3257



**ILCORN**  
WWW.ILCORN.ORG



ILLINOIS  
**SUSTAINABLE**  
AG PARTNERSHIP

*Policy Working Group*  
*04.02.2024*

**Tools to Advance NLRS**



# ISAP's PURPOSE

The **Illinois Sustainable Ag Partnership** is a non-profit made up of 15 member organizations working collaboratively to promote whole system conservation solutions focused on soil health and water management to reduce nutrient losses and meet sustainability goals.





Precision Conservation Management



Illinois Extension

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



## Core Strategies



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How do we create our desired impact?

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Increase farmer recognition in the **ECONOMIC VALUE** of conservation practices.

Serve as the clearinghouse for **SOIL HEALTH & CONSERVATION DRAINAGE EDUCATION**.

Accelerate the **ADOPTION OF CONSERVATION PRACTICES** that improve soil health, "carbon cycle balance", & water quality.

## Enabling Outcomes



---

What is needed to bring about change?

---

Farmers and advisors have access to data and view ISAP as a trusted source of information.

All education is action oriented, fosters knowledge transfer, and motivates change on the landscape.

ISAP members and partners are using a consistent message to inform and engage key audiences.

Policies and funding priorities are supporting practices with the biggest water quality and climate impacts.

## Desired Impact



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What is our "long-term" goal?

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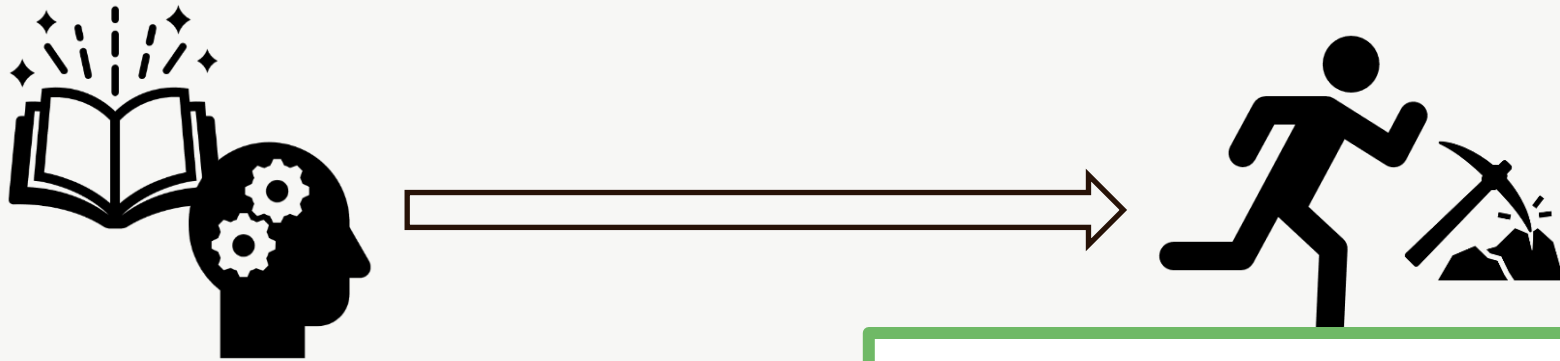
Illinois agriculture voluntarily meets NLRS goals and benefits from being part of the climate solution







# Information = Action



**Information  $\neq$  Action**



Make my bed  
every day




# ISAP's ROLE

- Coordinating field days and other **educational events**
- Foster **peer networks**
- Providing expertise through our **collaborative partnerships**
- Platform for disseminating science based information & **relevant resources**



- Key findings from the Biennial Report
- Statewide nutrient loads and practice adoption
- What can farmers do?



ILLINOIS  
SUSTAINABLE  
AG PARTNERSHIP

### Can Illinois reach its water quality goals?

Meeting the Challenge of Nutrient Loss Reduction in the Ag Sector

The IL Environmental Protection Agency (IEPA) and the IL Department of Agriculture (IDOA) released the **Nutrient Loss Reduction Strategy (NLRS)** in 2015, and in it quantified nutrient loads from **multiple sources** and set aggressive **reduction targets** for the amounts of nitrate-nitrogen (NO<sub>3</sub>-N) and total phosphorus (TP) leaving the state. The strategy laid out best practices to achieve reductions, including interim reductions to be achieved by 2025. Recently, the **2023 NLRS Biennial Report** was released, describing activities from 2015 through 2022.

This overview from the IL Sustainable Ag Partnership (ISAP) is designed to build awareness of the NLRS among farmer and advisor audiences, highlight challenges, and provide a variety of ISAP and partner resources to support conservation.

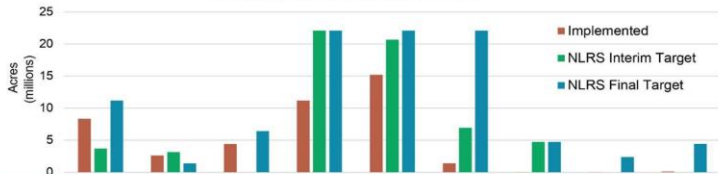
#### Key Findings - 2023 Biennial Report:

**Illinois is not on track to meet the interim (2025) goals of the NLRS.**

- Monitoring data illustrate the 2017-2021 five-year average values for **nitrate-nitrogen and total phosphorus loads are 4.8% and 35% above the 1980-1996 baseline**, respectively. For this same period, river flow is 23% above the baseline.
- While overall nutrient loads remain high, **point source contributors have successfully reduced their total phosphorus loads by 34%** via National Pollution Discharge Elimination System (NPDES) permit limits.
- Despite significant investment and effort, **nutrient losses attributed to the nonpoint sector, including agriculture, are increasing**. Researchers are studying how various factors such as climate variability, legacy nutrients, and increased drainage may be contributing to these increases.
- **Levels of conservation practice adoption have increased, but not at the pace or scale needed to meet NLRS targets.**

#### Agricultural Conservation Practice Implementation

Each NLRS biennial report presents information on the implementation of conservation practices, shown below with the target acres from plausible NLRS interim and final practice scenarios included for context. The list of practice options is not exhaustive.



	MRTN	N Inhibitor	Fall/Spring Split N	Soil Test Phosphorus	Conservation Tillage	Cover Crops	Bioreactors	Constructed Wetlands	Buffers & Filter Strips
Nitrate ↓ (%/ac)	10	10	7.5-10	-	-	30	25	50	90
Total Phosphorus ↓ (%/ac)	-	-	-	7	50	30-50	-	-	50
Implemented (Acres)	8.4M	2.6M	4.4M	11.2M	15.2M	1.4M	1449	421	97,749
Interim Target (Acres)	3.7M	3.1M	-	22.1M	20.7M	6.9M	4.7M	-	-
Final Target (Acres)	11.2M	1.4M	6.4M	22.1M	22.1M	22.1M	4.7M	2.4M	4.4M

#### Practice Notes

##### NUTRIENT MANAGEMENT

- Use of MRTN and soil test phosphorus to determine application rates, nitrification inhibitor with fall N, and split fall/spring N applications are increasing.

##### COVER CROPS

- Adoption stands at 20% of the interim goal and just 6% of the long-term goal.
- Significant financial and technical assistance are needed to provide hands-on support to farmers making this management change.

##### EDGE OF FIELD PRACTICES

- Implementation is occurring at a fraction of the level needed to meet NLRS goals.
- Building associated treatment practices into the increasing amounts of drainage installation is critical to success.

##### Which solutions are right for your farm?

IL is approaching a critical point in the implementation of the NLRS – the interim target date of 2025 – and the agriculture sector and its partners must demonstrate that collective investments in conservation, outreach, and education can achieve desired impacts on water quality. For the voluntary adoption model to be successful, each farmer or landowner, with the help of trusted advisors, must evaluate nutrient loss reduction opportunities for his or her operation.

Multiple resources and programs from the IL Sustainable Ag Partnership (ISAP) are available to assist farmers, landowners, advisors, and other ag-facing audiences in reducing nutrient losses: [www.ilsustainableag.org](http://www.ilsustainableag.org).

REFLECT	LEARN	ACT
<p>Am I:</p> <ul style="list-style-type: none"><li>• Following recommended soil health, tillage, and nutrient management guidelines?</li><li>• Farming marginal acres that may be better suited for conservation?</li></ul> <p>Do I have:</p> <ul style="list-style-type: none"><li>• Unbuffered streams or drainage ditches? Untreated tile outlets?</li></ul>	<ul style="list-style-type: none"><li>• Attend a soil health or conservation drainage training.</li><li>• Join a monthly IL Cover Crop On-Farm Network call.</li><li>• Review <a href="#">An Introduction to Soil Health Practices</a> and other ISAP or partner resources.</li></ul>	<ul style="list-style-type: none"><li>• Fill out a STAR form to assess soil and nutrient loss management practices on individual fields.</li><li>• Locate a specialist using ISAP's Conservation Story Map, or create a profile to share your expertise with others.</li><li>• Evaluate incentive program opportunities for cover crops and edge of field practices.</li><li>• On rented land, integrate conservation practices using lease addendums, for example via <a href="https://farmdoc.illinois.edu/agricultural-law">https://farmdoc.illinois.edu/agricultural-law</a>.</li><li>• Call or visit your local USDA Service Center to get started with a conservation program.</li></ul>

#### How much conservation is needed?

The NLRS presents several **scenarios** to illustrate the types of interventions needed to meet interim and long-term NLRS targets. While not prescriptive, each scenario depicts an example suite of conservation practices and the estimated percentage of agricultural land on which each practice is needed.

For example, the NLRS's **Interim Target (NP7)** and **Final Target (NP8) Scenarios** include 6-9 practices, some of which are needed on nearly all farmed acres to achieve NLRS water quality goals. Additional modeling is needed to understand how these estimates should be adjusted to account for changes in precipitation and water yield.

Farmer

Soil

Conservation

Conservation

Buffer

Calculate acres value



# Acknowledge the facts

- Illinois is NOT on track to meet interim (2025) goals for the NLRS.
- Monitoring data illustrate nutrient loads are above baseline values.
- Levels of conservation practice adoption have increased in some cases, but not at the pace or scale needed to meet NLRS targets.



# What can farmers do?

1. Reflect

2. Learn

3. Act





# REFLECT –

Am I:

- Following recommended soil health, tillage, and nutrient management guidelines?
- Farming marginal lands that may be better suited for conservation?

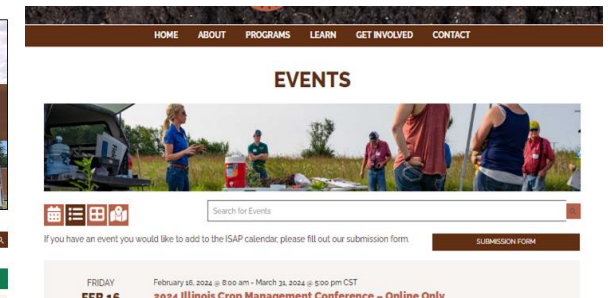
Do I have:

- Unbuffered streams or drainage ditches?
- Untreated tile outlets?



# LEARN - Information

- Visit ISAP's website:  
[www.ilsustainableag.org](http://www.ilsustainableag.org)
- Subscribe to “The Aggregate”
- Explore our digital library
- Attend a field day



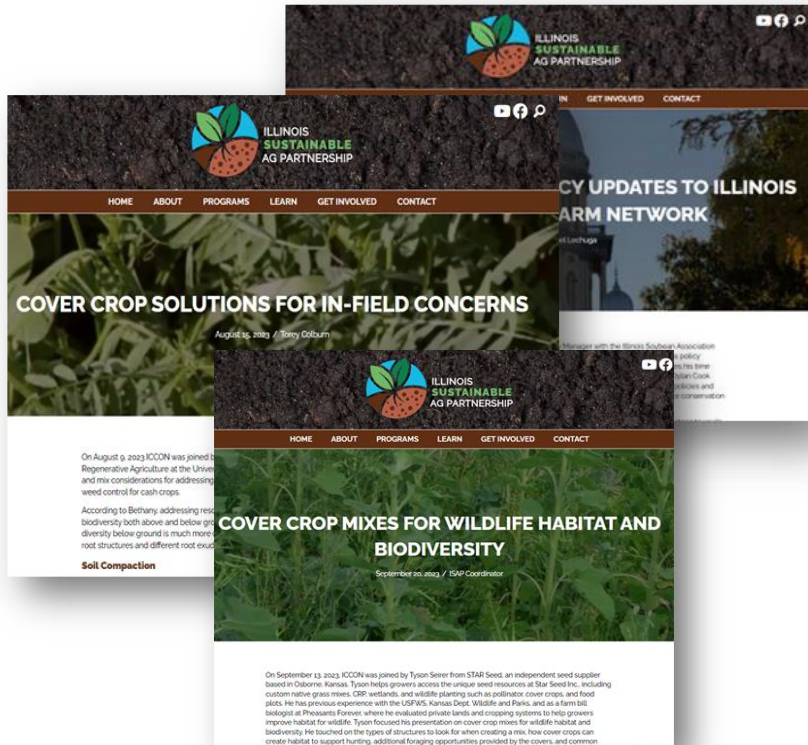
# LEARN - Networking

## Illinois Cover Crop On-Farm Network

- Cover crop enthusiasts from Illinois and broader Midwest
- Monthly discussions on cover crop topics
- Recordings posted to YouTube
- Recap blogs posted at [ilsustainableag.org](http://ilsustainableag.org)
- Google Group to stay connected



# ICCON Resources



Following each webinar, ISAP publishes recap blogs on the ISAP website:  
[www.ilsustainableag.org](http://www.ilsustainableag.org)

Resources summarize information gathered through discussions

## Digging Deeper with ISAP: Cover Crop Mixes

Cover crop mixes are a great tool that can be used to address a wide range of field concerns and production goals. This resource is meant to guide your design of a cover crop mix that is applicable to your production environment, highlight various considerations of mix designs, and support your development of an adaptive strategy to successfully use multispecies cover crops on your farm.

### Why should you use a mix? What are your goals and needs?

- Balance CN ratio
- Improve nitrogen production
- Suppress weed growth
- Grazing or forage production
- Root diversity to remediate soil issues: compaction, erosion, or water infiltration
- Wildlife habitat/food (above & below ground)
- Maximize growth following a small grain crop

### How should you design your mix?

Choose species that have complementary growth windows, plant architectures, and nutrient uptake capabilities to address and achieve your specific goals.

When including the following species in a mix, plan to make the following adjustments:

- Grasses: Reduce overall composition to 1/3 of a full rate
- Legumes: Keep near full rates
- Brassicas: Reduce rates to 1-5 lbs total

Be adaptable and willing to play with mix recipes until you find what works for you. Don't be locked in to one mix; try different recipes to see what works best.

### What considerations should you take into account?

- Management requirements for each species
  - Establishment (planting technique, timing, depth, winter survivability)
  - Species characteristics (termination method/timing, impact of vining vs. upright plant types)
  - Potential impact on cash crop (pest attraction, CN ratio, etc.)
- Equipment needs (planter attachments, weight/downforce, ability to apply nutrients)
- Cost/benefit ratio for a mix vs. single species cover crop

### Mixes Before Corn

This advanced low CN ratio mix would be relatively easy to plant into. Barley and triticale are early maturing grass options. Vining legumes, such as vetch or peas, could be substituted if planter set-up can handle vining plant types.

Starting Mix	Advanced Overwintering Mix
5-20 lbs 5-20 lbs 1-5 lbs	Winter Barley or Triticale 120-30 lbs Crimson Clover 18-12 lbs Rappseed or Camelina 1-4 lbs
Termination Timing: Early termination of plant growth	Termination Timing: Early termination of plant growth
Approx. Cost: \$46/acre	Approx. Cost: \$46/acre

### Soybeans

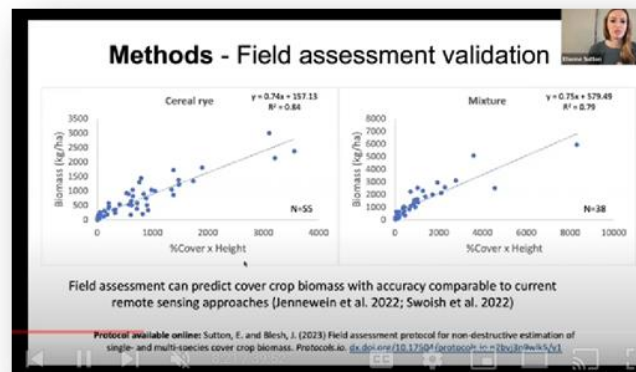
End of soybeans for soybean residue, with soybean cover crops can be used for diversity by a fibrous root system.

Starting Mix	Mix After Small Grains
10 lbs Up to 4 lbs	Summer Mix Grain Sorghum 1 lb Spring Oats 10 lbs Cowpeas 1.5 lbs
Termination Timing: Winterkill Approx. Cost: \$46/acre	Radish 12 lbs Buckwheat 6 lbs Sudangrass 1.5 lbs

### Resources:

Soil Health Directory | [sustainableag.org/cover-crop-soil-health-directory](https://sustainableag.org/cover-crop-soil-health-directory)  
Webinar Recordings | [bit.ly/ICCONyoutube](https://bit.ly/ICCONyoutube)  
Using the Most of Mixtures | [bit.ly/ICCONCoverCropMixes](https://bit.ly/ICCONCoverCropMixes)

ISAP would like to thank the following experts for joining ICCON's Cover Crop Control Summer Series and contributing to the resource: Bethany Blesch, University of Missouri Center for Regenerative Agriculture; Maggie Averett, University of Missouri Center for Regenerative Agriculture; Steven Seiler, and Tyson Seiver (Star Seed Inc.).



Recordings are posted on YouTube!  
[youtube.com/@ilsustainableag](https://youtube.com/@ilsustainableag)



# LEARN – Guidebook

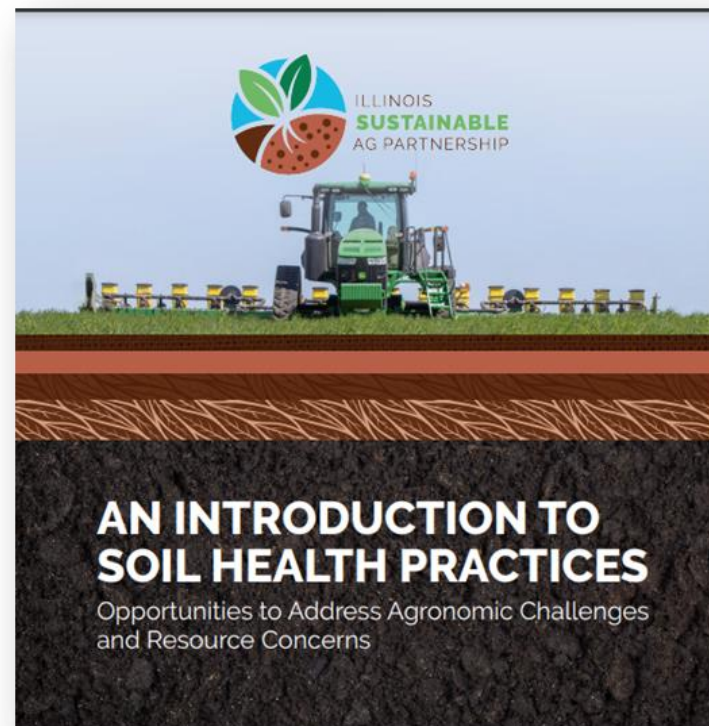
## Technical Advice - Scientific Research - Farmer Stories

- Cover crop
- No-till
- Nutrient management

*Framed as tools to address agronomic challenges*



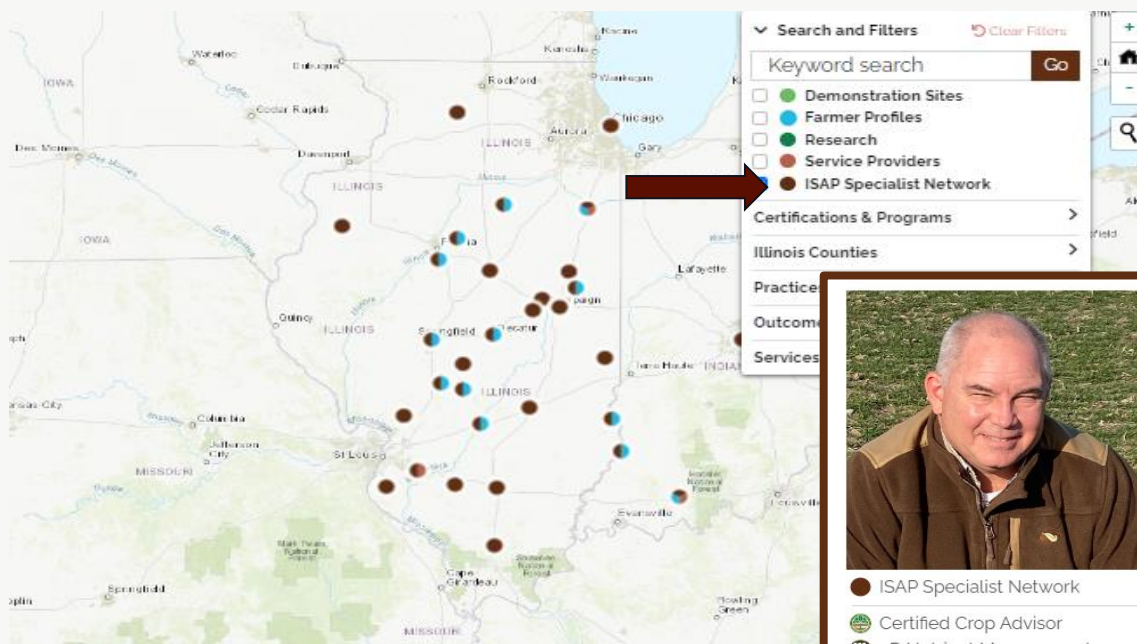
*[ilsustainableag.org/soil-health-journey](https://ilsustainableag.org/soil-health-journey)*





# ACT – Get Advice

## Conservation Story Map



**John Pike , Agronomist/Researcher**  
Pike Ag, LLC

John Pike served as a Research Agronomist for the U of I at Dixon Springs nutrient management, soil fertility, and cover crops. He served as an Extension Natural Resources. He has also worked for SIU, Lake Land College, and worked for GROWMARK in Christian and Piatt County. He lives on a family farm so

**I am a for-profit consultant, please contact me directly to find out more services.**

**Practices:** Cover Crops; Tillage; Nutrient Management

**Outcomes:** Pest Management

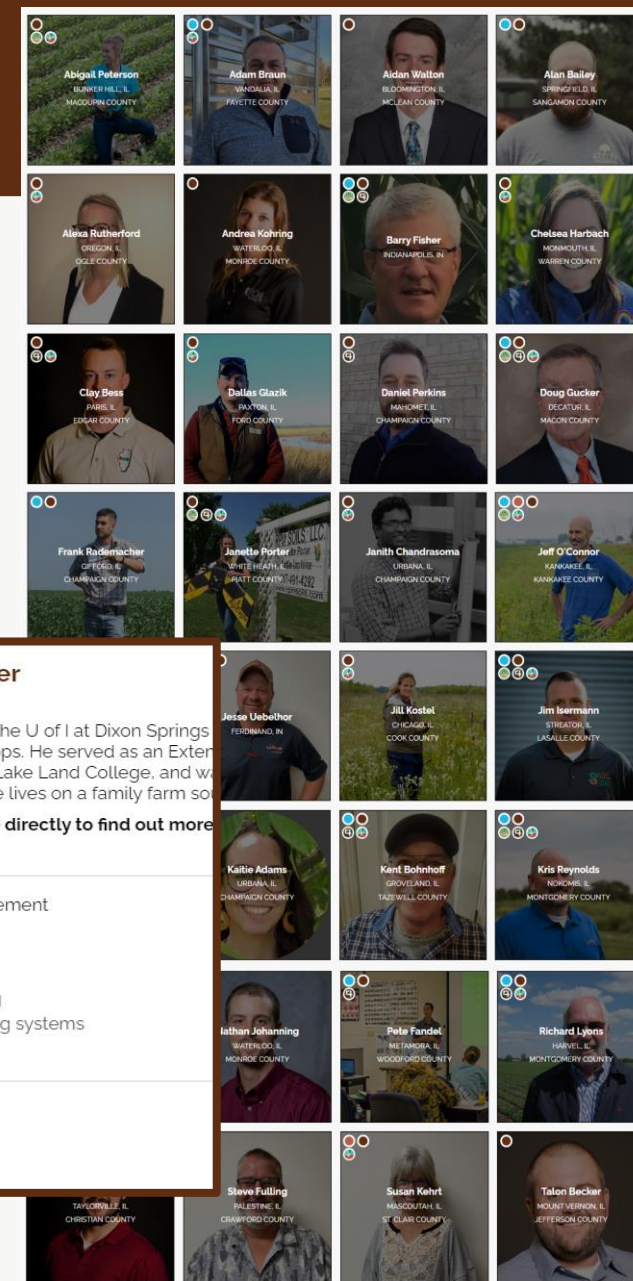
**Services:**

- Cover crop seed selection and practices
- Nutrient management (NRCS 590) planning
- Weed/pest control in conservation cropping systems
- Tillage

Marion, IL

[jp1ke1.ag@gmail.com](mailto:jp1ke1.ag@gmail.com)

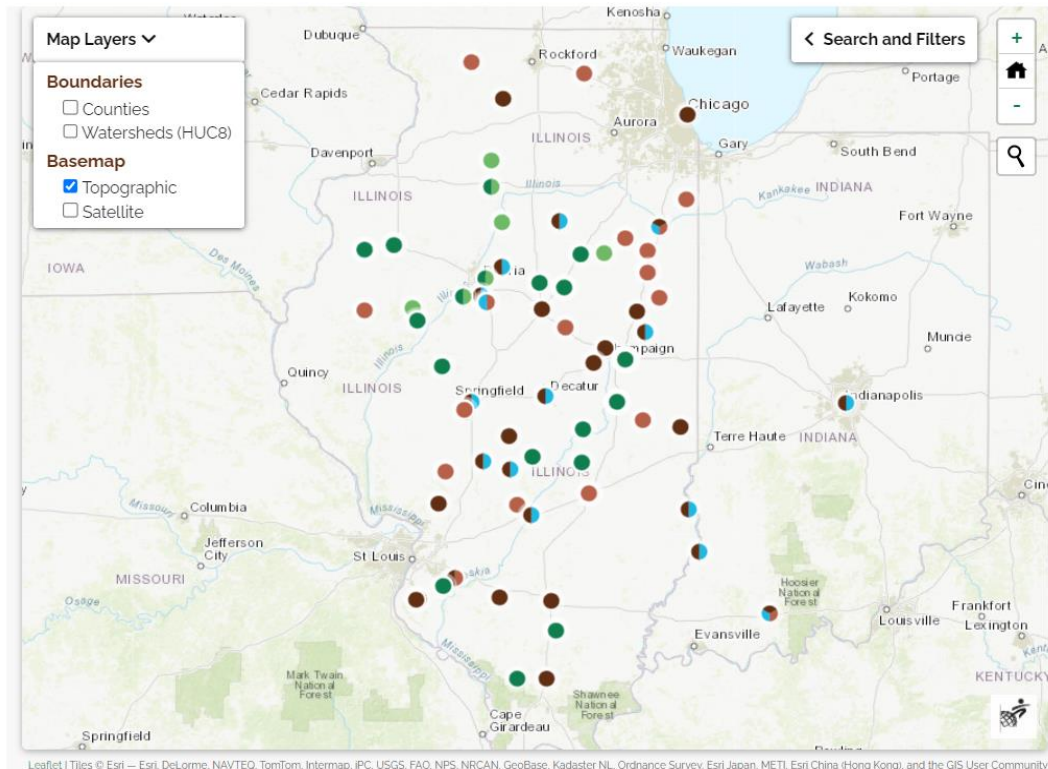
618-727-1234



# Add your pin to the map!

## CONSERVATION STORY MAP

ISAP's Conservation Story Map is designed to communicate sustainable agriculture efforts in Illinois and facilitate connections to support healthy soil, clean water, and profitable farms. We encourage you to connect with individuals and businesses listed on the map and invite you to [put your own pin on the map!](#)



### Put your pin on the map!

Complete this form to add your profile to the ISAP Conservation Story Map.

Type of Profile \*

On which map layer(s) would you like your information listed?

- ☐ Demonstration Sites
- ☐ Farmer Profiles
- ☐ Research
- ☐ Service Providers
- ☐ ISAP Specialist Network

Contact Name \*

Contact Name, REQUIRED

Contact Title

[ilsustainableag.org/conservation-story-map](https://ilsustainableag.org/conservation-story-map)





# ACT – Get supplies and services

## Cover Crop Seed Dealer Directory

- 30+ businesses
- Seed sales
- Services – custom seeding, termination
- List your business!



## ISAP's Cover Crop Seed Dealers Directory

Illinois Sustainable Ag Partnership's Cover Crop Seed Dealers Directory shares contact information, geography of service, and a list of available conservation cropping services provided by cover crop seed dealers in Illinois. The directory was developed to assist farmers in identifying cover crop seed dealers in their proximity who can supply cover crop seed and provide other services to support a farmer's transition to or management of a conservation cropping system.

Add your business to the directory or access a searchable, filterable version of this document by scanning the QR code or visiting [ilsustainableag.org/cover-crop-seed-dealers-directory](https://ilsustainableag.org/cover-crop-seed-dealers-directory)

ISAP does not endorse any particular program or company. Our goal is solely to share information among our farmer networks. The information in this directory was accurate at the time of publication (August 2023), but we encourage you to contact the service providers listed for the most up-to-date information. If there is information in this directory that needs to be updated, please contact ISAP at [hello@ilsustainableag.org](mailto:hello@ilsustainableag.org)



Business Name and Contact Info	Geography	Cover Crop Seed Services						Other Conservation Cropping Services									
		Cover crop seed sales	Cover crop seed & practice selection	Organic seed sales	Custom aerial seeding	Custom drill or broadcast seeding	Seed shipping	Cover crop termination	Nutrient application - N	Nutrient application - P	Variable rate nutrient application	Fertilizer application	Nutrient mgmt. planning	Regenerative grazing consult	Small grains /crop diversification consult	Pasture / grazing mixtures	Weed / pest
<b>Advance Cover Crops</b> www.advancecovercrops.com 618-922-7446 adamdahmer@advancecovercrops.com	Southern IL	✓	✓				✓	✓									
<b>Agassiz Seed and Supply</b> www.agassizseed.com   701-282-8118 info@agassizsee.com	Statewide	✓	✓				✓							✓	✓	✓	
<b>Albert Lea Seed</b> www.alseed.com   800-352-5247 seedhouse@alseed.com	Statewide	✓	✓	✓			✓										
<b>C. D. Ford &amp; Sons, Inc</b> www.cdford.com   309-944-4661 sheena@cdford.com	Central IL	✓	✓	✓			✓								✓	✓	✓

[ilsustainableag.org](https://ilsustainableag.org) | [hello@ilsustainableag.org](mailto:hello@ilsustainableag.org)



- **Financial incentive opportunities for Illinois farmers.**

- **Cover Crops - 15 programs**
- **Edge of Field - 18 programs**
- **Stacking Matrix for increase**

> *Expanded online directory coming soon!*

[illegible][illegible]



# ACT – Become a leader

## Soil Health Leadership Program

- Become a Soil Health Ambassador
- 18-month advanced training
- Classroom and Field Based
- Enrollment open through May 31



> Apply at [ilsustainableag.org/shlp](https://ilsustainableag.org/shlp)



# STAY IN TOUCH



ILSUSTAINABLEAG.ORG



HELLO@ILSUSTAINABLEAG.ORG



872-250-8771

Helen VanBeck, ISAP Manager

· hvanbeck@farmland.org

Jean Brokish

· jbrokish@farmland.org



# Partner Updates

Raise your hand if you have an update to share



Illinois Environmental  
Protection Agency



**Illinois**  
Department of  
**Agriculture**



**Illinois Extension**  
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



**ILLINOIS**  
**NUTRIENT LOSS**  
REDUCTION STRATEGY

# Thank you for attending!

Illinois NLRs Policy Working Group Meeting  
Tuesday, April 2, 2024

*A link to the presentations and minutes from this meeting  
will be made available in May.*



Illinois Environmental  
Protection Agency



**Illinois**  
Department of  
**Agriculture**



**Illinois Extension**  
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



**ILLINOIS**  
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