

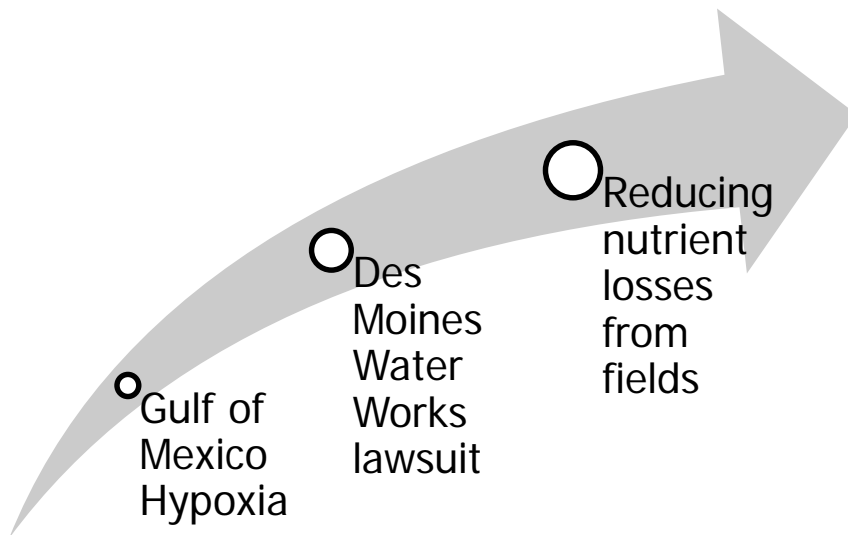
# Dead Zones & Drinking Water:

## *Farming's Nutrient Loss Challenge*

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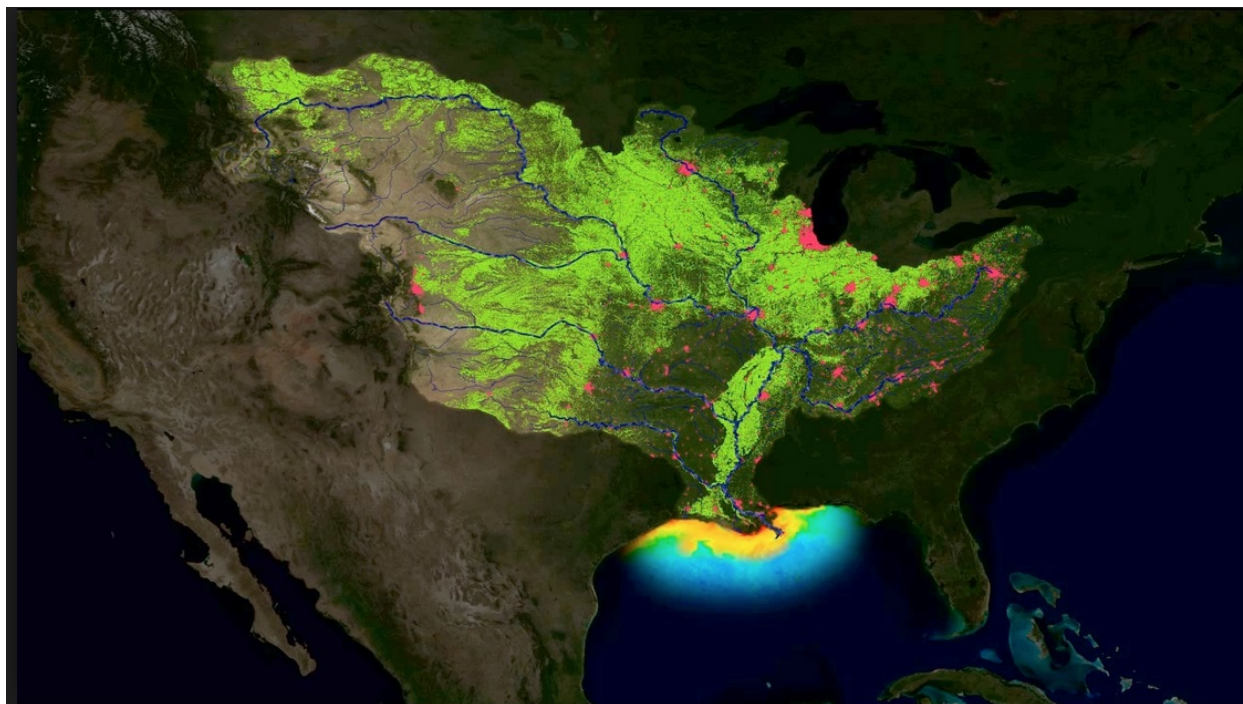
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# WATER QUALITY CHALLENGES FOR FARMING



# GULF HYPOXIA & THE MISSISSIPPI RIVER BASIN

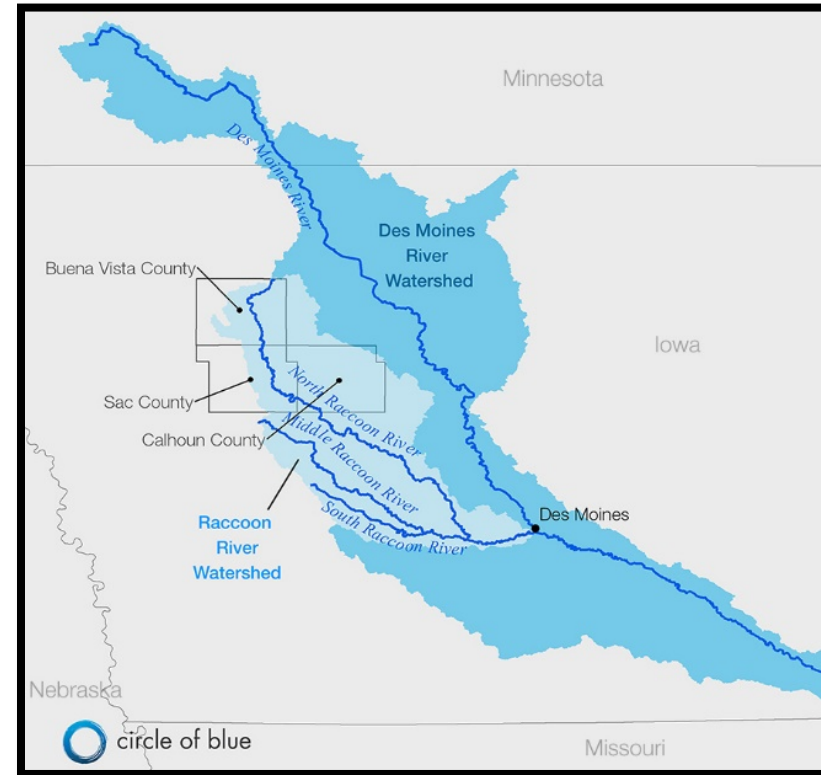
- ❖ Third largest drainage basin in the world; Drains 41% and 31 of the 48 contiguous states
- ❖ USDA: 242 million acres of major commodity cropland; \$54 billion in agricultural products
- ❖ Hypoxia or dead zone: over 5,000 square miles in 2014
- ❖ Agriculture may contribute 70% of the delivered nitrogen and phosphorous
- ❖ Gulf Restoration Network v. EPA; nutrient criteria



Source: [http://www.noaanews.noaa.gov/stories2011/20110728\\_sullivan.html](http://www.noaanews.noaa.gov/stories2011/20110728_sullivan.html)

# DES MOINES WATERWORKS LAWSUIT

- ❖ DMWW: water with nitrates from district drainage is a point source and subject to Clean Water Act
- ❖ DMWW claims costs: \$4.1m on nitrate removal equip; \$7,000 per day to operate; new equip at \$76m to \$183.5m; spent \$1.5m since Dec. 2014
- ❖ Drainage Districts: local government; public utility; tax/assessment & eminent domain



# DES MOINES LAWSUIT & CLEAN WATER ACT



Source: [http://www.agriculture.com/news/policy/iowa-water-facility-pls-suit-over-ag\\_4-ar46929](http://www.agriculture.com/news/policy/iowa-water-facility-pls-suit-over-ag_4-ar46929)



Source: <http://phys.org/news/2010-09-tile-drainage-nitrate-loss.html>

- ❖ CWA regulates 'point source': "any discernible, confined, discrete conveyance"; pipes, etc.
- ❖ "agricultural stormwater discharges" are defined as 'nonpoint sources' and generally exempt
- ❖ The DMWW lawsuit questions legal impact of drainage system on exemption



# OHIO AND TOXIC ALGAE



❖ 2014: Toledo residents instructed to not use or drink water because of toxic algae blooms in western Lake Erie

❖ Ohio Senate Bill 1 (July 3, 2015) restricts fertilizer application in Western Lake Erie Basin



❖ Restricted for snow-covered, frozen or saturated soil; also in granular form if 50% chance of 1" precip. in a 12-hour period

<http://news.nationalgeographic.com/news/2014/08/140804-harmful-algal-bloom-lake-erie-climate-change-science/>



# CHESAPEAKE BAY TMDL

<http://www2.epa.gov/chesapeake-bay-tmdl>

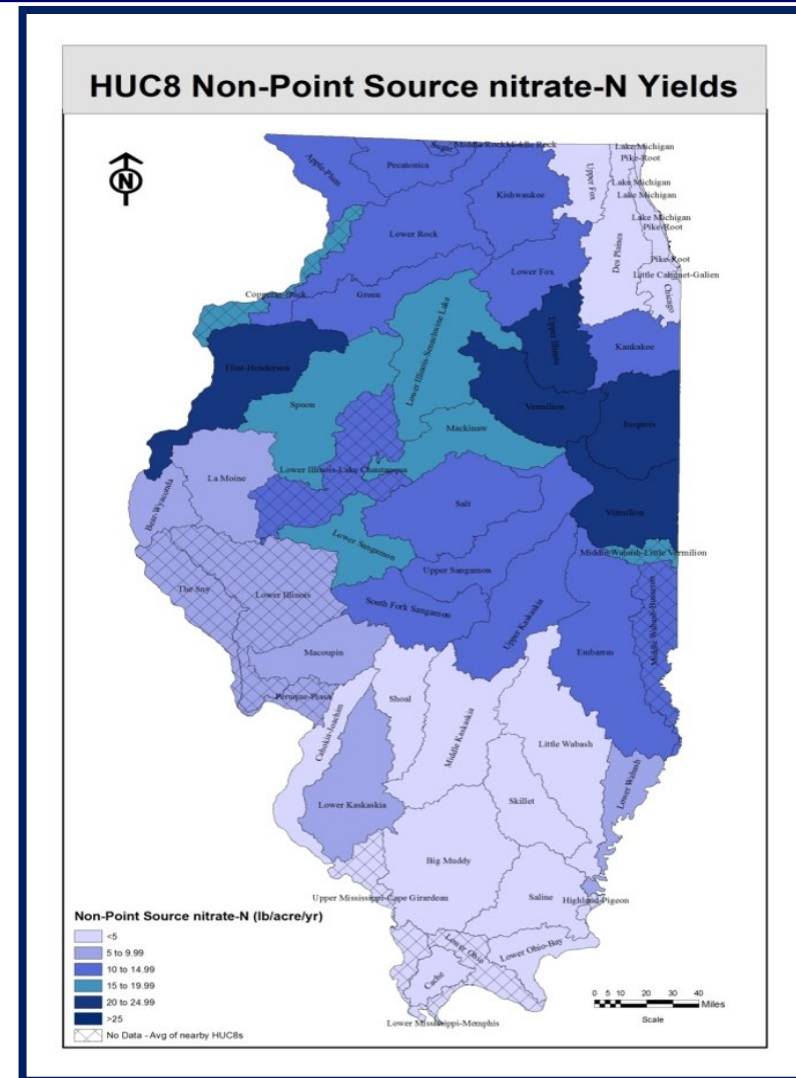


- ❖ 2010: EPA established a Total Maximum Daily Load (TMDL) to improve water quality in the Bay; a “pollution budget” to each state to combat hypoxic zone
- ❖ Largest of its kind (64,000 sq. mi.); focused on nitrogen, phosphorous and sediment reductions (25%, 24% and 20% respectively); farming
- ❖ Has thus far survived legal challenge



# ILLINOIS NUTRIENT LOSS REDUCTION

- ❖ Gulf Hypoxia Task Force: 45% reduction in nutrient loading.
- ❖ Illinois contributes 20% of nitrate and 11% of phosphorous to the Gulf.
- ❖ Goal is a 15% Nitrate reduction by 2025 with ultimate goal of 45% reduction; could cost as much as \$800 million annually.
- ❖ Est. 9.7m acres of tile-drained farmland; over 22m acres total.
- ❖ Farms losing est. 440m pounds N lost each year = 82% of total contributed by IL; farmers could be losing as much as 26-43 lbs./acre lost

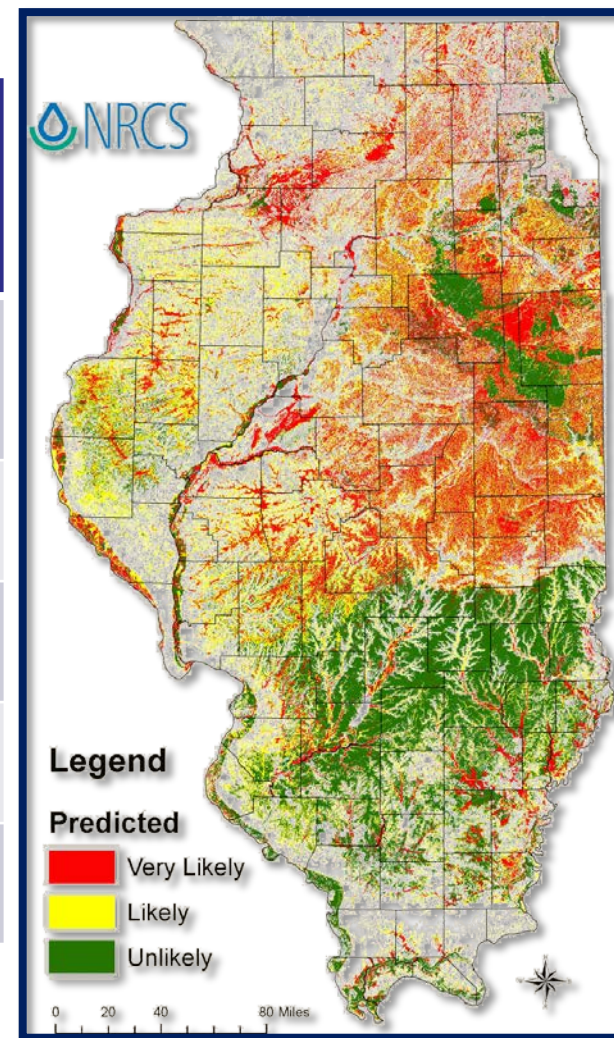




# ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

## Science Assessment: Examples of practices for N Reduction

Practice	Per Acre reduction	Total (million lb)	From baseline	Cost per lb N
Nitrification inhibitor-fall applied, tilled corn	10%	4.3	1.0%	\$2.33
Cover crops-all corn/soy tilled	30%	84	20.5%	\$3.21
Wetlands-25% of tilled	40%	28	6.8%	\$5.06
Buffers on all applicable land	90%	36	8.7%	\$1.63
Bioreactors-50% of tilled	40%	56	13.6%	\$1.38



# FARM BILL CONSERVATION PROGRAMS

- ❖ Environmental Quality Incentives Program (EQIP)
- ❖ Cost-share contracts for conservation practices to comply or avoid regulations (\$1.65 billion nationally; 60% reserved for livestock)
- ✓ Practices addressing erosion and sedimentation, plant and soil management and water quality
- ✓ Includes practices such as nutrient and pest management, cover crop, crop rotation, filter strips and buffers, irrigation water, and residue management.



# FARM BILL CONSERVATION PROGRAMS

## ❖ Conservation Stewardship Program (CSP)

❖ 5-year contracts to maintain and improve conservation on the farm; address resource concern (e.g., water quality)

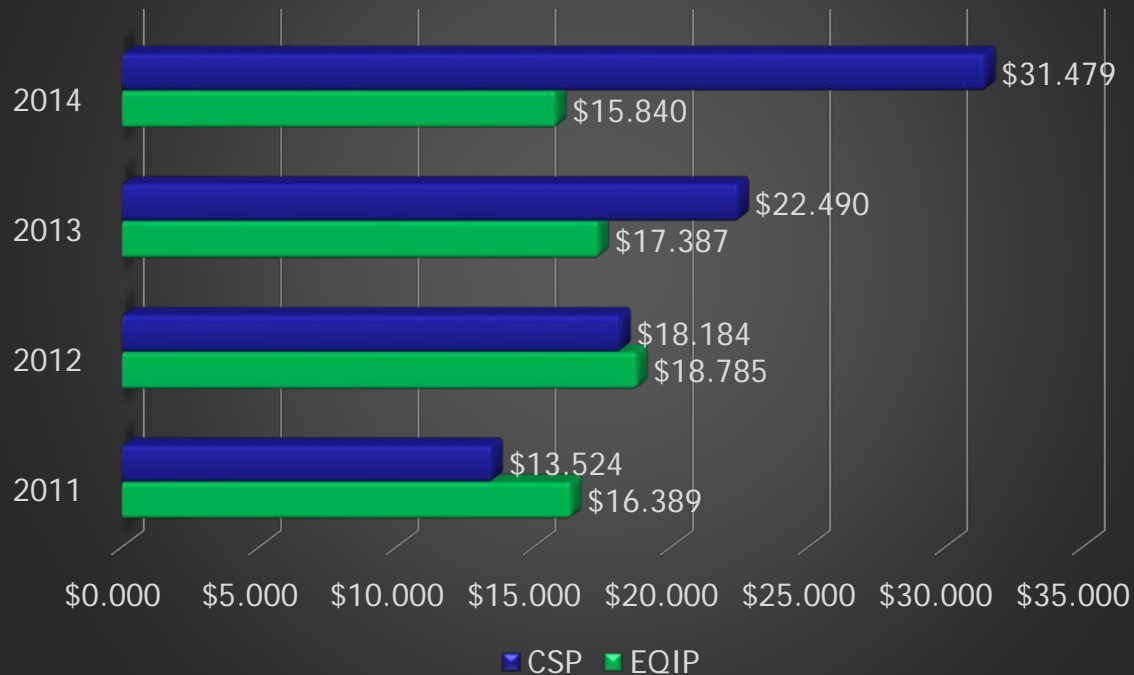
- ✓ Annual payments for installing new conservation activities and maintaining existing practices; and
- ✓ Supplemental payments for adopting a resource-conserving crop rotation.





# FARM BILL CONSERVATION PROGRAMS

## IL Conservation Investments (Millions)



Source: NRCS



# FARM BILL CONSERVATION PROGRAMS

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## EQIP in Illinois

- ✓ 2013 funded 42 contracts for comprehensive nutrient management plans (avg. \$7,400 per); 42 contracts for general EQIP (avg. \$26,942 per)
- ✓ 2014 funded 41 comprehensive nutrient management plans (avg. \$7,000 per); 58 general EQIP (avg. \$32,605 per)
- ✓ Limit: \$450,000 over five years 2014-2018

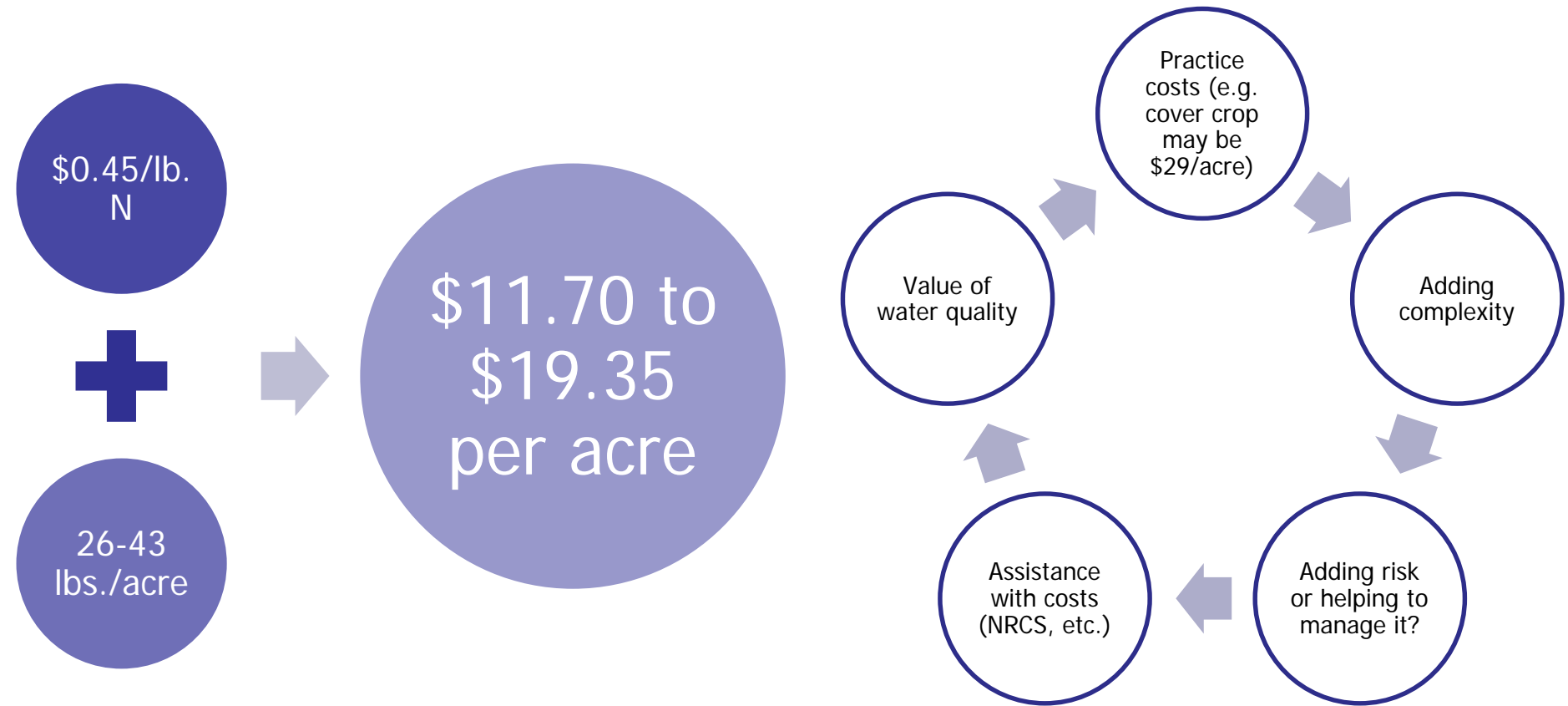
## CSP in Illinois

- ✓ 2013 funded 240 contracts covering 187,342 acres (avg. \$15,505 per contract)
- ✓ 2014 funded 534 contracts covering 395,469 acres (avg. \$15,917 per contract)
- ✓ Limit: \$200,000 over five years 2014-2018

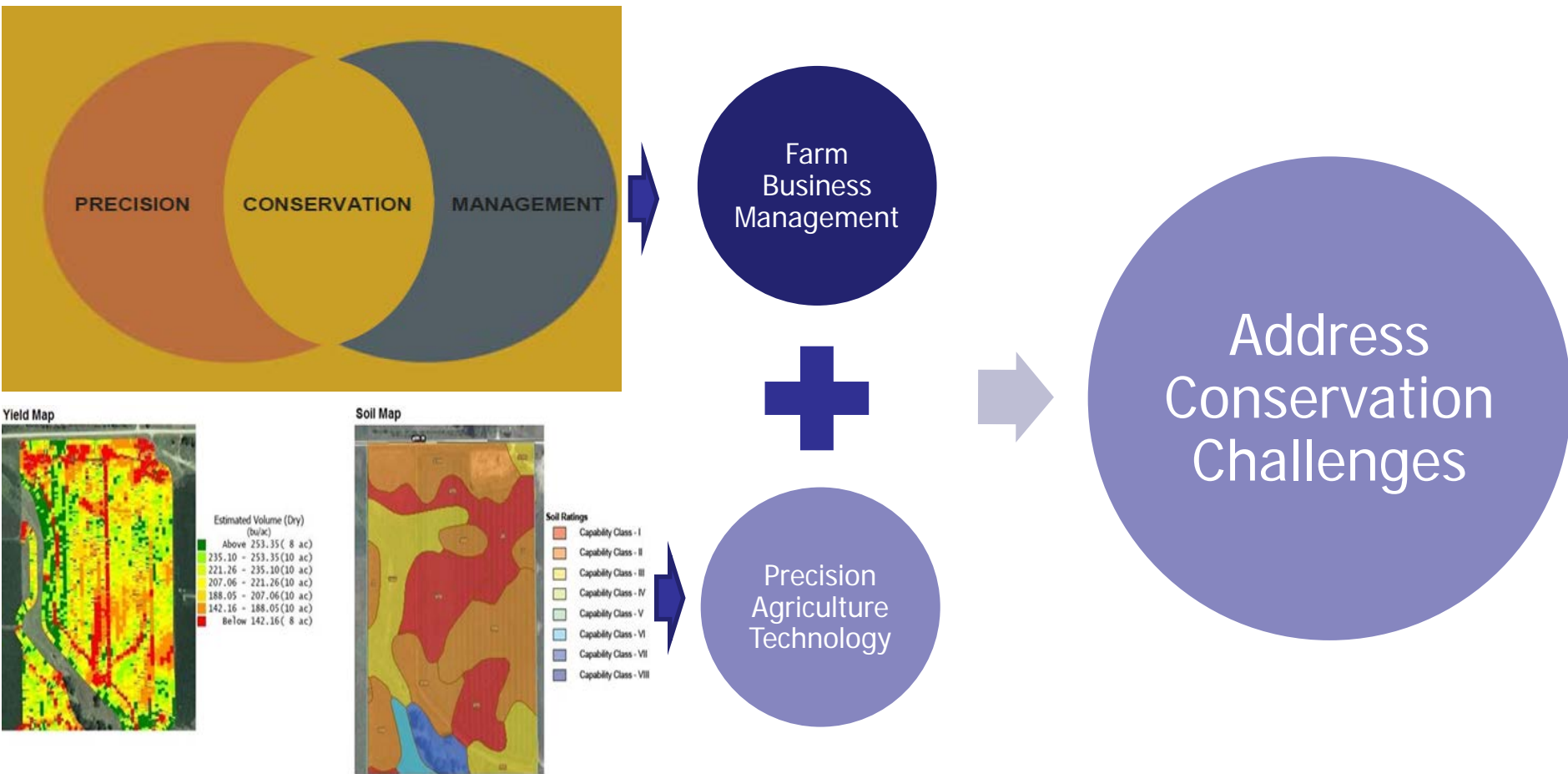




# MANAGING CONSERVATION



# REGIONAL CONSERVATION PARTNERSHIP PROGRAM



# THANK YOU!

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 **POLICY MATTERS**

[www.policymatters.illinois.edu](http://www.policymatters.illinois.edu)