# Environmental & Water Quality Programing

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# What are the needs?

Field Crops Advisory Group 2014

Farmer Discussion Groups 2013 & 2014

Farmer to Farmer discussions 2015

# Field Crops Advisory Groups

- Statewide priorities
  - Soil Management
  - Profitability
  - Production Risks
- Next 3 years
  - Regulations (4 of 6)

- Southeast Michigan
  - Western Lake Erie Basin
  - Resistance Management
  - Soil Health
- Next 3 years
  - WLEB
  - Regulations/water quality/Environment

# Farmer Discussion Groups

MICHIGAN STATE UNIVERSITY | Extension

## 2013

**Educators and researcher from various disciplines (fruit, bioenergy, cover crops, etc.)**

- Field crop producers and industry representatives suggested **rate and degree of change may be increasing**, yet each year is different and **successful production depends on responsive management of current conditions**

## 2014

- **100% of farmers** said the discussion on **sustainable corn production** …**beneficial** …
- **75%** indicated the discussion help them to **think differently about climate variability**.

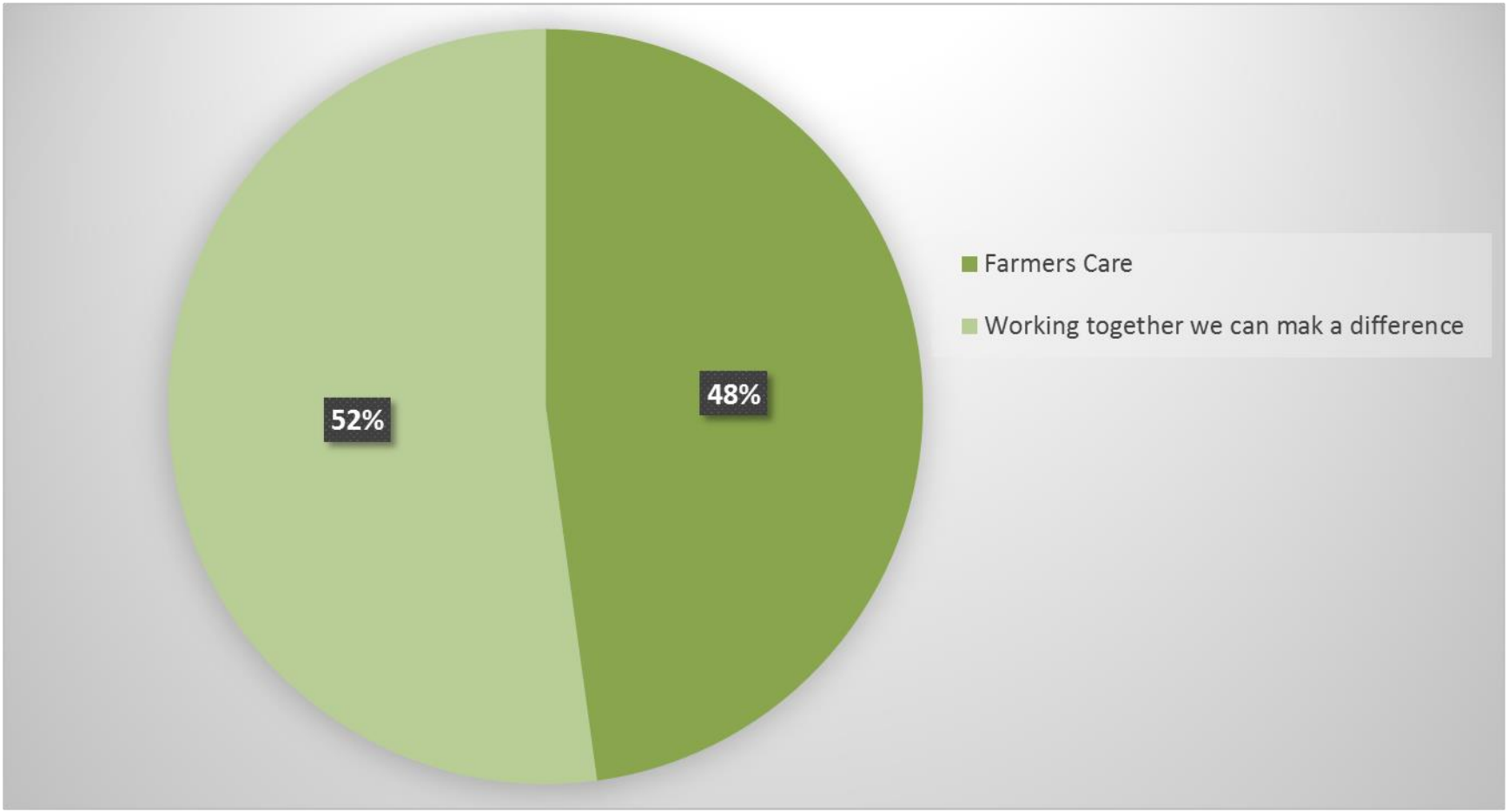
**Next 1-2 years…**

- **75%** were **somewhat likely to adopt new practices**

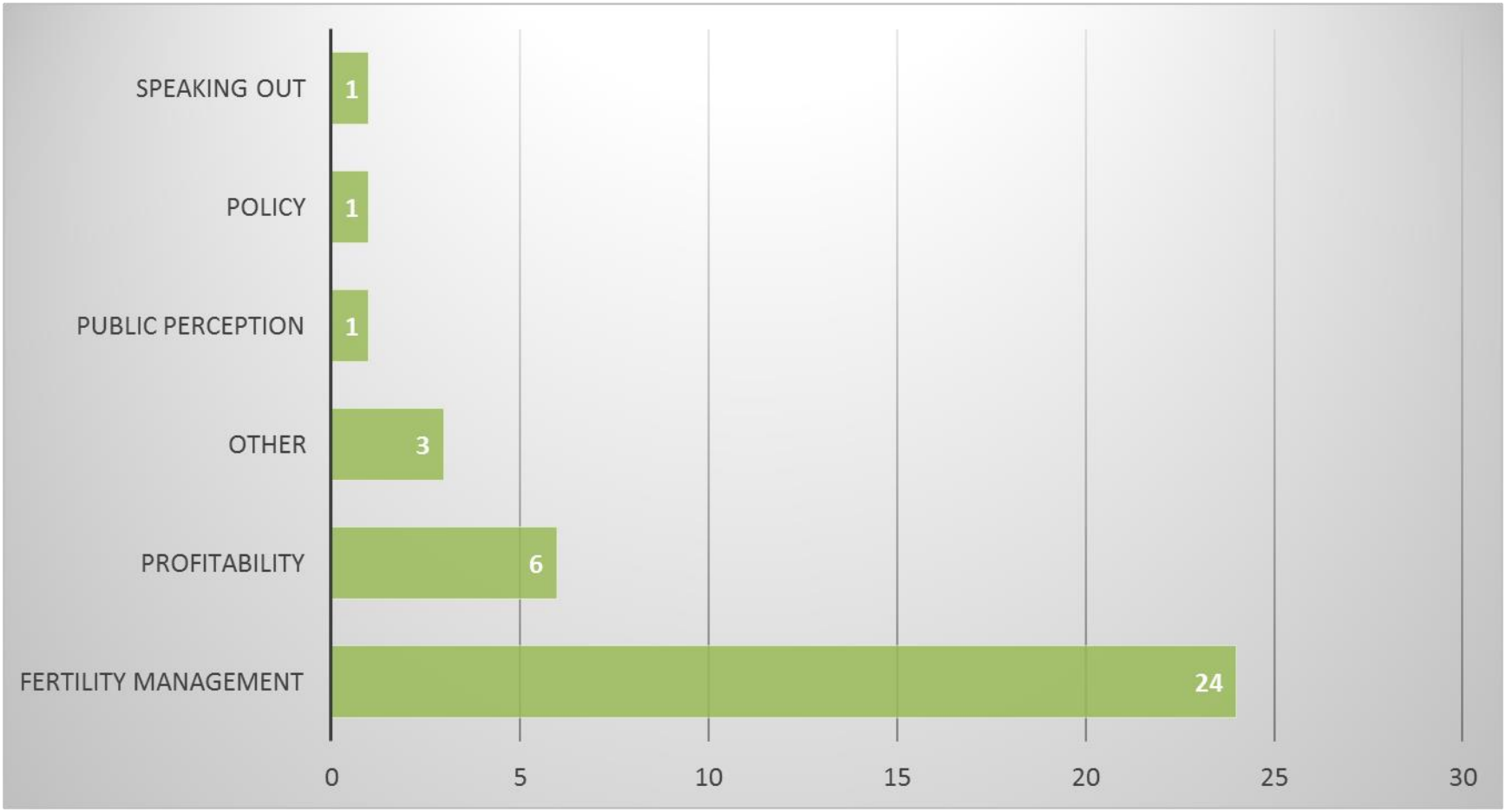
**Next 5-10 years…**

- **95%** were somewhat likely(63%) or very likely (31%) to adopting new practices.

# Message to the general public



# Challenges farms face in WLEB



# Building Capacity

MSUE Teams

Partners

Collaborators

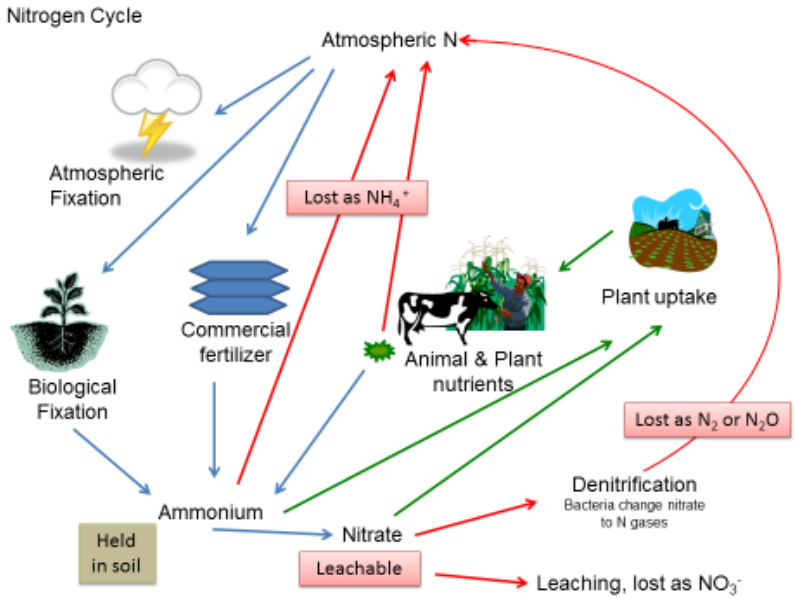
# Climate Variability and Change Action Team Mission

- Help MSUE personnel and clientele **understand inter-relationships** between climate, agriculture, natural resources and society.
- Introduce MSUE personnel and clientele to scenarios for climate change and **potential implications for Michigan's agricultural and natural ecosystems**.
- **Disseminate science-based information** to a broader public audience on regional climate change and associated societal response options.
- Design extension programming to work with clientele on **building adaptive capacity and resilience to seasonal climate variability and long-term changes** in climate.
- **Promote and facilitate linkages** between MSUE personnel and stakeholders who need scientific information on climate risks and who would benefit from development of new technologies and decision support systems.

# MSU E's N in the Environment Work Group – Ag & Environment cross institute team?

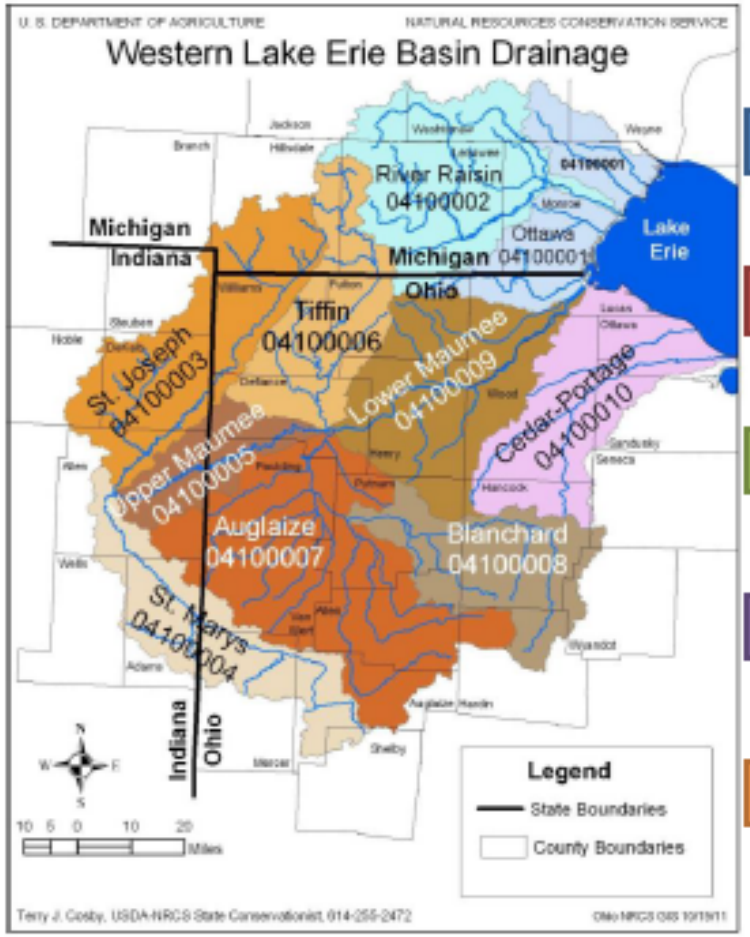
Engage Educators across disciplines in N programing:

- N cycle
- Field Days
- Field demonstrations
- 2014 worked with four farmers




"We recognize some of the most innovative practices will be developed by farmers. Our goal is assist the evaluation of those practices."

# Farmers Implementing Best Management Practices to Improve Water Quality in the Western Lake Erie Basin (WLEB)




*MSUE Efforts in Programming will Focus on Five Specific Areas*

## Targeted Educational Campaign

- Series of articles focusing on the history, current status and Best Management Practices producers are using to address nutrient loading in the WLEB.

## Webinar Series

- Short and concise messages with specialists and/or professionals addressing factors impacting water quality in the WLEB.

## Field Demonstrations

- Demonstrations to highlight Best Management Practices that reduce the risk of nutrients leaving fields.

## MSU Nutrient Recommendations

- Provide up-to-date (web-based) MSU Nutrient Recommendations for Field Crop and Vegetable producers to reduce excess nutrients leaving fields.

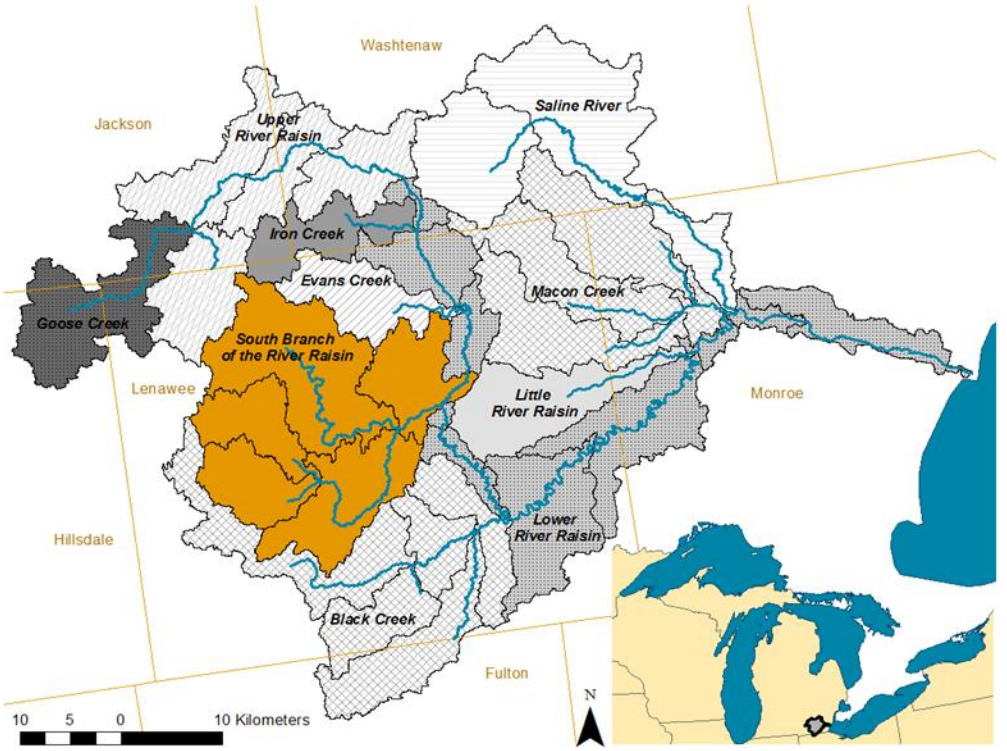
## MSUE Western Lake Erie Basin Website

- Creation of a webpage housed on www.msue.msu.edu to house the information (articles, webinars, field demonstrations, MSU Nutrient Recommendations, etc.) developed for producers in the WLEB.

# 2014 awardees for a White House and EPA Challenge:
## Winning Solutions for Nutrient Pollution.

## Cooling the Hot Spots

- ✓ Pilot program
- ✓ Interactions with low-adopting farmers,
- ✓ Refinement of hotspot mapping,
- ✓ installation of BMPs.

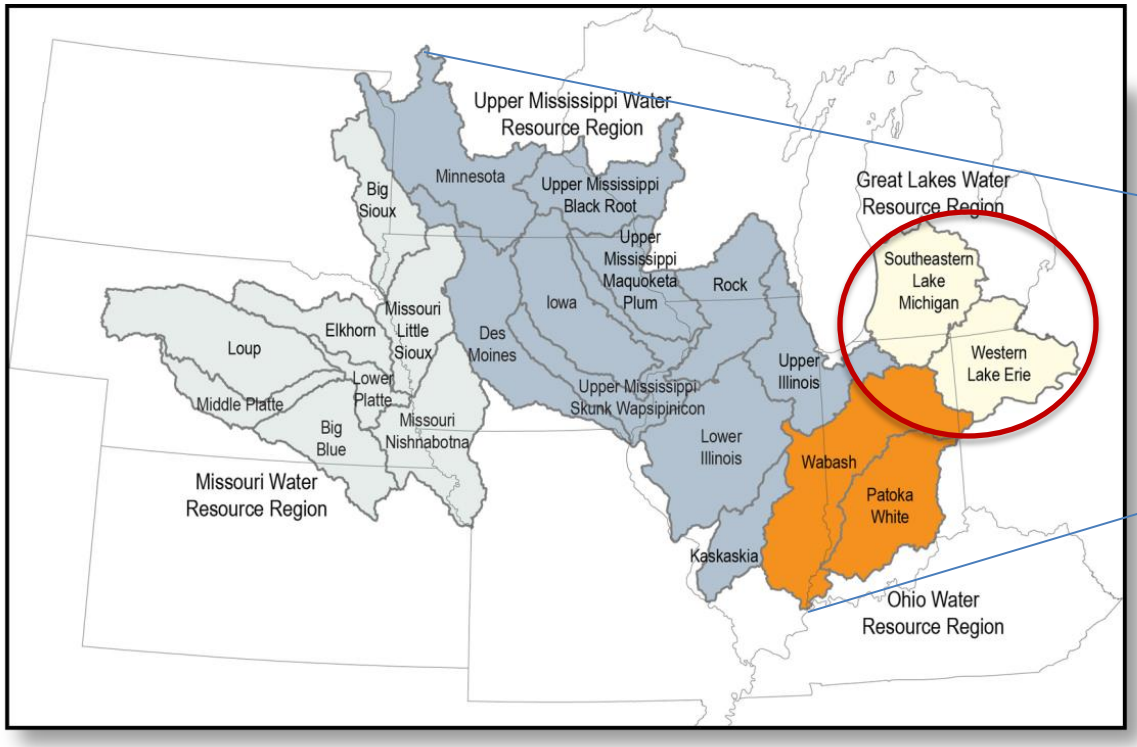


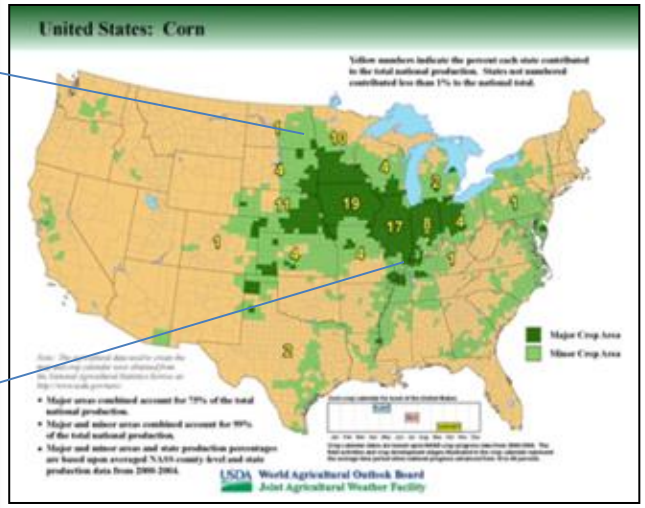

South Brand of the River Raisin, Lenawee Co.

# Michigan Ag Environmental Assurance Program


- Risk Assessments
- On-farm Assistance
- Programs
- Farmer to Famer

# Working with Universities across the Mid-West




**Collaborating on Grants:**

- Sustainable Corn
- Useful to Usable, U2U project
- Great Lakes Cover Crop Initiative
- GLISA

***Many coming to an end***

SUSTAINABLE CORN.ORG
CROPS, CLIMATE, CULTURE AND CHANGE

USDA
United States Department of Agriculture
National Institute of Food and Agriculture

# Rolling it out …

Field Research
Field Days
Educational Program
Articles
Web Pages

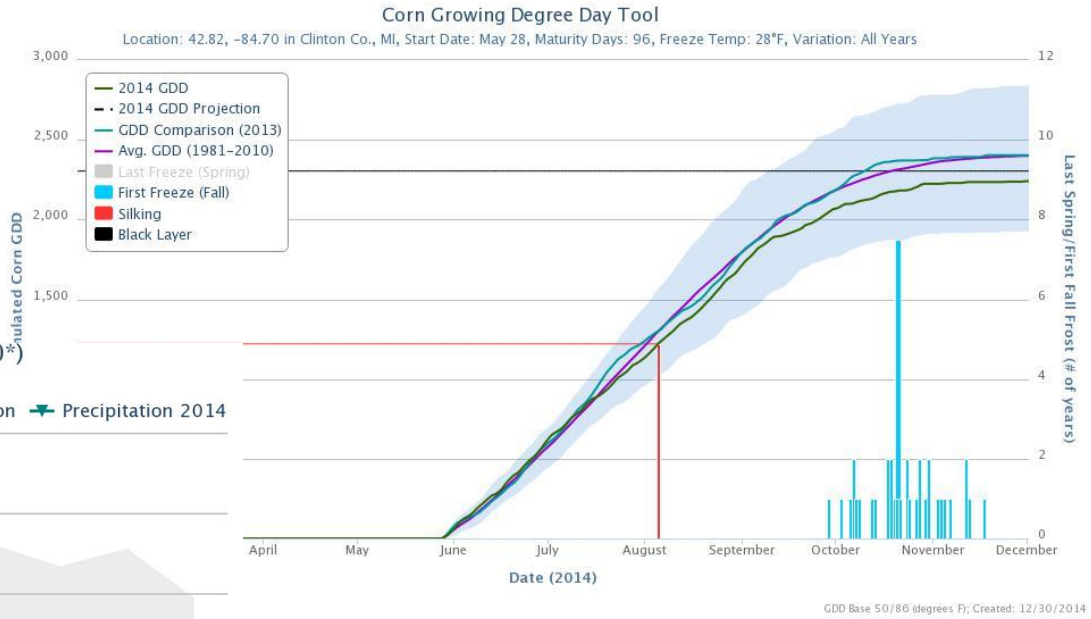
*Taking the Leadership on key issues*

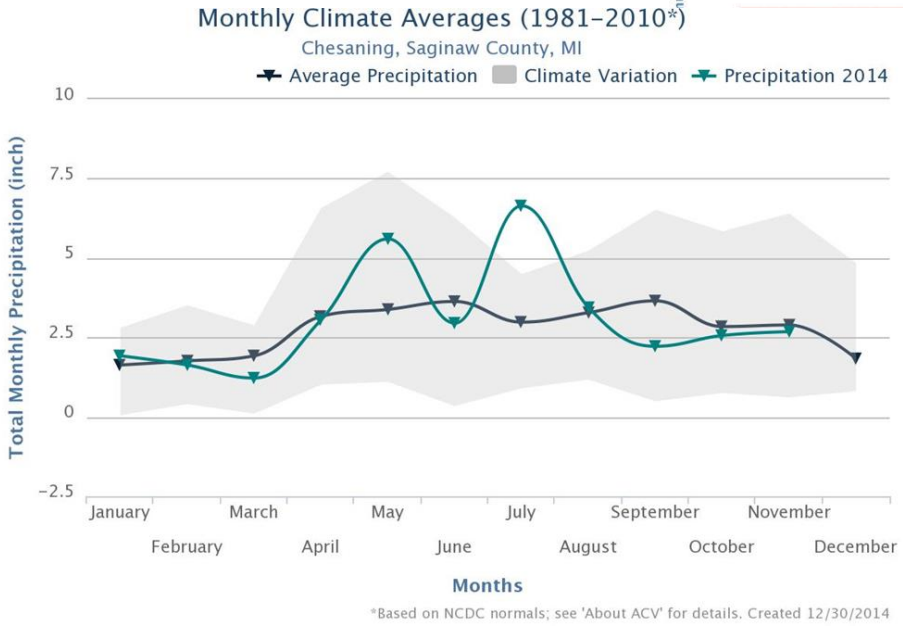
# Farmer Driven Field Trials

## Nitrogen

- 2014 (4 producers)
  - Sidedress swine manure
  - Apply through pre-tassel
  - Rate based on soil type
  - N rate under irrigation
- Funded for 2015

# Challenging Growing Season

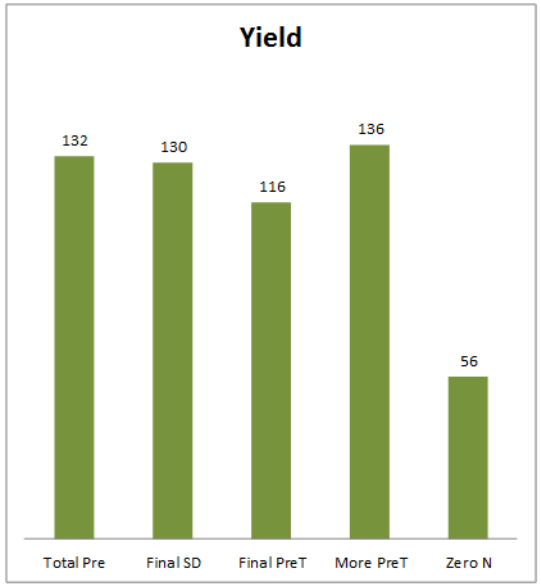


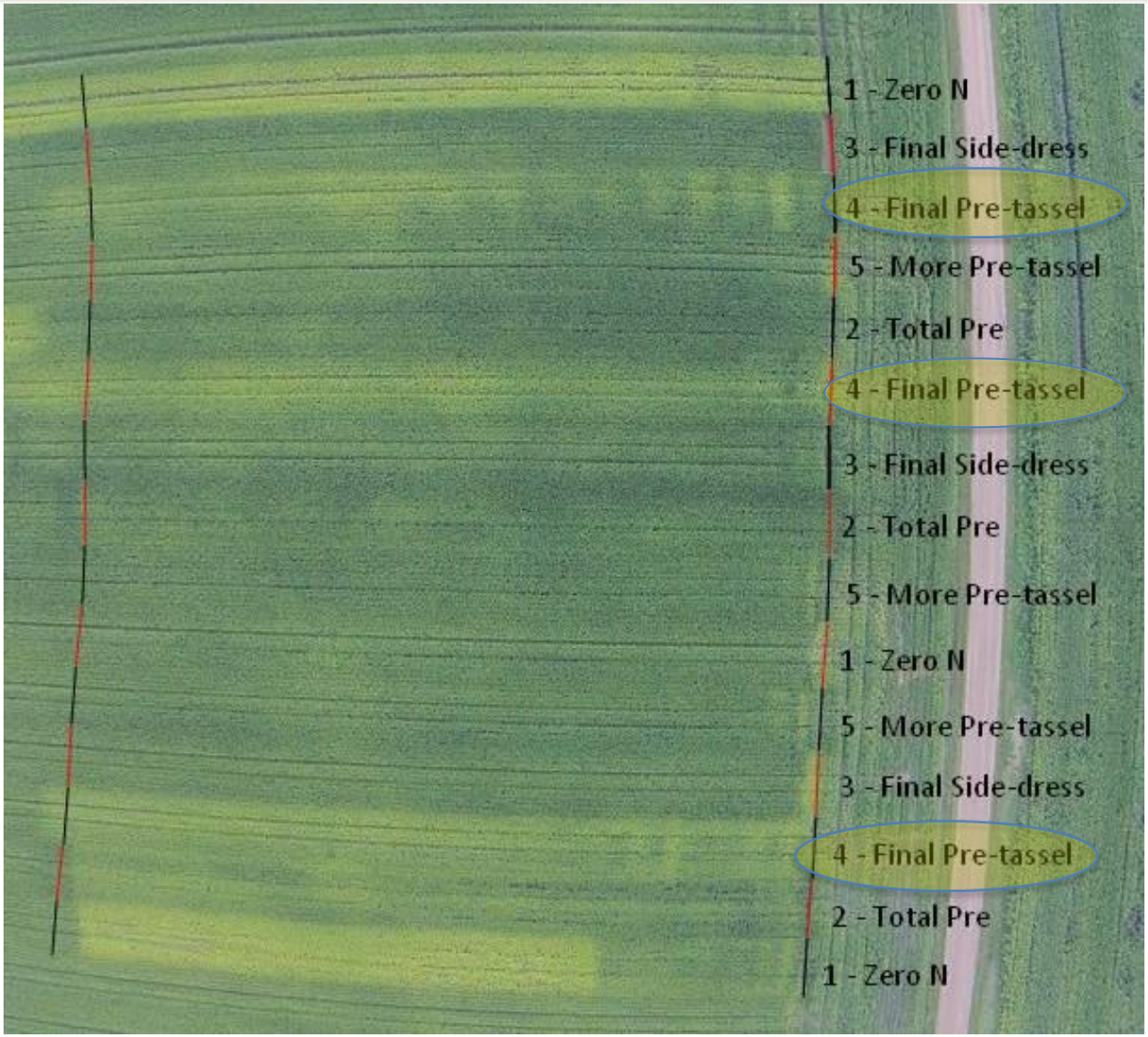




*Using U2U tools to explain growing season!*

# Big Picture View – early August

1. Zero N on ends
2. Final Pre-Tassel



# Thoughts…

- It all depends on the weather
- Timing of late N is very important
- Look at late N as a rescue
- This is just one year – more to come!

# Field Days

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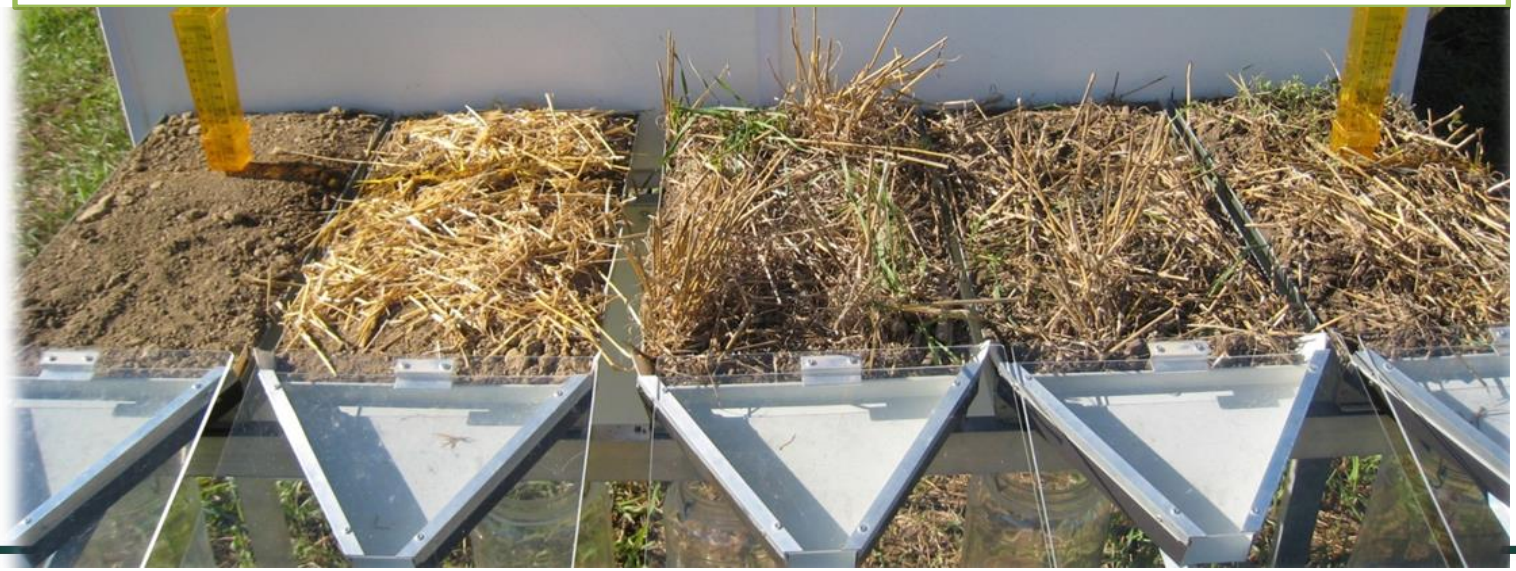
Fall 2012 - Bioegnergy, Cover Crop & Corn Residue Mgt

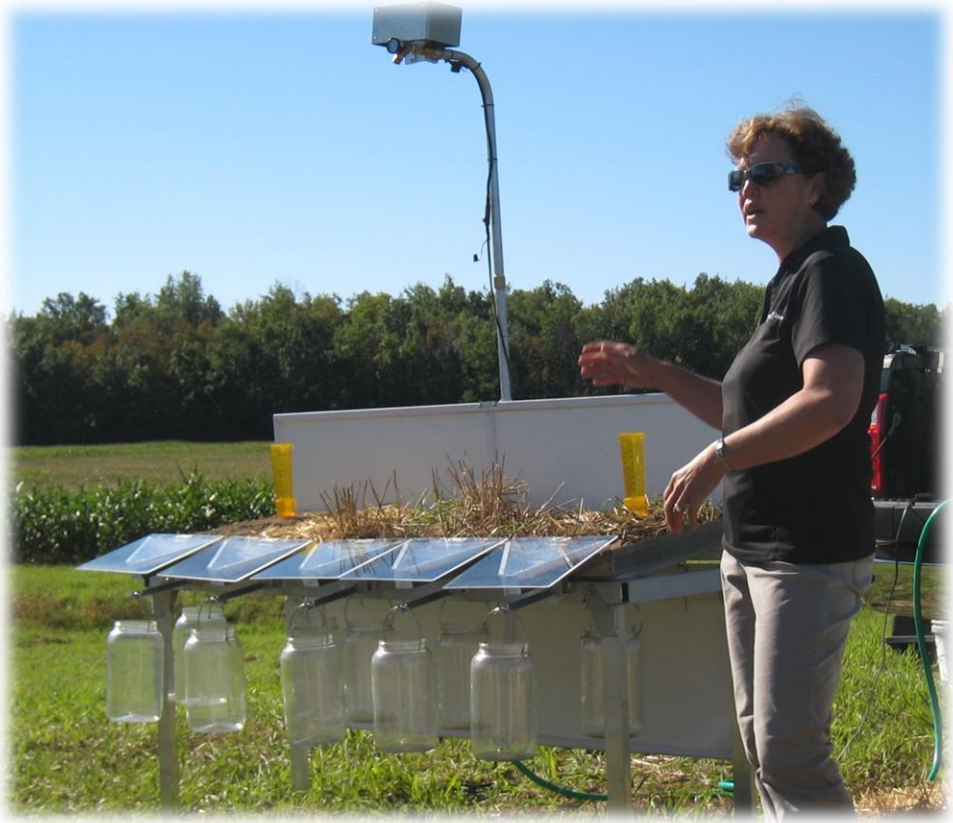
Summer 2014 – Smart Drainage Field Day: Use It, Don't Lose It



# How water moves through the soil…

Discussion on:

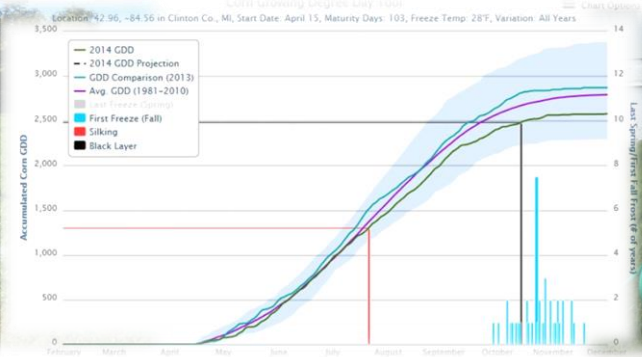
- Extreme events
- Runoff
- Infiltration
- Nutrient movement
- Cropping systems



Early in the rain event water moves through soil in no-till system

# Talking to educators and industry…

- Extension In-service Dec. 2013
- Cool Tools training August 2014
- Pioneer Soil Health August 2014 Training
- Regional Drain Commissioners October 2014




# Regulation example

- Manure Application Risk…
- Evaluate a field for manure run-off potential
  - On snow covered
  - Or frozen soil


MSUE Role

- Train the trainer
- Educate Decision Makers
- Think Tank to evaluate changes

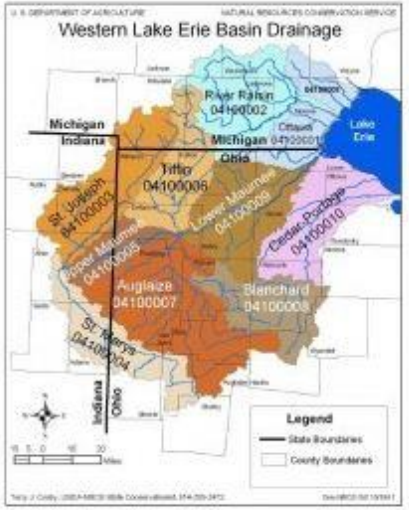
# Articles

- Climate, weather and farming; What is history telling us? December 2012
- Website and blog share crop research and engage Corn Belt farmers, May 2013
- Concerned about soil compaction? Stick a shovel in it!, June 2013
- Planting delays are not unique to Mid-Michigan, June 2013
- Managing fields after wheat harvest, July 2013
- Will corn mature in Mid-Michigan?, September 2013
- Farmers weigh in on nitrogen management, April 2014
- Web-based corn growing degree day tool helps with planting decisions, April 2014
- Planting corn past Memorial Day – What are the risks?, May 2014
- Evaluating crop damage series, June 2014
- Keeping nutrients in the field and out of tile lines, July 2015

# Western Lake Erie Basin



## Farmers implementing best management practices to improve water quality in the Western Lake Erie Basin (WLEB)




Lake Erie, considered the 11th or 12th largest lake in the world by surface area, is the shallowest of the Great Lakes averaging 62 feet in depth with a maximum depth of 210 feet. Because of its shallow depth, warm waters, and excessive input of nutrients from the surrounding land area, Lake Erie is particularly susceptible to algal blooms. To learn more, read Agriculture's Role in Protecting Lake Erie. Photo Credit:

www.nrcs.usda.gov Western Lake Erie Basin Watershed Map.

**Related News**

## Western Lake Erie Basin

Targeted Educational Campaign

- Target local media
- Increase awareness

**Related News**

**Twenty five causes of excess soluble phosphorus in Lake Erie**

*May 28, 2015* | **Monica Day** | Soluble phosphorus has been identified as one of the major contributors to the harmful algal blooms in Lake Erie. Unfortunately, there is not one simple solution.

**Managing the farming system to feed our crops and protect our water**

*April 17, 2015* | **Tim Harrigan** | Integrating conservation practices throughout the farming system can keep crop nutrients in the root zone and out of waterways.

**Agriculture's role in protecting Lake Erie**

*April 1, 2015* | **Christina Curell** | Phosphorus runoff: A large contributor to problems in Western Lake Erie Basin.

**On the re-eutrophication of Lake Erie**

*March 25, 2015* | **Tim Harrigan** | Is there something farmers could do to have the greatest impact on improving water quality?

**Feeding our crops, protecting our water in a changing climate**

*February 3, 2015* | **Tim Harrigan** | Providing nutrients to crops is essential to farming practices, but is there a way to control water run off with better on-farm management tools?

# Thank You!

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