

US EPA ARCHIVE DOCUMENT

GREAT LAKES COVER CROP INITIATIVE

A partnership forged to protect the Great Lakes by helping farmers use cover crops and conservation tillage systems to reduce pollution



Great Lakes – By the Numbers

2	Number of Nations whose land drains to the Great Lakes
5	Number of lakes that make up the Great Lakes
8	Number of States whose land drains to the Great Lakes
21	% of the World's fresh surface water held by the Great Lakes
84	% of North America's surface fresh water held by the Great Lakes
191	Number of years water is retained in Lake Superior
94,250	Number of square miles of surface area in the Great Lakes
201,460	Number of square miles of land that drain to the Great Lakes
33,191,365	Population of the Great Lakes Basin in 1991
162,000,000	Tons of cargo transported on the Lakes in 2002

Great Lakes Water Quality Concerns

- Sedimentation



Great Lakes Water Quality Concerns

- Sedimentation
- Nutrient Runoff



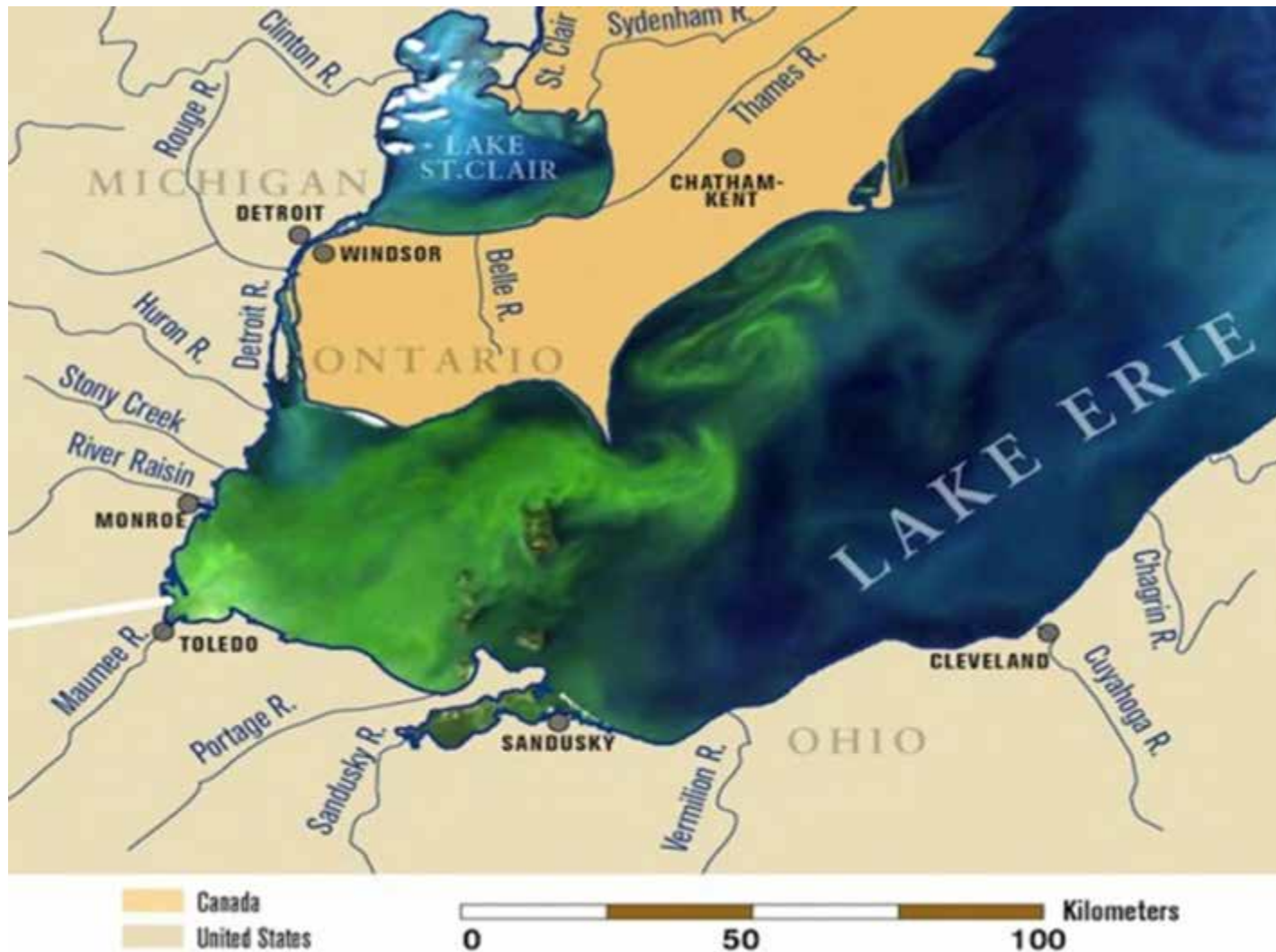
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Great Lakes Water Quality Concerns

- Sedimentation
- Nutrient Runoff
 - Algal Blooms



Issues in the Lakes



Damage to the Economy

State or Province	2008 GDP
New York	\$ 1,144,481,000,000
Illinois	\$ 633,697,000,000
Ontario	\$ 584,460,000,000
Pennsylvania	\$ 553,301,000,000
Ohio	\$ 471,508,000,000
Michigan	\$ 382,544,000,000
Minnesota	\$ 262,847,000,000
Indiana	\$ 254,861,000,000
Wisconsin	\$ 240,429,000,000
TOTAL	\$ 4,528,128,000,000

Great Lakes – An Important Global Resource

- Obviously, for many reasons, the Great Lakes are a critical resource not only for the US, but also North America and they also have global significance.
- What can we do to protect them?



Who is the GLCCI?

- We are agricultural educators from Indiana, Ohio and Michigan, representing:

- Extension
- Universities
- Non-profit
- NRCS
- Conservation Districts

PURDUE
UNIVERSITY



MICHIGAN STATE
UNIVERSITY
EXTENSION

The Ohio No-Till Council



Ohio Federation of Soil and Water Conservation Districts

Meet the Team - CTIC



Chad Watts – Project Director - CTIC

Meet the Team – Michigan State University



Christina Curell, MSUE – Lake Michigan



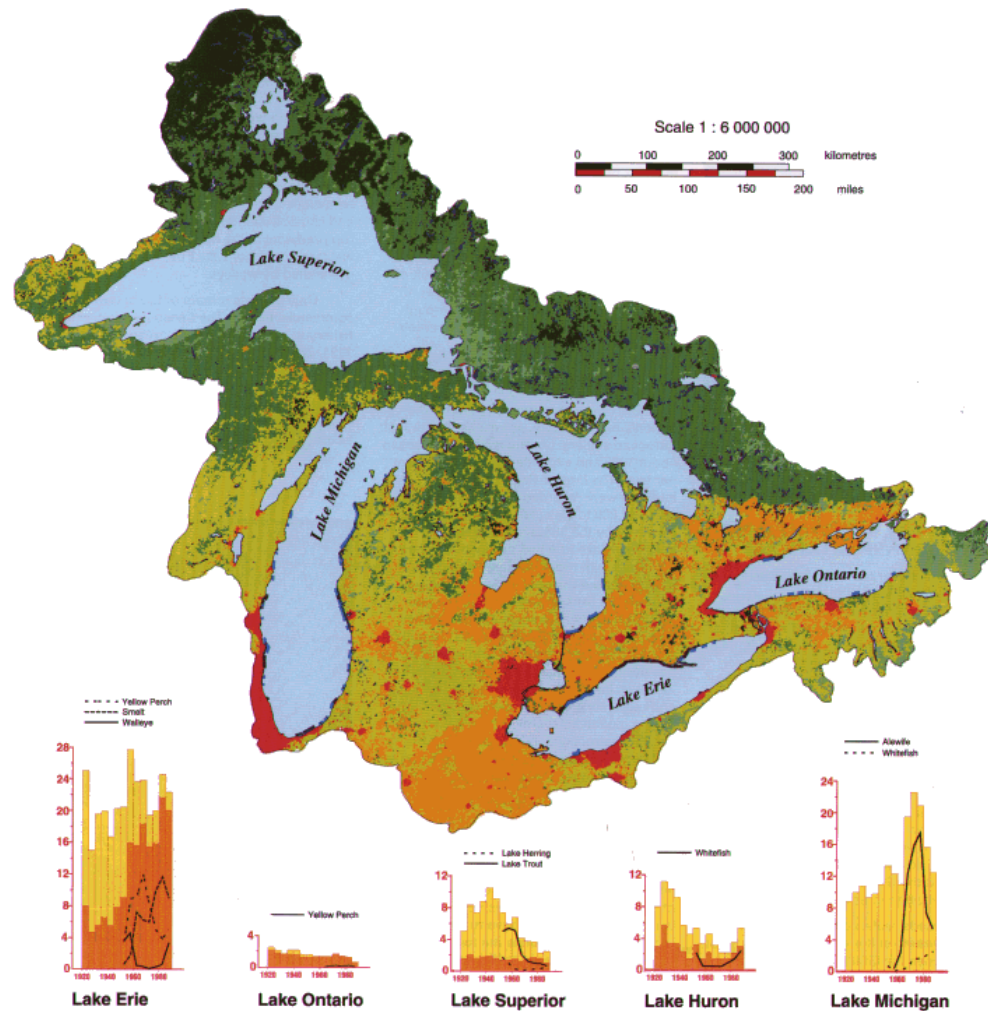
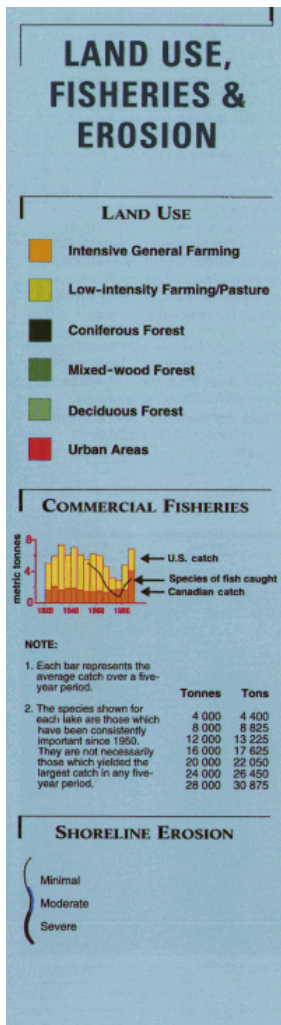
Paul Gross, MSUE – Lake Huron

Meet the Team – The Ohio State University

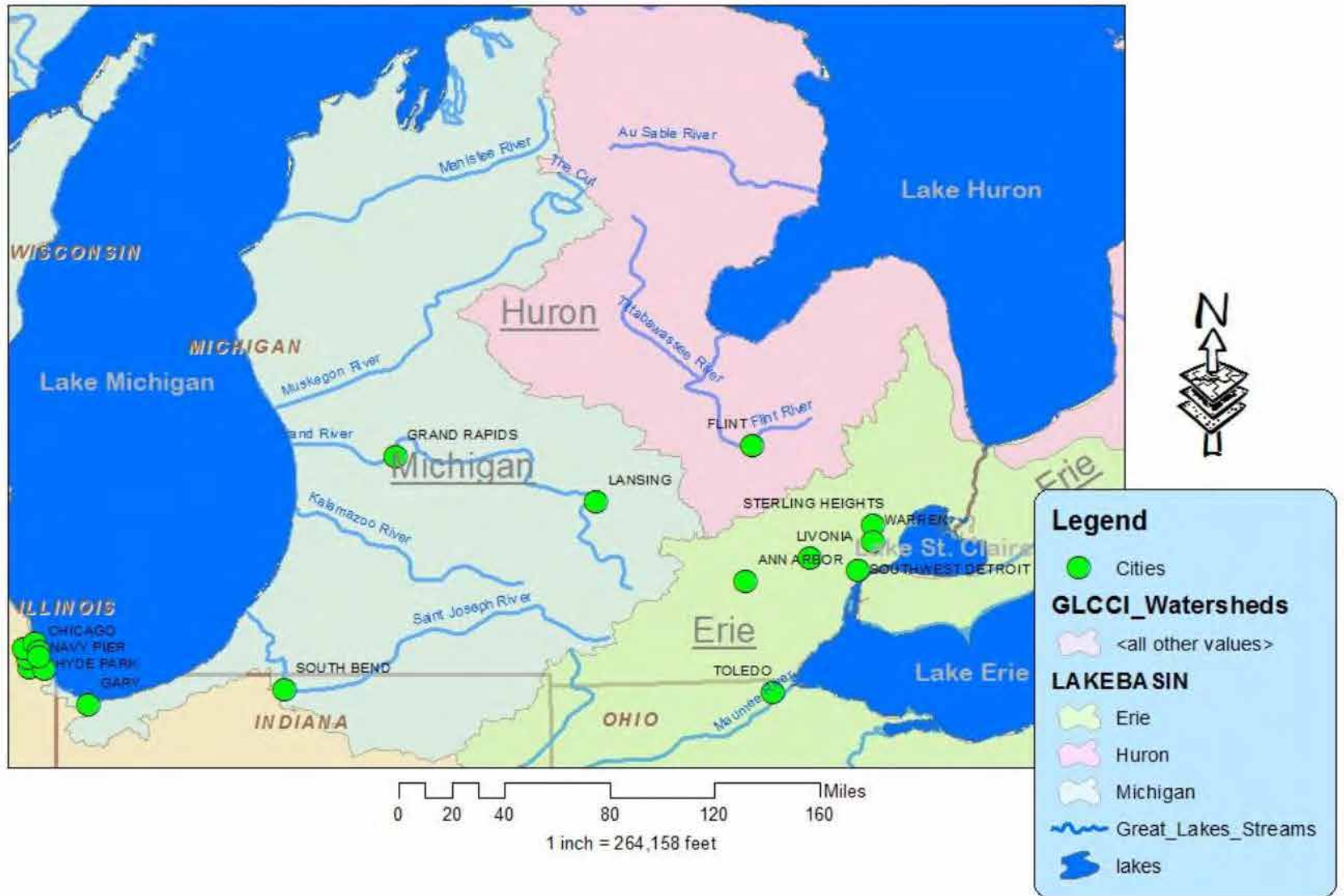


Florian Chirra – OSUE – Lake Erie

Land Use in the Great Lakes



GLCCI Priority Watershed Areas



What is GLCCI?

- Funded by the US EPA - Great Lakes Restoration Initiative (GLRI) in 2010
- Goal was to provide:
 - Technical Support
 - Educational Support
 - Social Support
- Objectives:
 - Work with farmers to:
 - Plant 15,000 acres of cover crops
 - Conduct 18 educational meetings to help farmers use cover crops and conservation tillage systems on their farms



Technical Support

- Providing expert one-on-one assistance to farmers to help them to successfully plant cover crops as part of a conservation system on their farm



Technical Support

- Is about getting cover crops incorporated into the production systems.
- Starts with science based assessment of farmers needs and opportunities
- Developing the plans for the best options for using cover crops to address the farmers resource concerns: erosion, compaction, N source, N scavenger, soil builder, etc.



Technical Support

Choosing a Cover Crop

What are your objectives?

What is your cropping system?

What is your tillage system?

What is your climate?

What are your soil types?

What are your soil characteristics?

Technical Support

- Working with farmers to connect the dots
- An ongoing process of assessment, recommended practices, implementation, evaluation and reassessment
- Innovation, testing new systems and practices to meet the farmers needs and protecting the waters of the Great Lakes



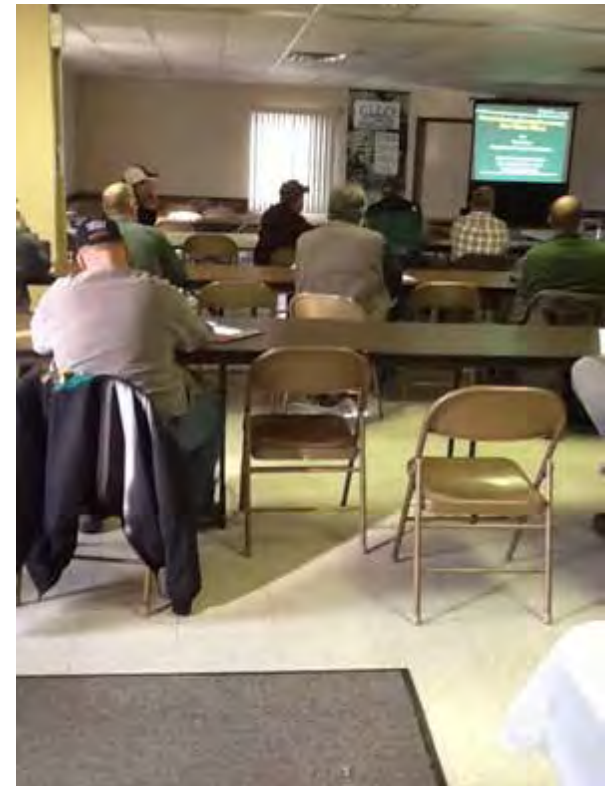
Educational Support

- Providing educational opportunities to help farmers better understand how to incorporate cover crops on their farms as part of a conservation farming system



Workshops

- Benefits of Cover Crops
- Choosing Cover Crops
- Economics of Cover Crops



Field Days

- Cover Crop Species
- Different Seeding Methods
- Cover Crop Benefits to the Environment



Demonstrations

- Cover Crops impact to soil health
- Cover Crops impact to production
- Cover Crops impact to the environment



Social Support

- Aimed at helping producers learn from and interact with one another about cover crops and conservation farming systems
- Promoting a culture of collaboration and learning from one another.



2013 National No-Tillage Conference

- 20 farmers from the GLCCI project area participated with GLCCI to plant cover crops on their farms attended the 2013 National No-Tillage Conference in Indianapolis



Agricultural Retailer Meeting

- Working with Ag retailers in the Western Lake Erie Basin (WLEB) on how they can connect with conservationists to promote cover crops to farmers



Producer Focus Group

- Sharing “lessons learned” through GLCCI
- Relating stories of how each started using cover crops
- Sharing ideas and strategies on how to promote cover crops to other farmers
- Farmers teaching conservationists, helping shape programs



Conservation In Action Tour 2013

- Producers were given opportunities to attend CTIC's national conservation tour that highlights conservation agriculture
- The 2013 tour was held in Livingston County, IL around CTIC's Indian Creek watershed project



Connecting Farmers and Experts

- Cover Crop Listserves
- Publications
- Web-based decision tools
- Informational websites
- Presentations by Experts



Midwest Cover Crops Council - Cover Crop Decision Tool
IN: De Kalb County Seeding Dates
 (C) Common Use - Consideration: Some Knowledge about species/use
 (E) Emerging Use - Limited State Knowledge about species/use
 Attribute Ratings: 0 - Poor, 1 - Fair, 2 - Good, 3 - Very Good, 4 - Excellent

Location Information
 State/Province: Indiana
 County: De Kalb

Cover Crop Information
 Crop: Corn - Grain
 Plant Date: ca 14/2011
 Harvest Date: 10/15/2011

Field Information
 Soil/Fertility Class: Somewhat Poorly Drained
 Address Change (Frost, Seiches, etc): Yes
 Flooding/Frosting: No

Cover Crop Attributes
 #1: Nitrogen Scavenger
 #2: Wind Erosion
 #3: Erosion Control

Select cover crop species information sheet
 Rye, Winter Cereal
 Submit

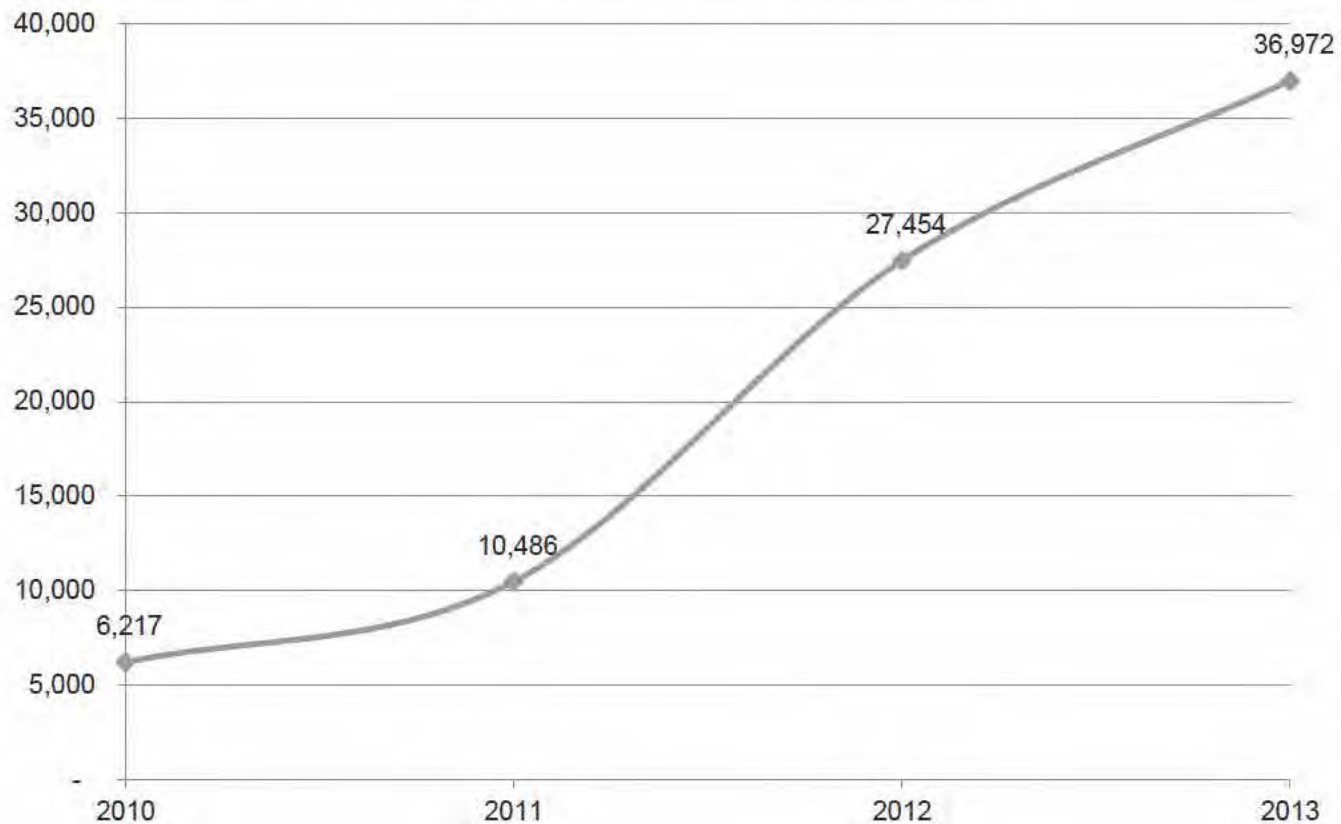
Species	0	1	2	3	4
Legume					
Wheat, Winter C-3.4					
Wheat, Spring C-3.2					
Wheat, Fall C-3.2					
Rye, Winter C-3.4					
Roadside Annual C-3.2					
Bromus hordeaceus C-3.2					
Sorghum C-3.1					
Triticum, Winter C-3.4					
Wheat, Winter C-3.4					
Grass					
Rhodesiola C-3.2					
Other					
Corn, Common F-3.2					
Notes					
50% winter, 50% fall					
40% A Roadside, 60% F-3.2					
50% C-3.1, 50% F-3.2					
60% C-3.1, 40% F-3.2					



What GLCCI Accomplished

- Planted 36,972 Acres of cover crops

Cumulative Cover Crop Acres Planted

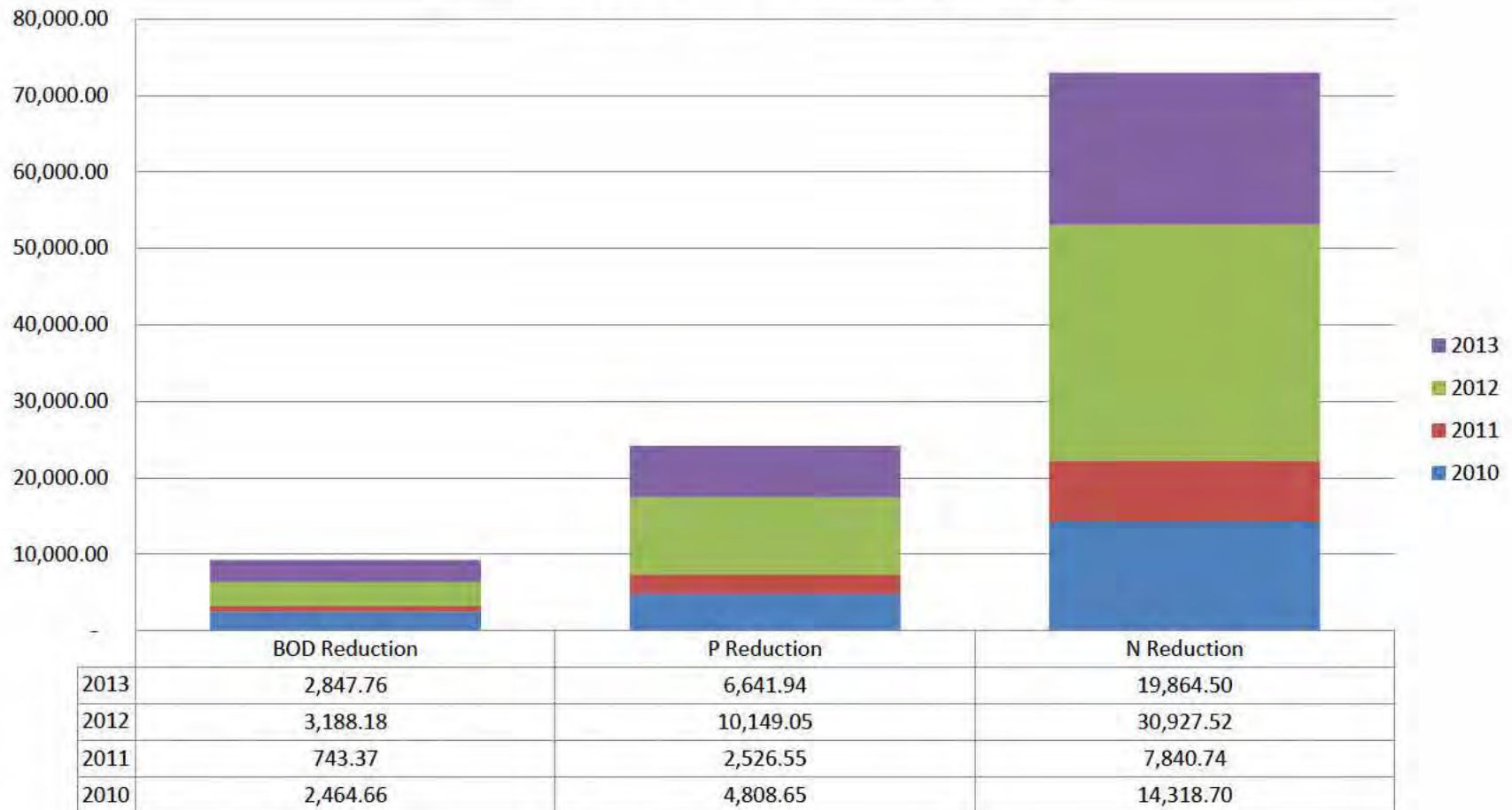


Total Nutrient Load Reduction

Year	Cover Crops Planted	Annual Nitrogen Reduction	Annual Phosphorous Reduction
	Acres Planted	Pounds per Year	Pounds per Year
2010	6,217	14,319	4,809
2011	4,269	7,841	2,527
2012	16,968	30,928	10,149
2013	9,518	19,865	6,642
Total	36,972	72,951	24,126

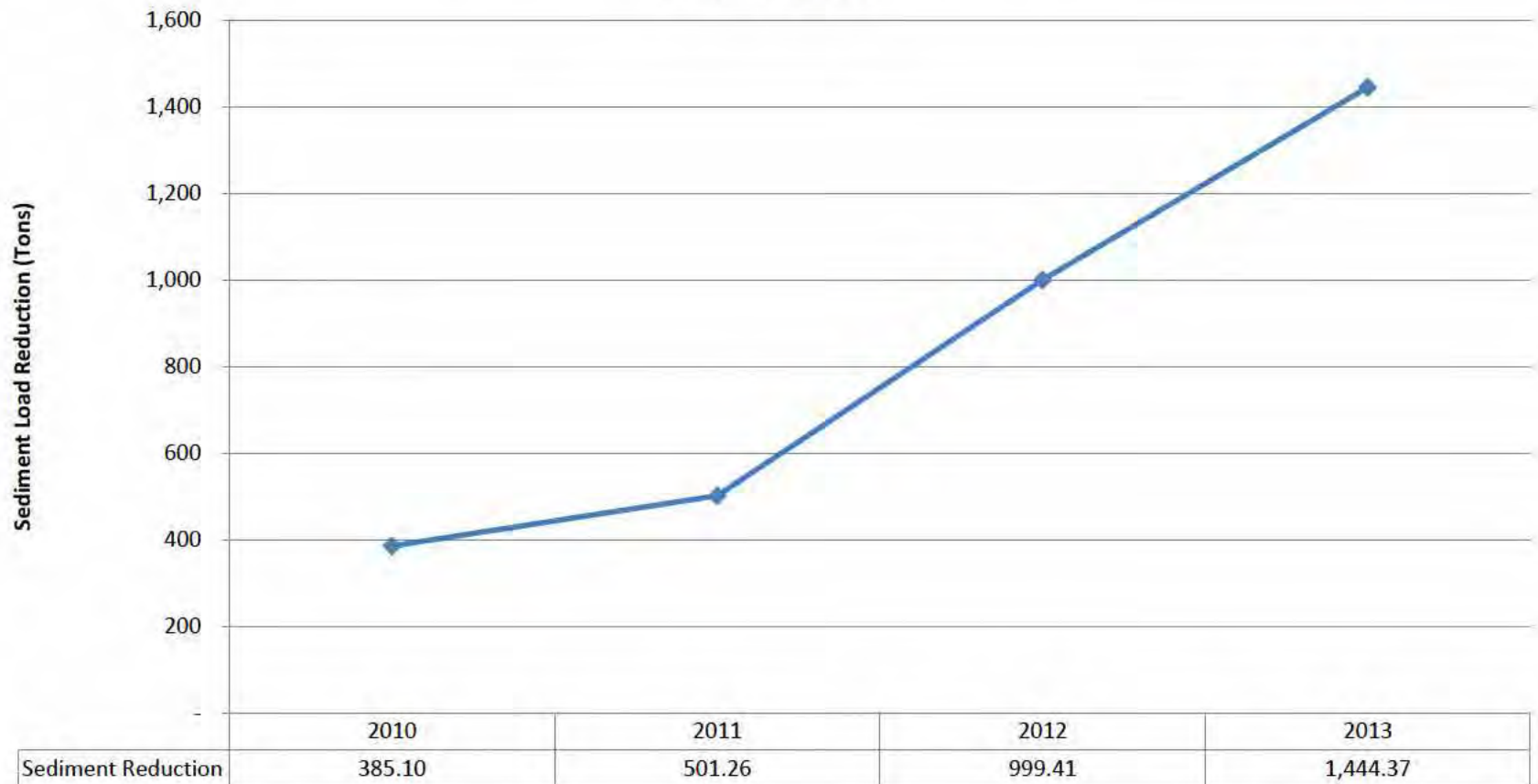
Load Reductions Achieved

Annual Load Reductions (Lbs / Year)



Sediment Load Reductions

**Cumulative Sediment Reduction
(tons / year)**



Meetings and Presentations

- GLCCI Participated in 81 cover crop educational meetings and field days
 - 3,401 people were impacted at these meetings
- Groups / individuals impacted:
 - Farmers
 - Agricultural retailers
 - Watershed group members
 - Conservation agency staff members
- Partners:
 - Soil and Water Conservation Districts (SWCDs)
 - Watershed groups
 - Conservation Agencies (Local, State and Federal)

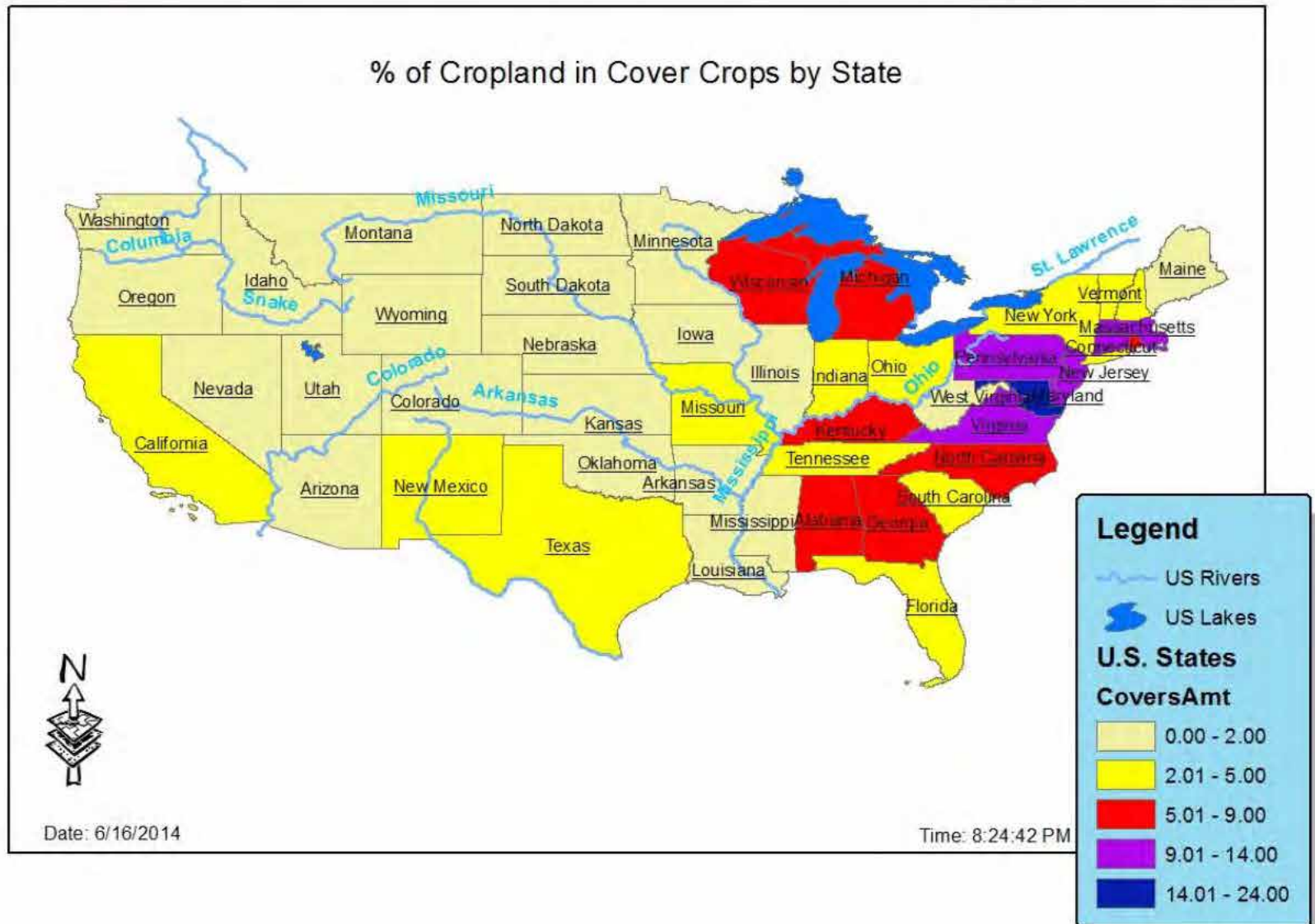


What is the potential for cover crops?

Acres of Cover Crops Planted in 2012	Cropland Acres in 2012	% of US Cropland where cover crops are used
56,799,829	2,105,821,528	2.7 %

We have a long way to go!

% of Cropland under cover by State



Keys to Success

- Partnerships
 - With other agencies to do meetings and meet with farmers
 - GLCCI partners brought the right mix of expertise to the table
- Direct communication and technical assistance to farmers
- Knowledgeable technical resources
- Momentum behind cover crops and soil health management systems because of soil health focus
- Real issues addressed and positive outcomes achieved
- Really good, committed farmer cooperators who are champions of cover crops and conservation tillage systems and are willing to share their experiences