Sustainable Intensification of Agriculture: Strategies and Partnerships

NGFA
April 1, 2014


Our mission is to conserve
the lands and waters on
which all life depends

We work in 36 countries
And all 50 of the United States.

Magnificent sea anemone with pink anemone fish near Solomon Islands in the South Pacific ©Daniel & Rovvie Wisdom

We own and manage the largest network of private preserves in the United States.

Hiking in the Conservancy's Folsom Point Preserve in Iowa's Loess Hills ©Chris Helzer

Children fishing at the Altamaha Waterfowl Management Area in McIntosh County Georgia ©Erika Nortemann

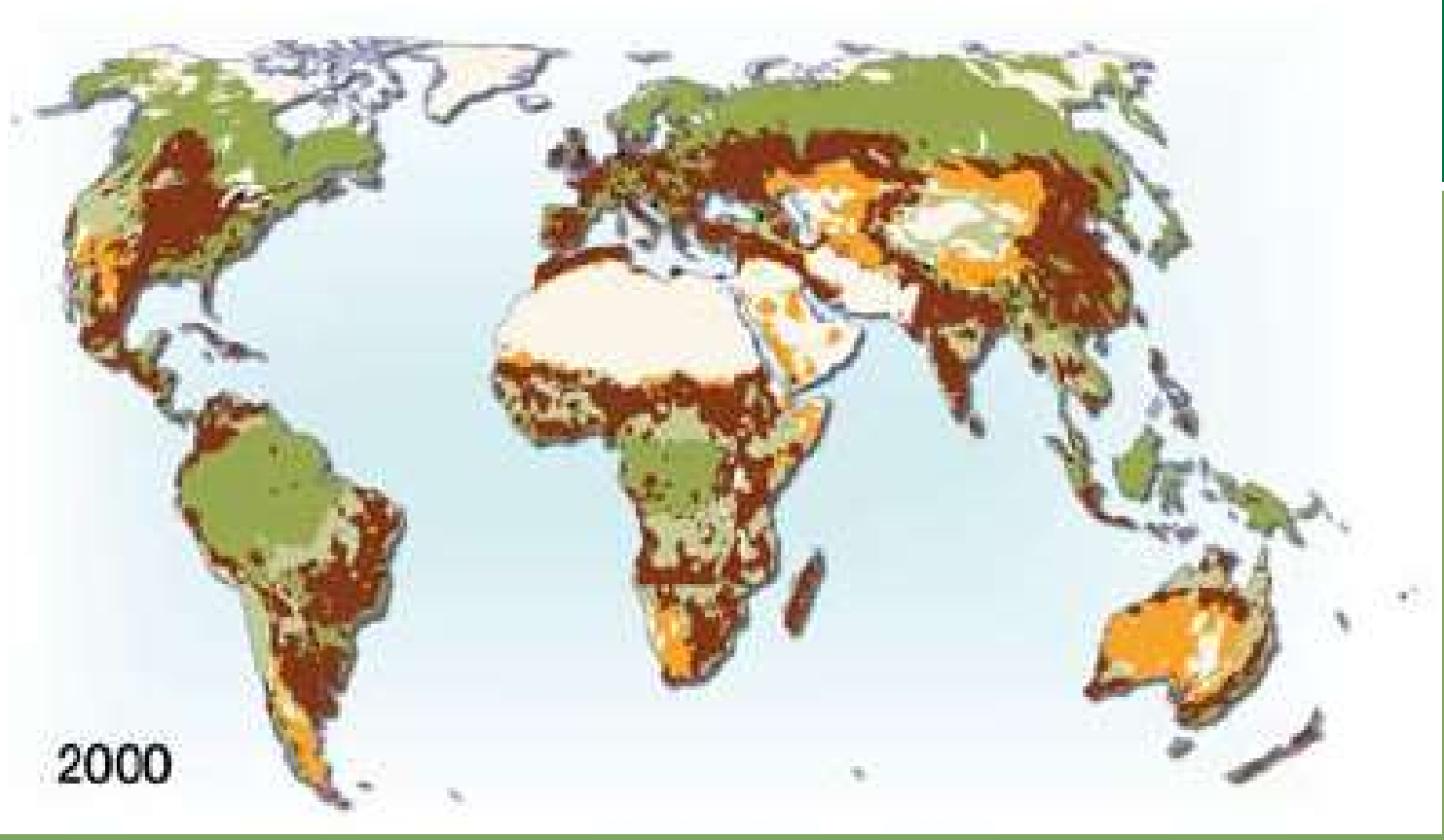
Patagonia grasslands, Argentina ©Bridget Besaw

River leading to Iliamna Lake, Alaska habitat the gravel bottoms provide habitat for king salmon ©Ami Vitale

Where We Work in Agriculture

Landuse and agriculture

- Agricultural land
- Extensive grasslands (incl pasture)
- Regrowth after use
- Forests
- Grasslands
- Non-productive land



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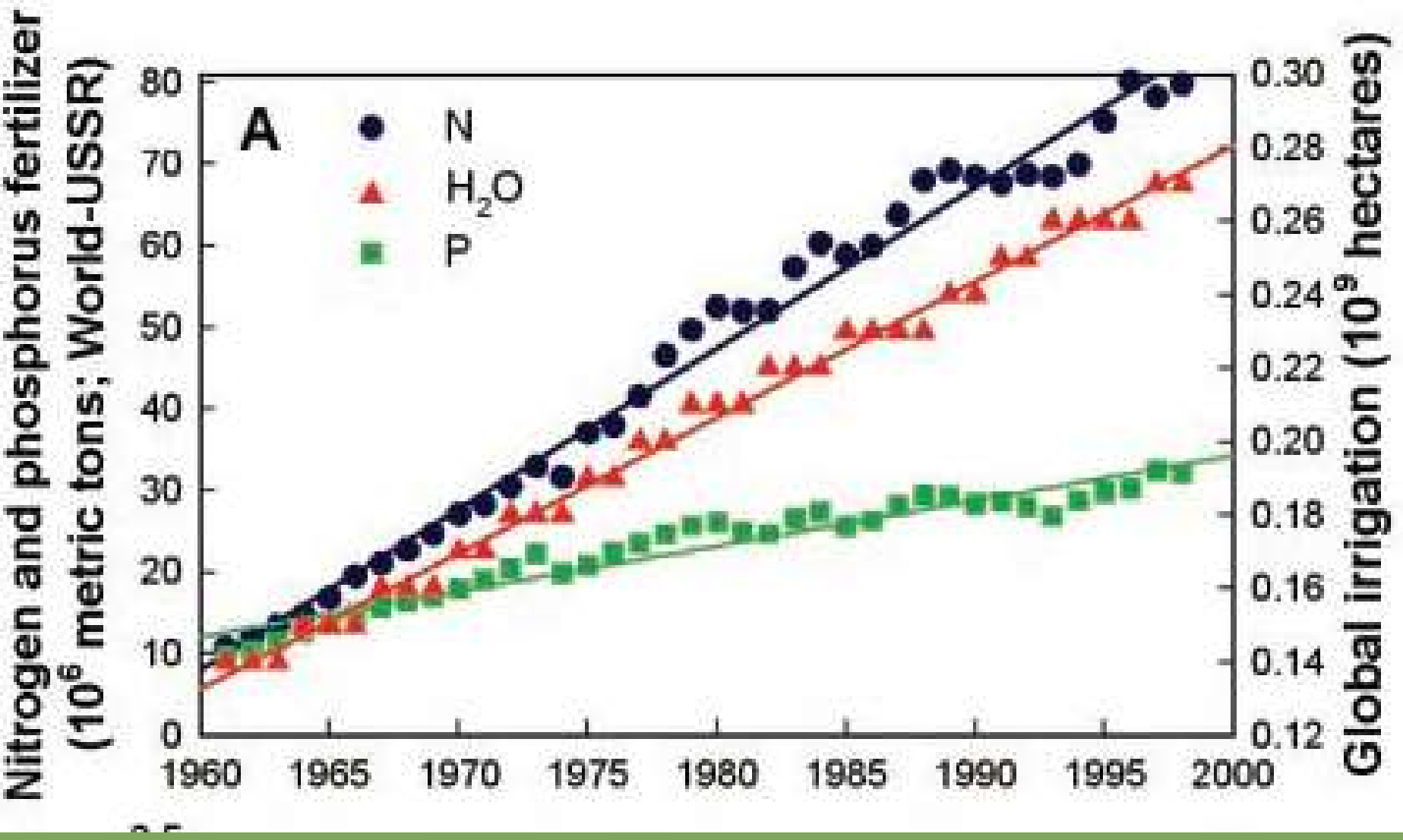
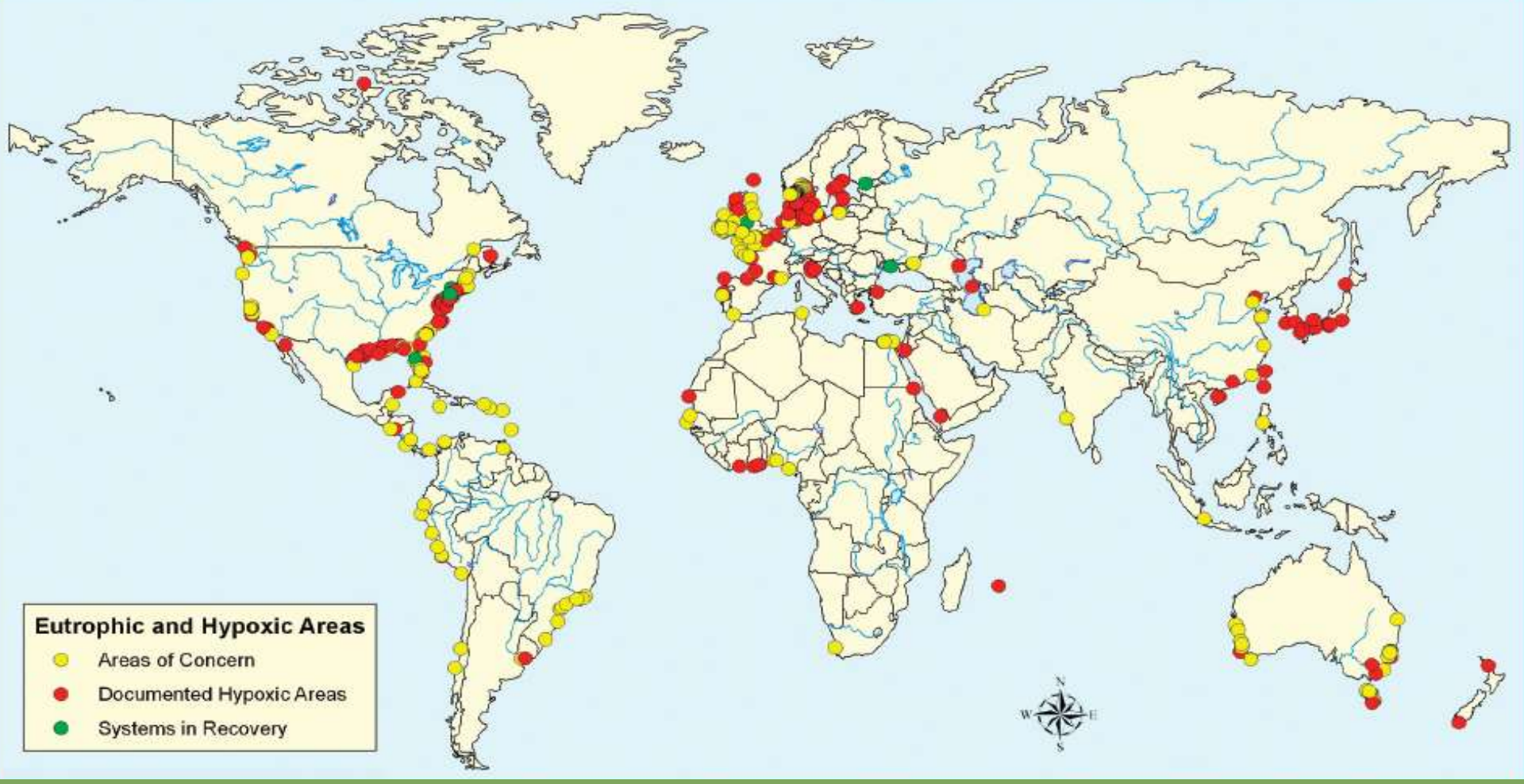
Sustainable Intensification of Agriculture

The agricultural challenge: Feeding humanity while conserving

Global Nitrogen, Phosphorus and Irrigation Use

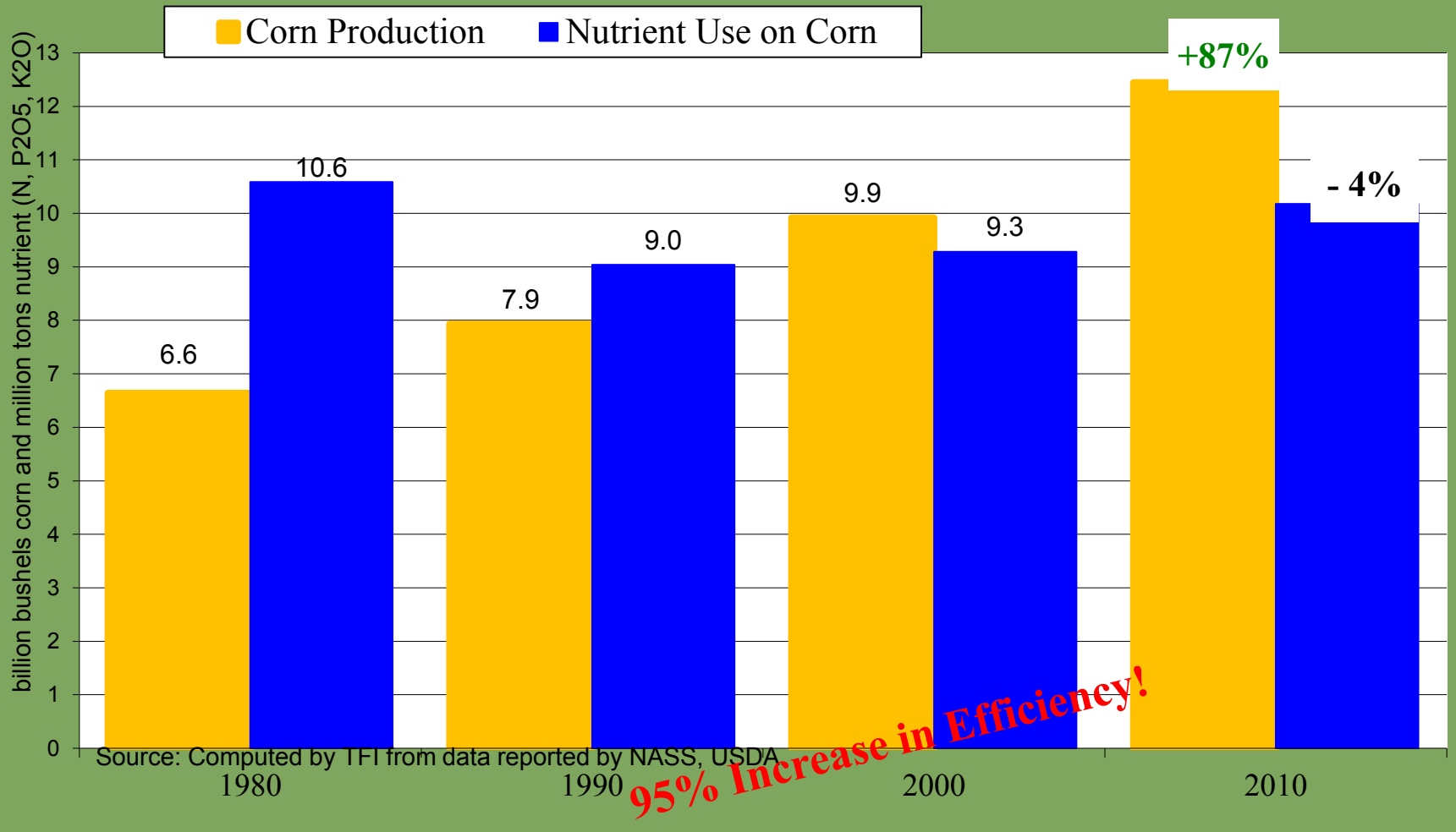


Dead Zones of the World



Major known eutrophic and hypoxic areas. Reprinted from Selman et al.

U.S. Corn Production and Nutrient Use on Corn



Source: Computed by TFI from data reported by NASS, USDA

High Leverage Ag Strategies

TNC traditionally worked mostly at this level

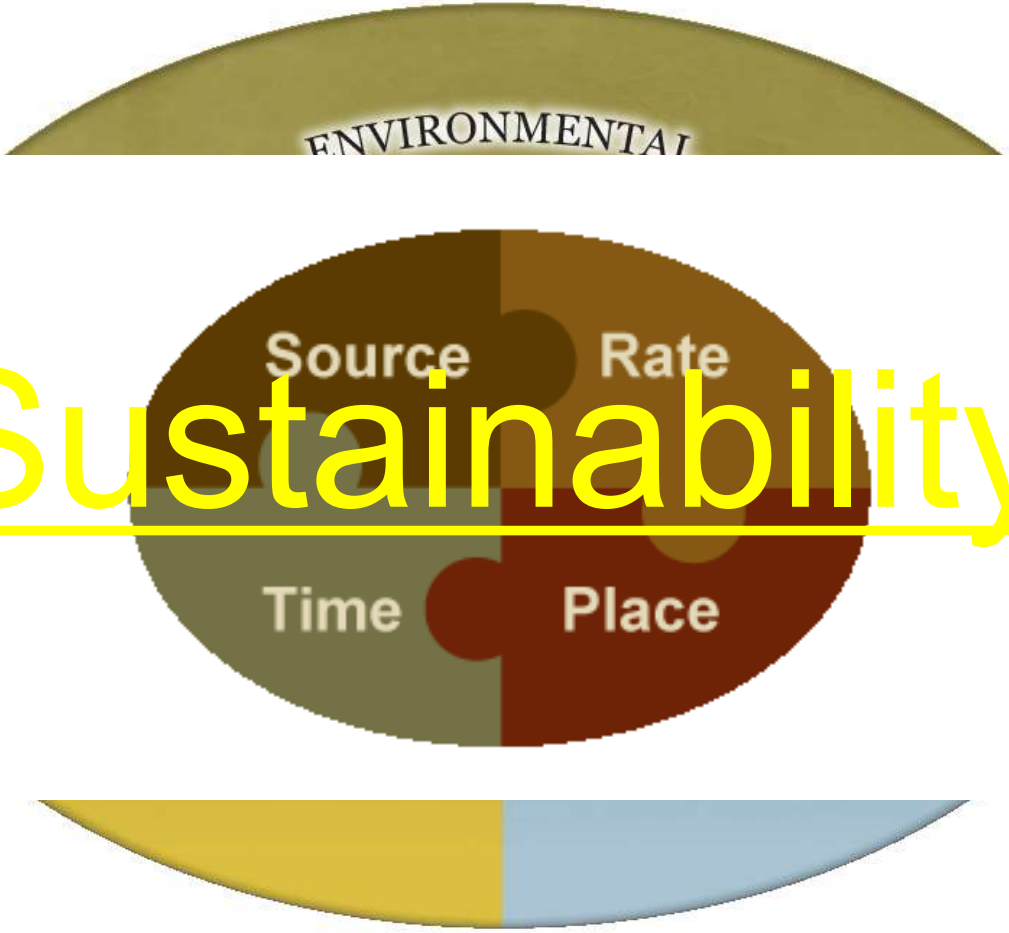
Producer

Processors, Food and Beverage Companies

High leverage: Farm Bill, supply chain engagement, soil health and nutrient stewardship partnerships

Retailers

4R Nutrient Stewardship



Sustainability

A management strategy

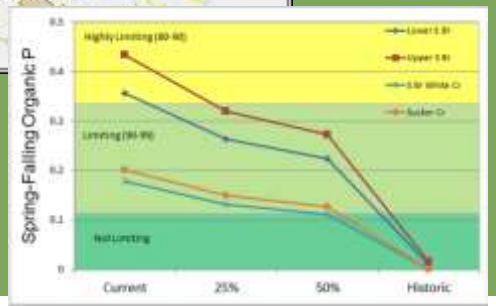
4R Certification

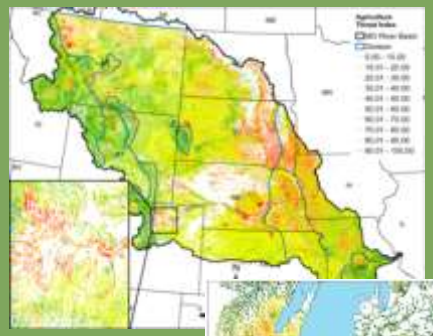
Getting to Scale

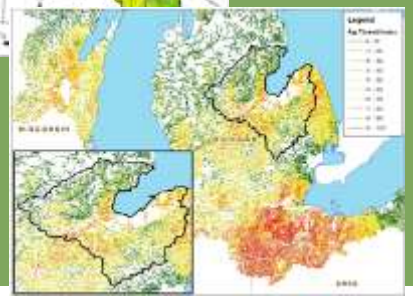
Relationships between biological, water quality and water availability outcomes and conservation practices.

Help establish realistic desired conditions

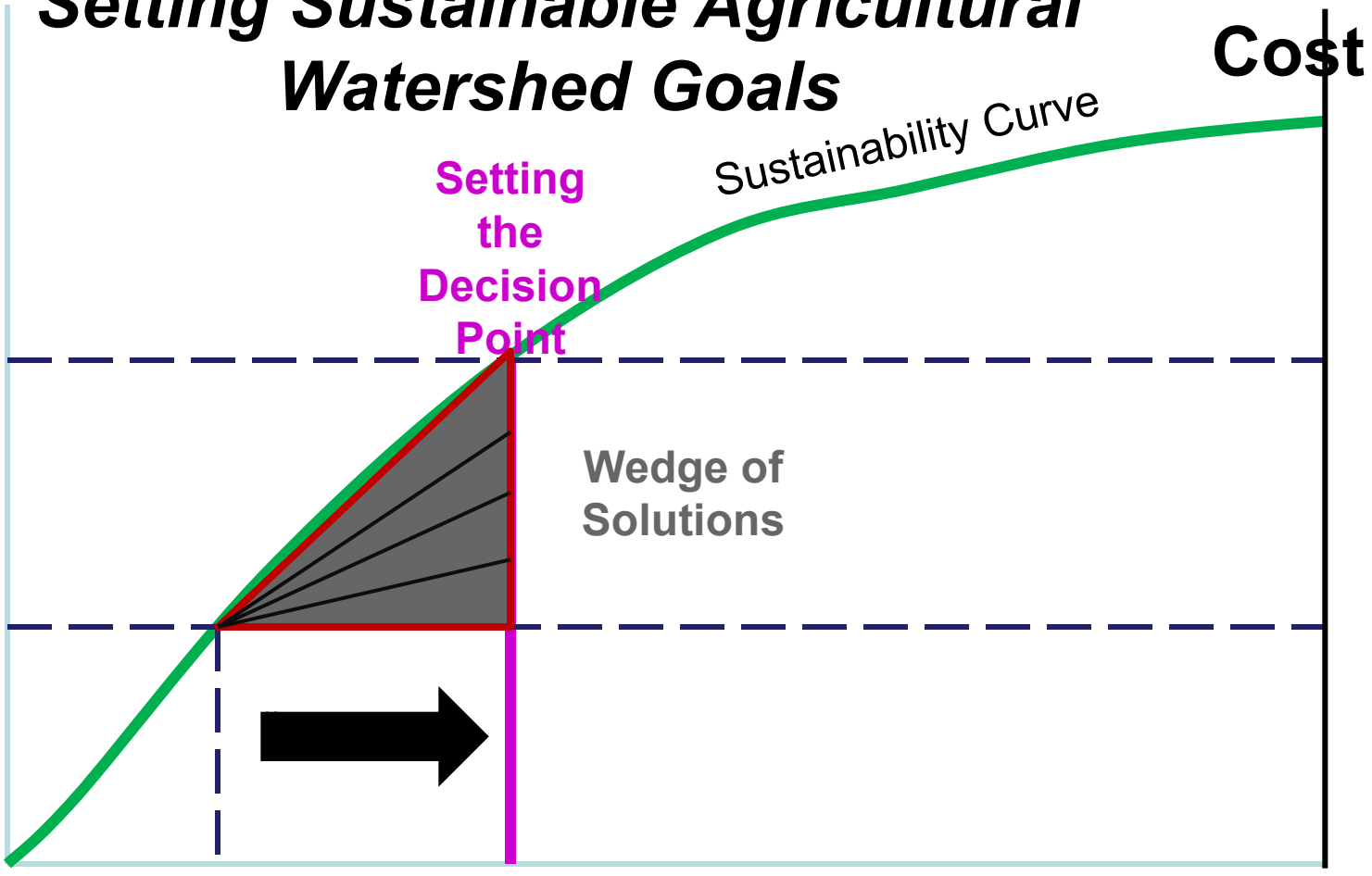
Develop tools that guide strategic conservation





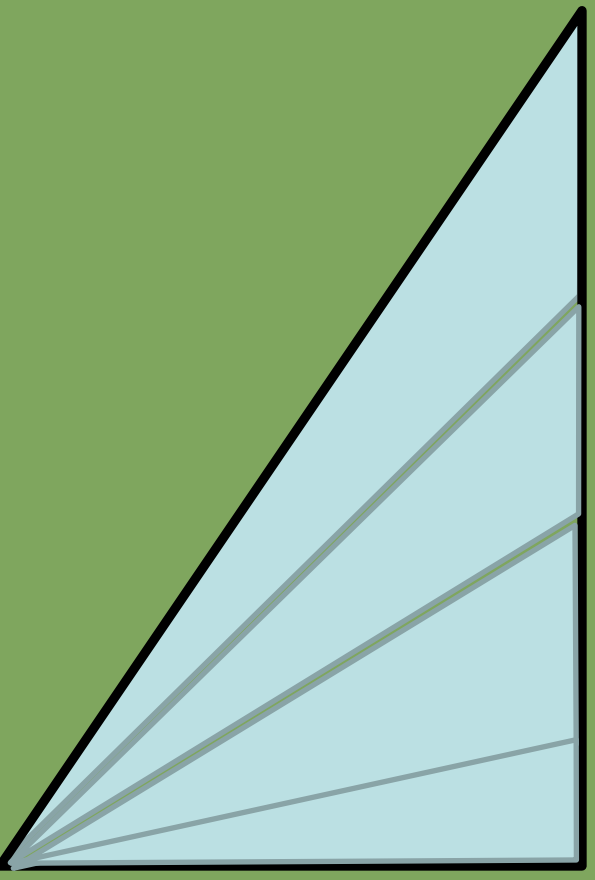


Defining OUTCOMES – Setting Sustainable Agricultural Watershed Goals



Tools/Calculator

Practices – “Wedge of Solutions”



In-Field Practices

Conservation Tillage, cover crops, nutrient management

Edge-of Field Practices

Nutrient Treatment

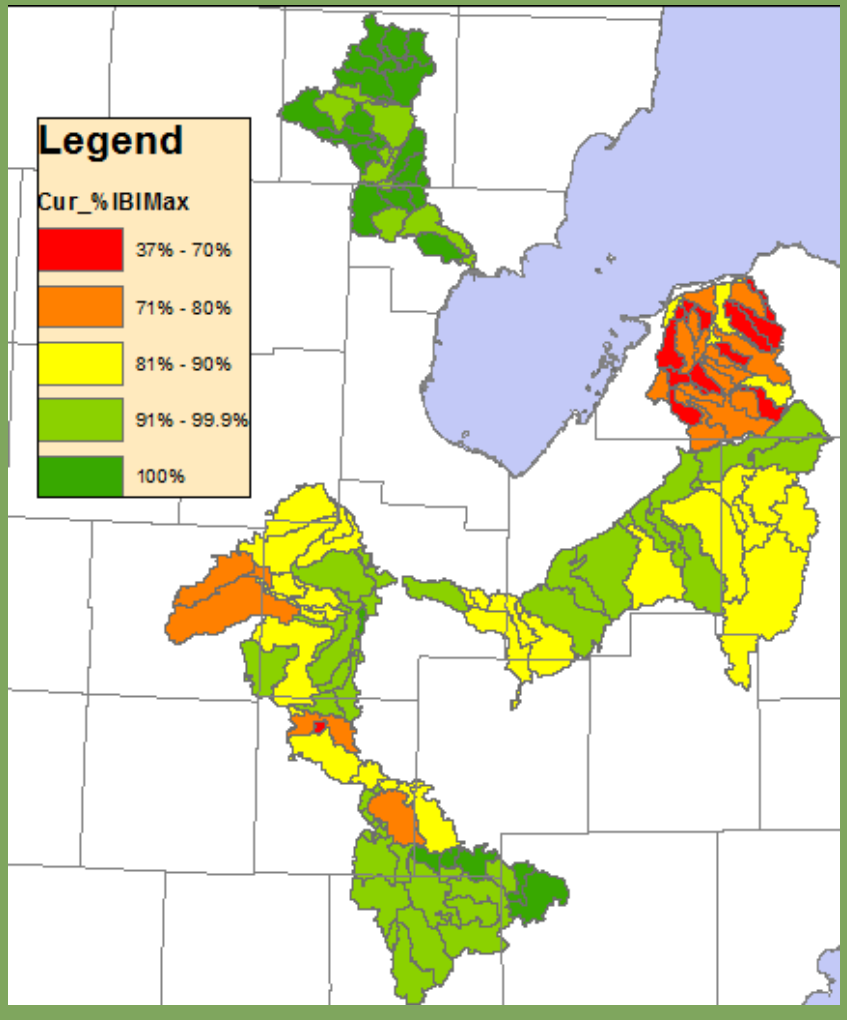
Wetlands, Bioreactors, 2-stage ditches

Downstream Practices

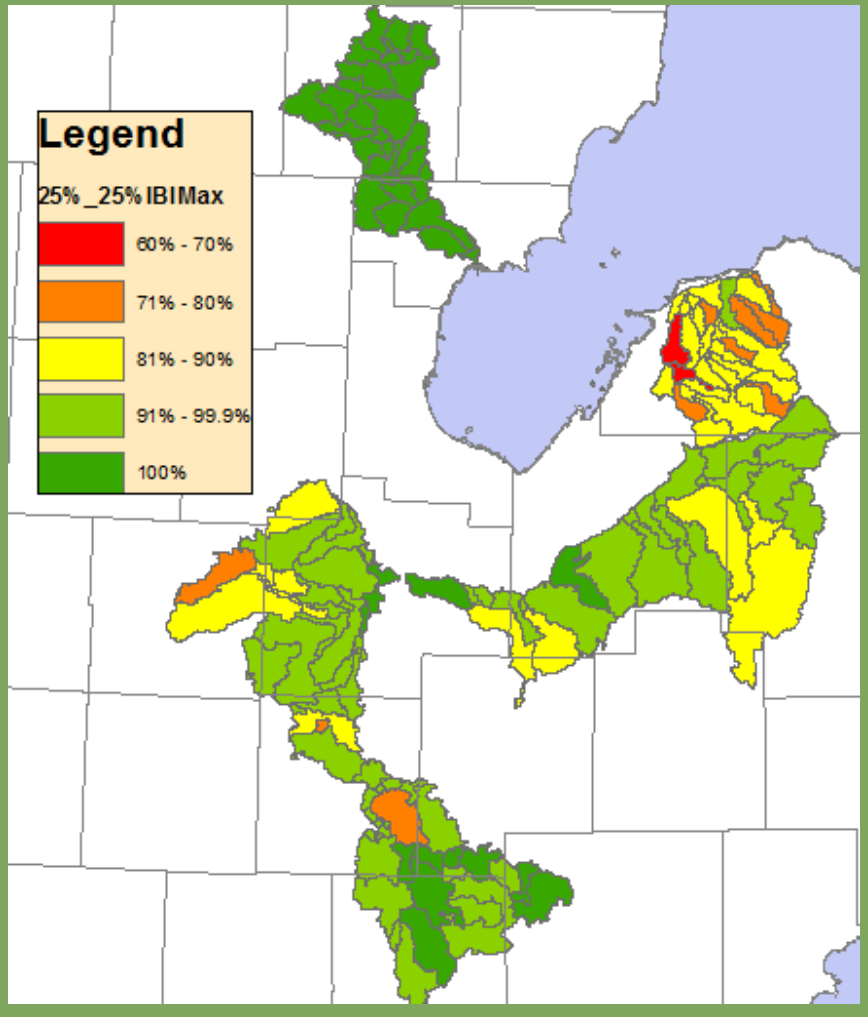
Restoring Wetlands, Reconnecting Floodplains, Stabilizing Streambanks

Forecasting Costs and Benefits

Current Condition



25% BMP Implementation



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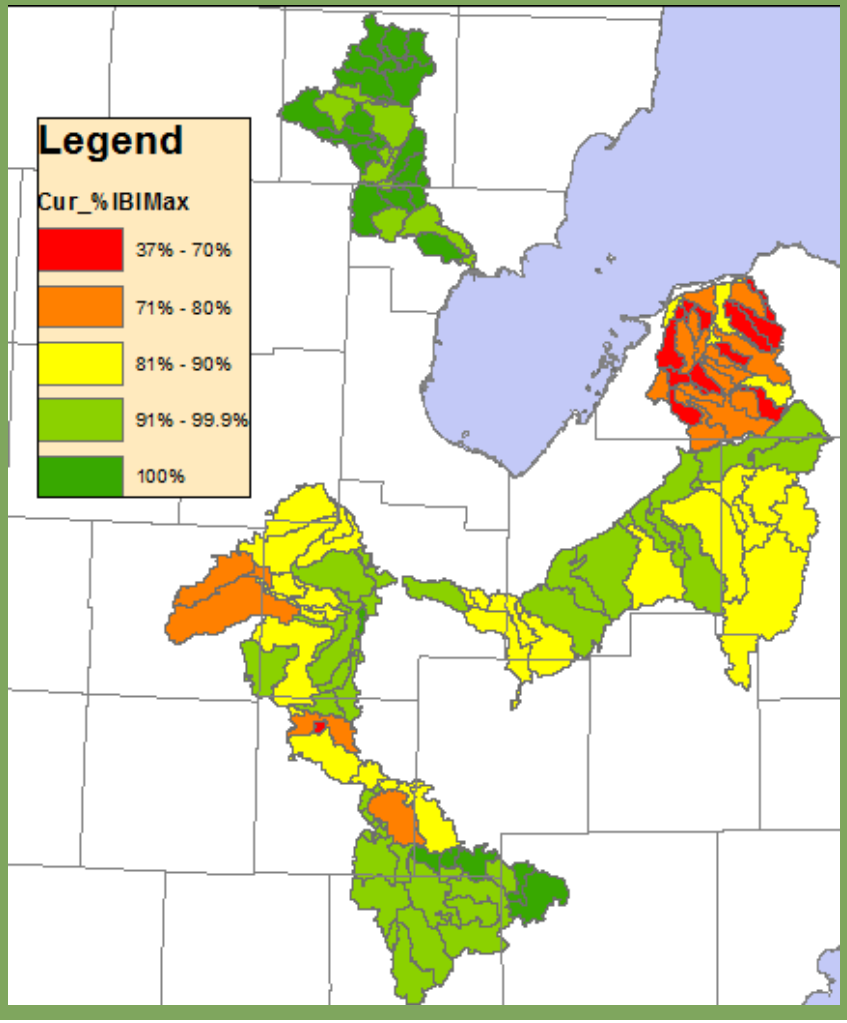
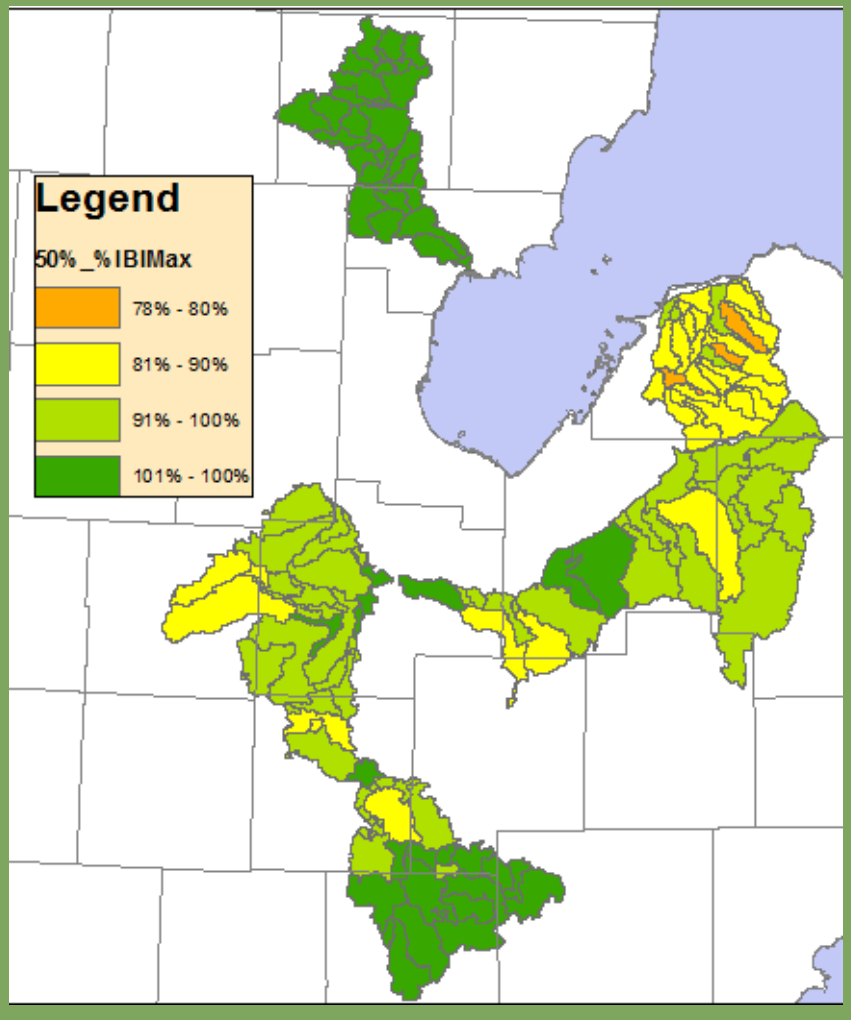


50% BMP Implementation



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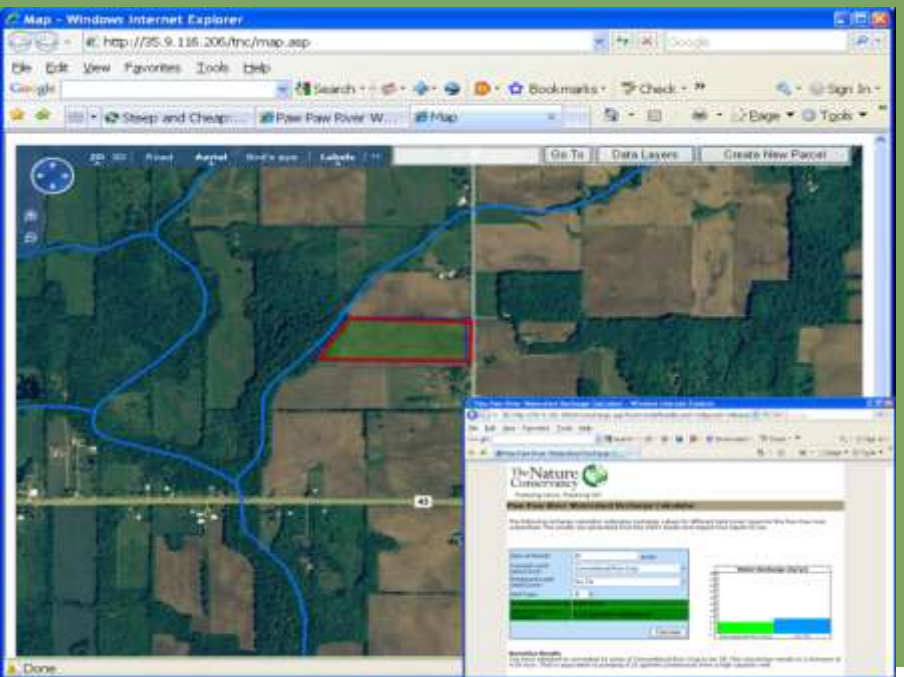
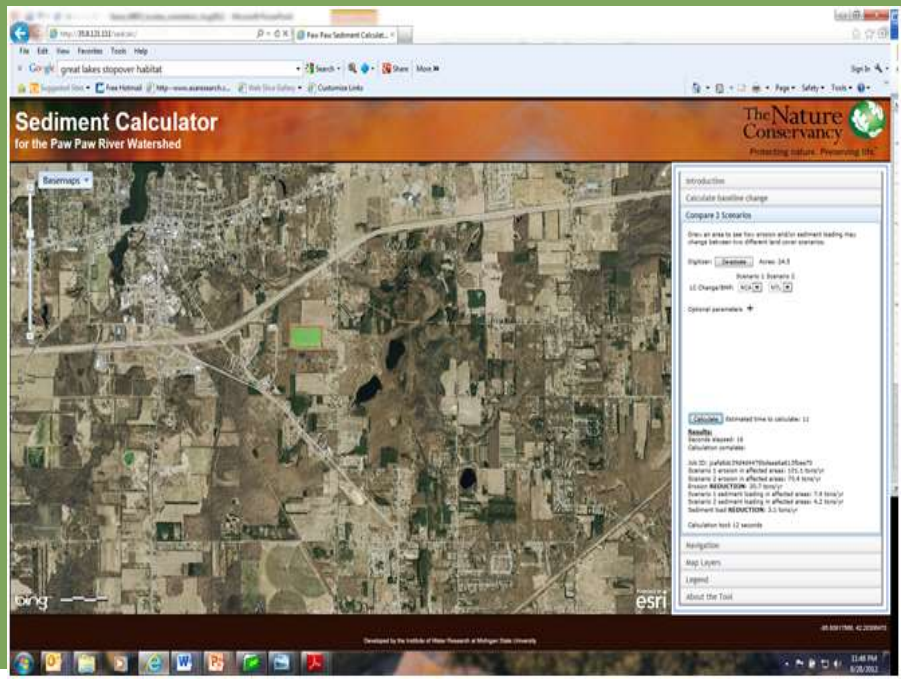
Online Tools
Groundwater, Sediment, and Nutrient

MICHIGAN STATE UNIVERSITY

- Facilitate strategic placement of BMPs
- Track cumulative placement of BMPs and progress toward goals
- Support Transactions





Supply Chain Initiatives: Field to Market

What is the Fieldprint Calculator?

An online education tool for row crop farmers that indexes their agronomics and practices to a fieldprint

Helps growers evaluate their farming decisions and compare their sustainability performance

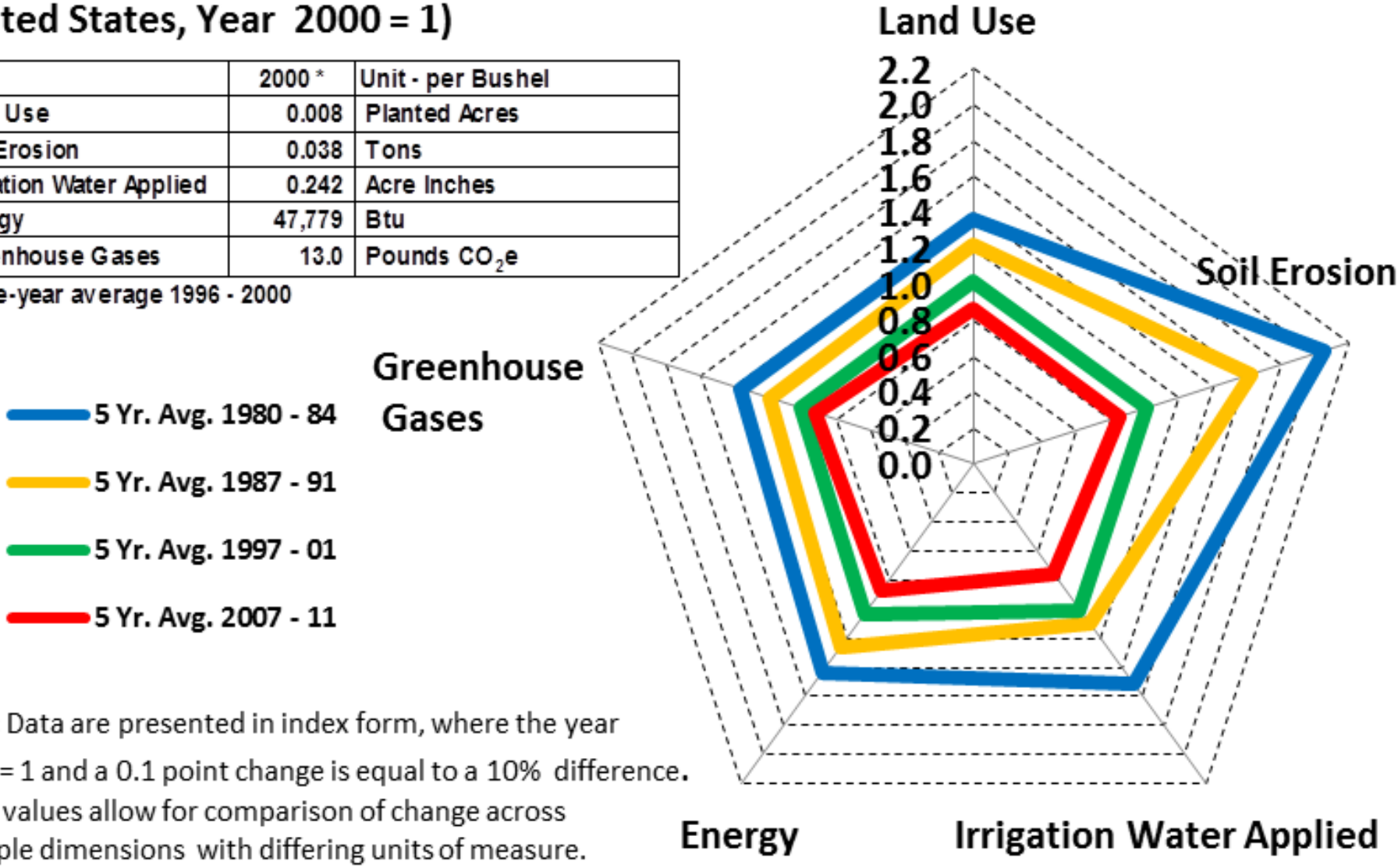
- In the areas of:
  - Land use
  - Soil conservation
  - Soil carbon
  - Water use
  - Energy use
  - Greenhouse gas emissions
  - Water Quality and Biodiversity in development
- Against:
  - Their own fields
  - Their own performance over time
  - County, state and national averages

Sample Results:
Resources per bushel, Corn

Index of Per Bushel Resource Impacts to Produce Corn for Grain (United States, Year 2000 = 1)

Year	2000 *	Unit - per Bushel
Land Use	0.008	Planted Acres
Soil Erosion	0.038	Tons
Irrigation Water Applied	0.242	Acre Inches
Energy	47,779	Btu
Greenhouse Gases	13.0	Pounds CO_2e

* Five-year average 1996 - 2000



Note: Data are presented in index form, where the year 2000 = 1 and a 0.1 point change is equal to a 10% difference. Index values allow for comparison of change across multiple dimensions with differing units of measure.

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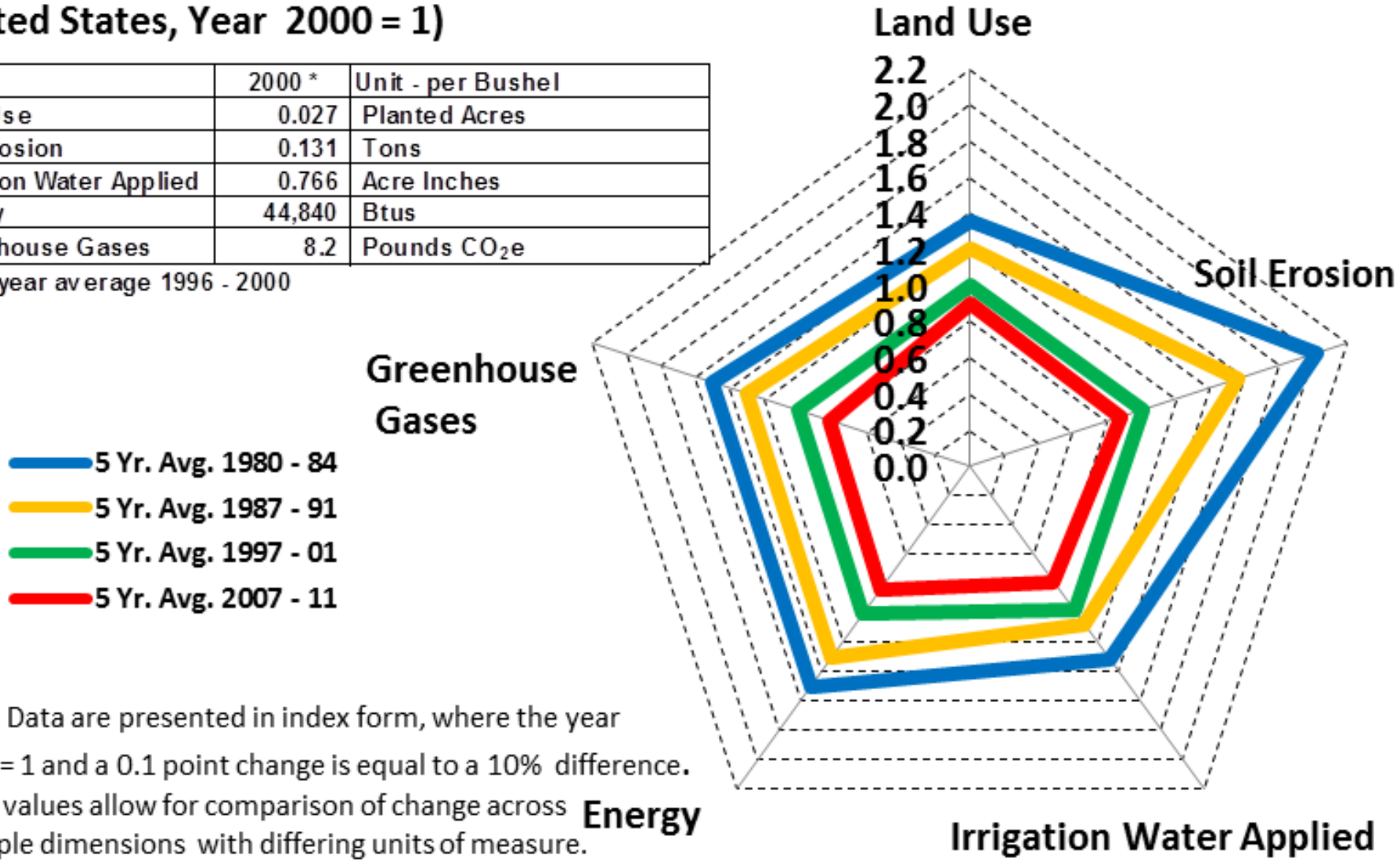
Field to Market : Resources per bushel, Soybeans

Index of Per Bushel Resource Impacts to Produce Soybeans (United States, Year 2000 = 1)

Year	2000 *	Unit - per Bushel
Land Use	0.027	Planted Acres
Soil Erosion	0.131	Tons
Irrigation Water Applied	0.766	Acre Inches
Energy	44,840	Btus
Greenhouse Gases	8.2	Pounds CO_2e

* Five-year average 1996 - 2000



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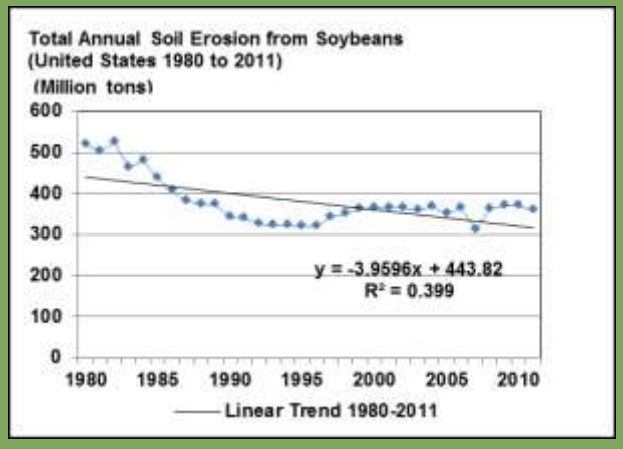
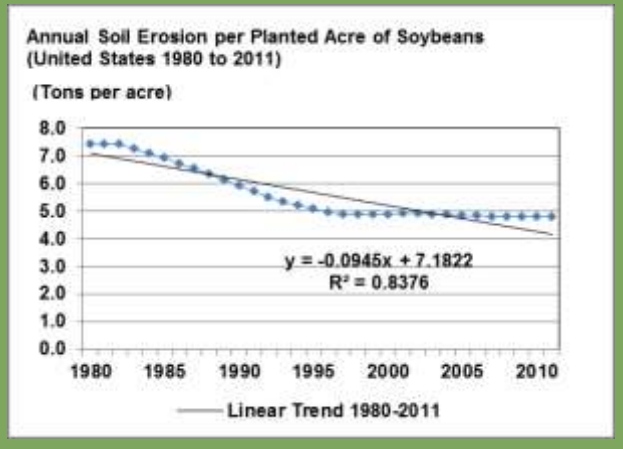
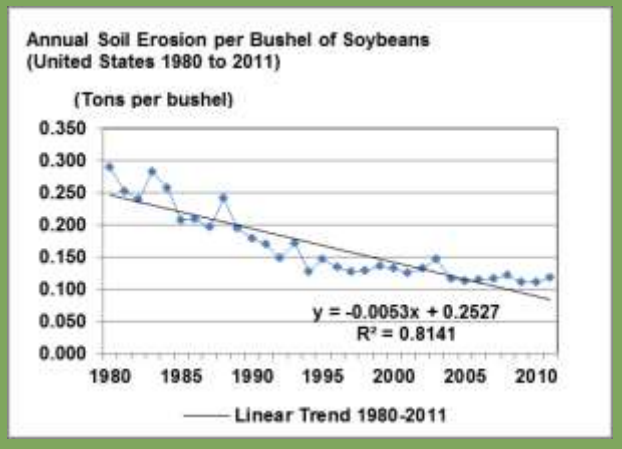
A Closer Look
Soybean Results: Soil Erosion







TOTAL PER ACRE PER BUSHEL

- Total soil erosion decreased over most of the study period, but has increased more recently (similar for corn)
- Per acre soil erosion decreased during first half of study period, then leveled off (similar for corn, cotton, and wheat)

Questions?

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