



# North America Region

## Agriculture Program



We conserve  
the lands  
and waters  
on which all  
life depends.

Visit [nature.org](https://www.nature.org)



# LASTING *results*



**1 million+**  
members



**64 years** of  
conservation



**120 million acres**  
protected worldwide,  
including all 50 states  
and 35 other countries.

## Nutrient Management



## Sustainable Grazing



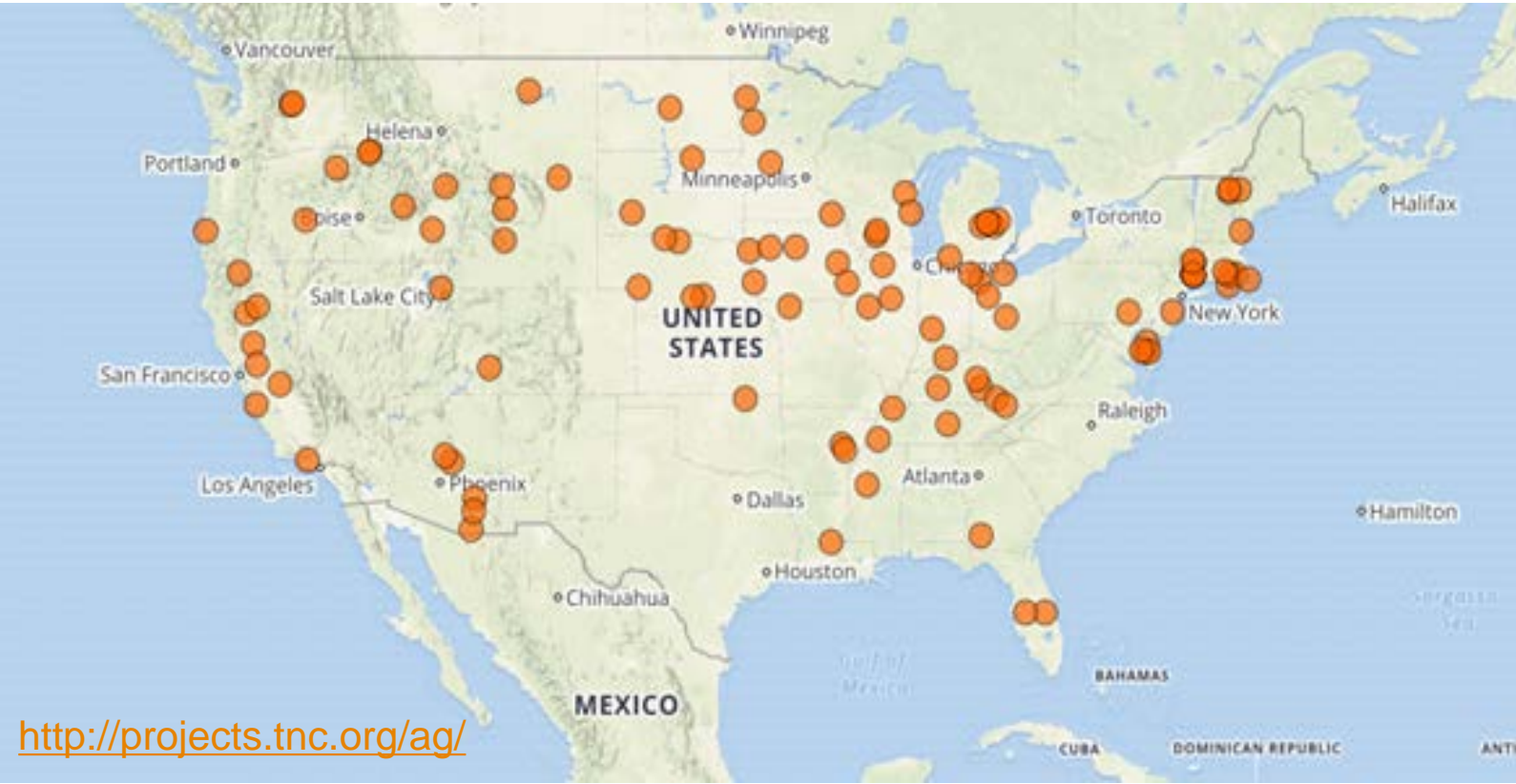
Focus Areas



Dozens of agriculture projects are embedded in these whole systems.



# North America Region | Agriculture



<http://projects.tnc.org/ag/>



## Our Nutrient Goal:

**Reverse agricultural nutrient loading trends** causing hypoxic zones in freshwater systems and oceans **by 2025**.

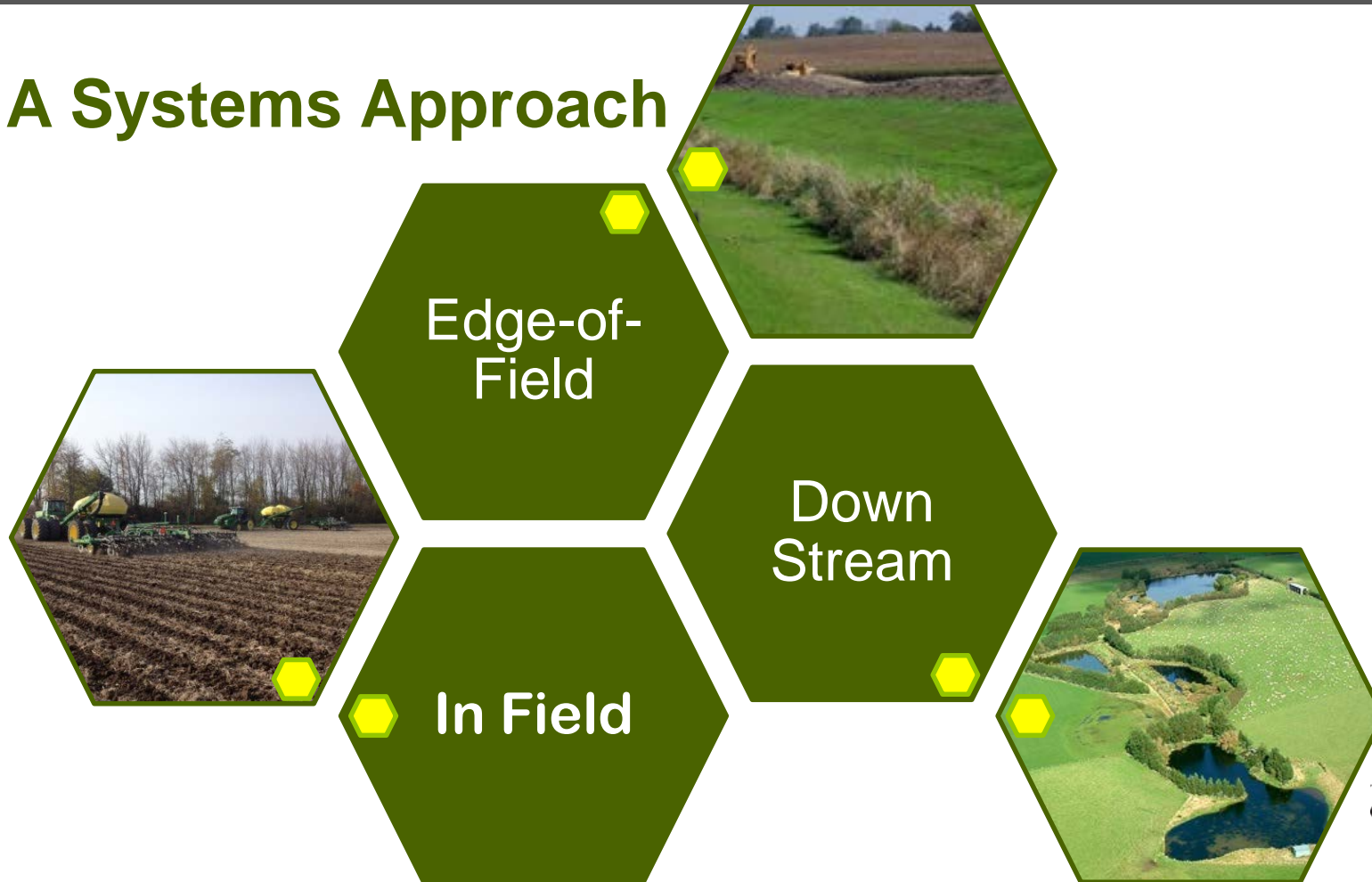
## What Are We Doing?

- Demonstrating the value of **Precision Conservation technologies**
- Mobilizing with the agriculture industry to increase conservation champions and advisors **guiding farmers to deliver those practices**
- Engaging the food industry in **supply chain initiatives** to drive change
- Working to increase **policy incentives**





# A Systems Approach



# Water Quality Data from Indiana Soil Health Demo Farm



## Planting cover crops to reduce nutrient loss from agricultural fields and improve water quality

Laboratory of Jennifer L. Tank, Dept. of Biological Sciences, University of Notre Dame



**Problem of Excess:**

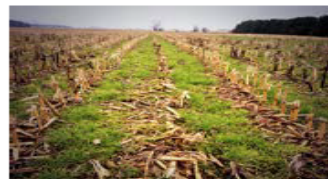
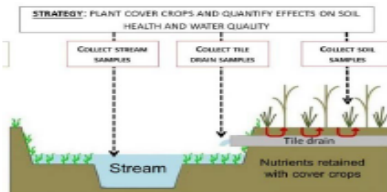
- Channelized agricultural streams and ditches export excess nitrogen (N), phosphorus (P), and sediments to sensitive downstream ecosystems where they contaminate drinking water, fuel downstream algal blooms with “dead zones”, and harm sensitive fish and mussels.

- Excess fertilizer nutrients often enter streams and ditches via tile drains, especially during Winter and Spring when fields are bare.

### Cover crops can reduce nutrient loss:

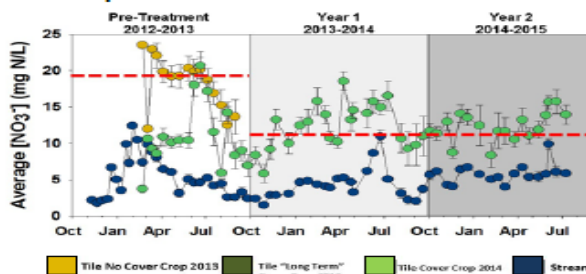
- Cover crops, like ryegrass, are planted after cash crop harvest and their growth coincides with critical times for nutrient export from tiles to streams/ditches.

Version: 15 Sept 15  
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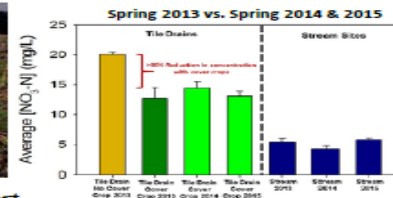


**Goal: Retain nutrients/soils on fields, and reduce stream export.**

### Nitrate-N export from tile drains is lower with cover crops



- Tile drain  $NO_3^-$  without cover crops is especially high during Winter 2012 and Spring 2013 (see left panel).
- In 2014 (Yr 1) and 2015 (Yr 2),  $NO_3^-$  from tile drains with widespread cover crop planting are lower and similar in concentration to tile drains draining fields w/ long term cover crops.



- Year 1 and Year 2 planting suggests that the planting of cover crops reduces tile drain nitrate concentrations by ~30%.

- Our data suggest that cover crops have the potential to significantly reduce N export from tile drain outlets.

### Conclusions:

- Cover crops provide a field-scale management solution that reduces nutrient loss to tile drains and keeps fertilizer on fields.
- Cover crops applied at the watershed scale have the potential to meet current reduction goals set by managers to significantly reduce nutrient export to downstream waters.



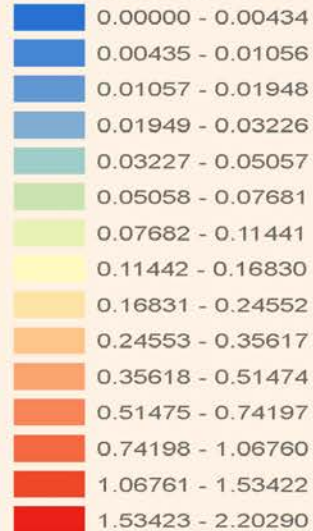
0 25 50 100 Kilometers

# DRAFT

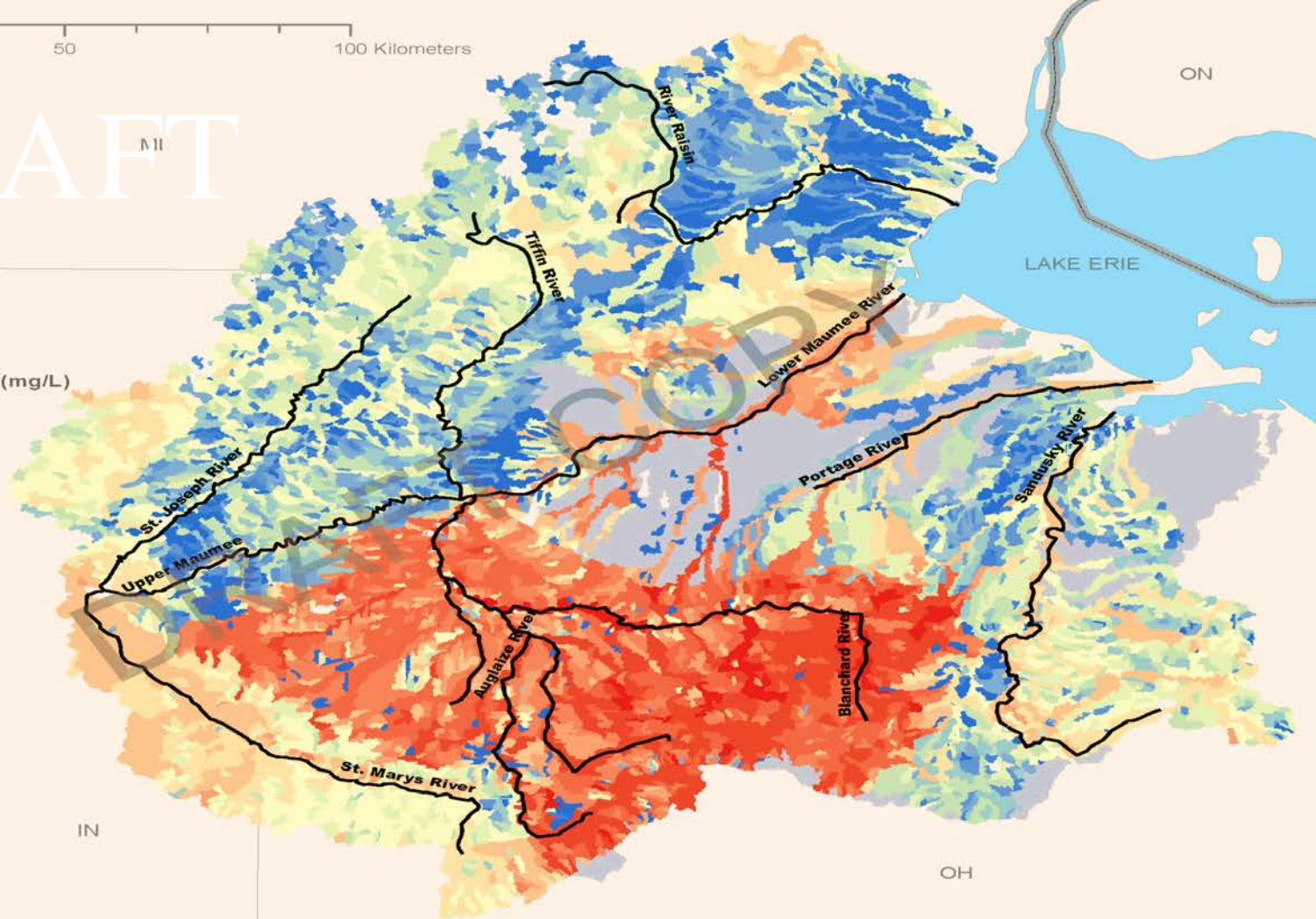
## WLEB Model Avg Predictions

Major Rivers

Med. Tot. Phosphorus Conc. (mg/L)



No Flow COMIDs  
Canada-USA Border







Private Third  
Party Audited  
Nutrient Service  
Providers

Voluntary







# 4R Nutrient Stewardship Advisory Committee



Corn Marketing Program of Michigan  
Michigan Corn Growers Association



SOIL AND WATER RESOURCES  
Ohio Department of Natural Resources



## Midwest Row Crop Initiative

Leading food retailers, brands, input providers and producers, including **Walmart, PepsiCo, Monsanto, Kellogg's, General Mills** and **Cargill**, are working with **respected conservation groups** – like **TNC, WWF and EDF** – and row crop **farmers** to meet growing consumer demand for more **sustainable food**.



## Midwest Row Crop Initiative

### *Stakeholder Engagement*

Together, we want to **support, enhance and accelerate** the environmentally-friendly agricultural practices already underway in Illinois, Iowa and Nebraska to **deliver more food** while...



Improving Water  
Quality



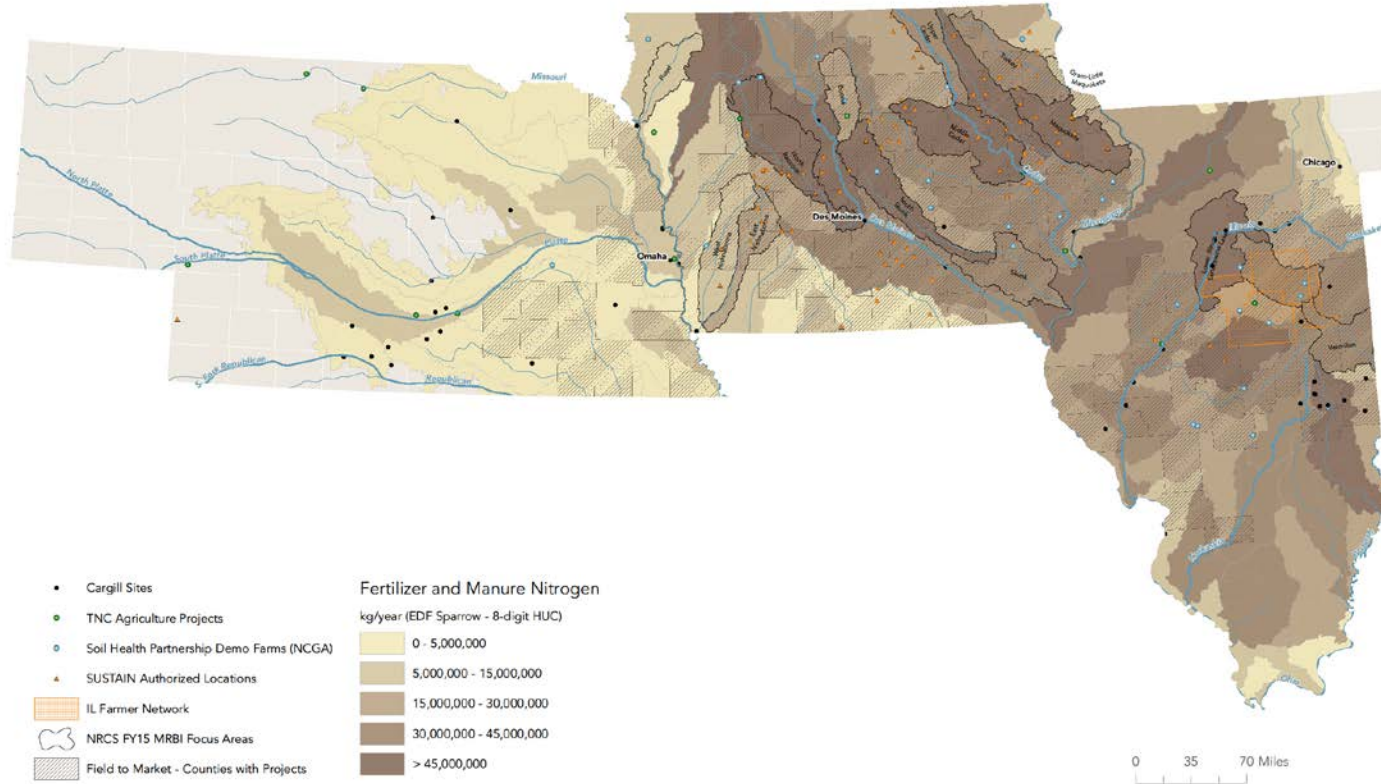
Optimizing Irrigation  
Efficiency



Reducing  
Greenhouse Gas  
Emissions



# Midwest Row Crop Initiative





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[nature.org/workinglands](https://www.nature.org/workinglands)

