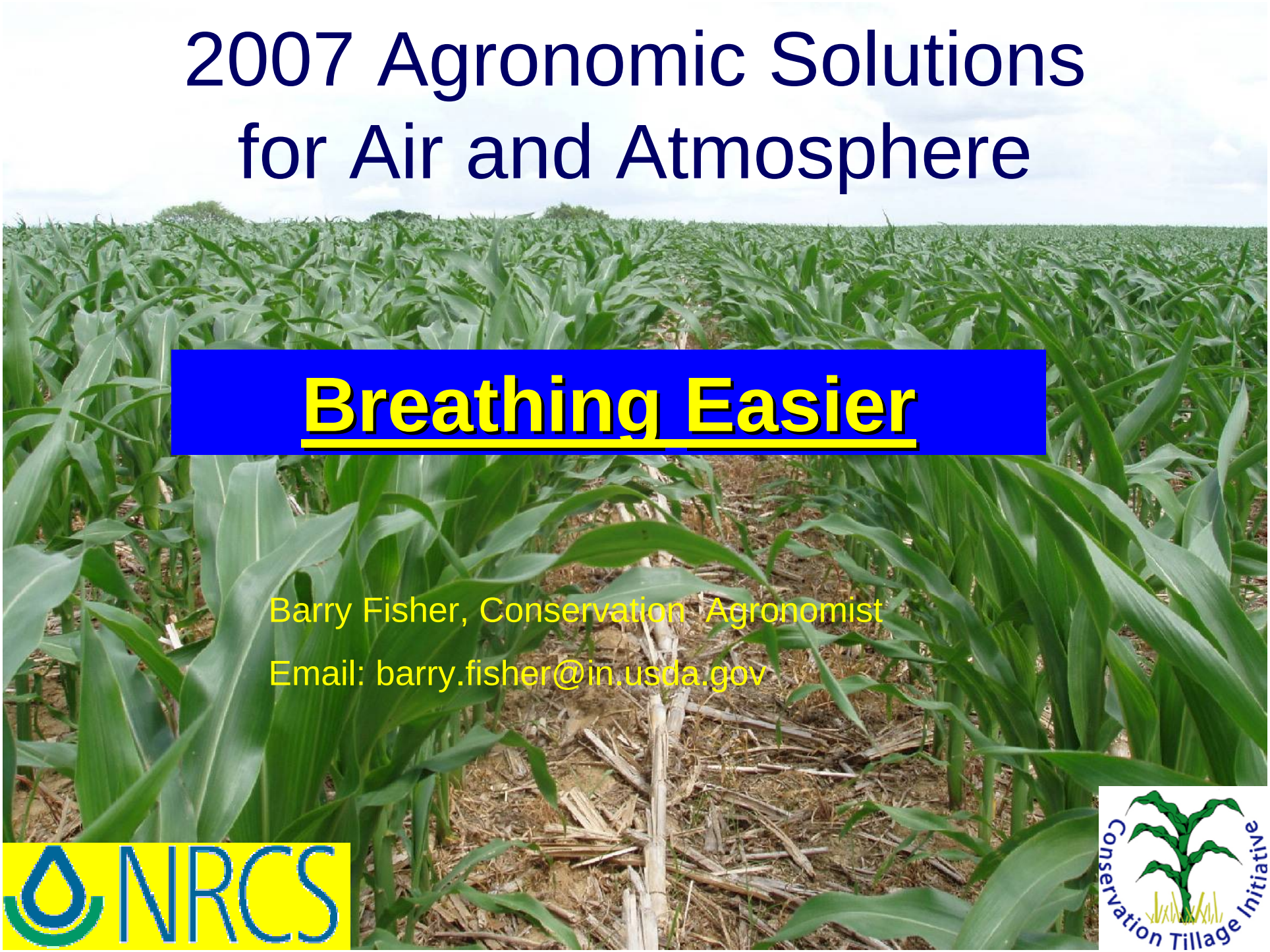
2007 Agronomic Solutions for Air and Atmosphere



Breathing Easier

Barry Fisher, Conservation Agronomist

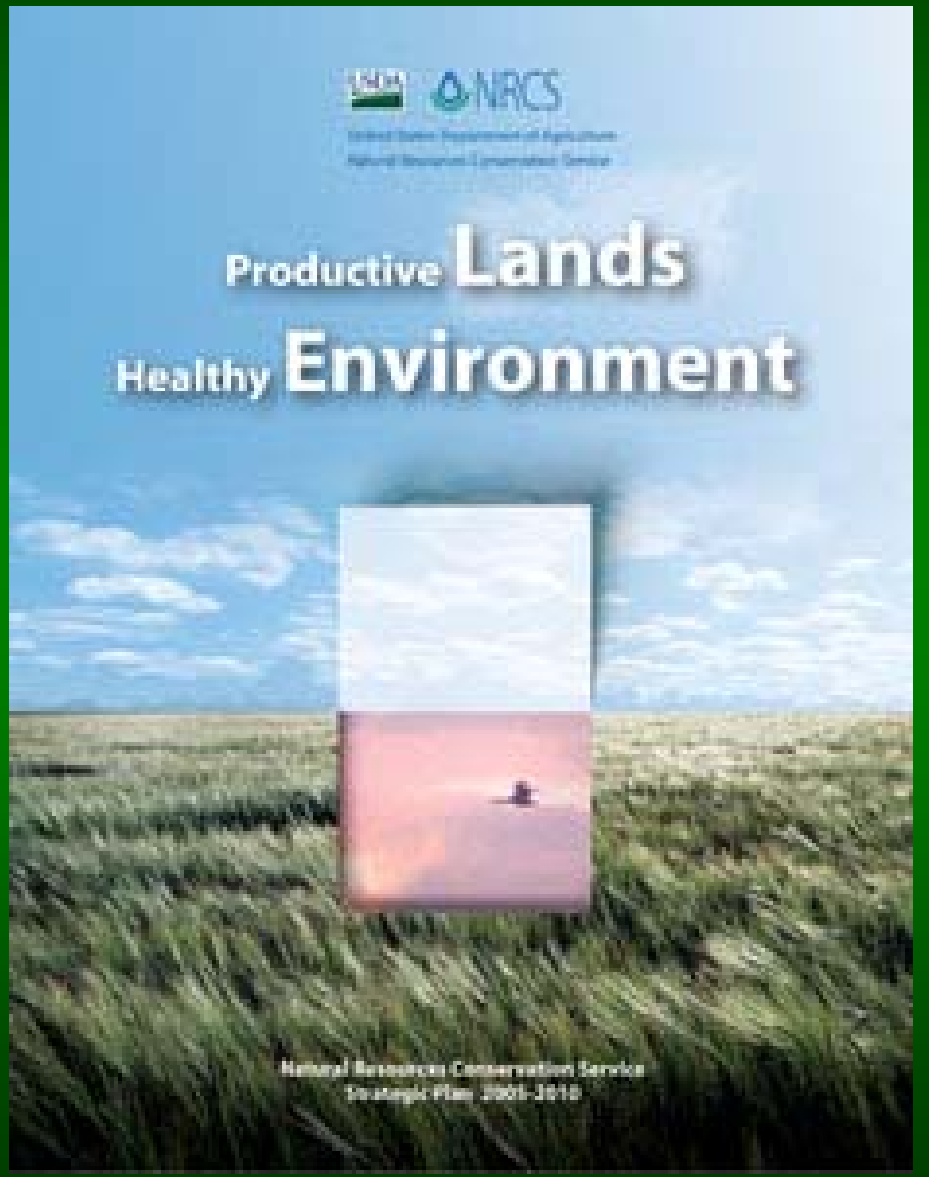
Email: barry.fisher@in.usda.gov

NRCS

Conservation Tillage Initiative

Helping People

Help the Land



Venture Goals

- Clean Air
- An Adequate Energy Supply
- Working Farm and Ranch Lands

•What can we do for Air Quality?

NRCS


No-Till


Nutrient Management


Cover Crops


Buffers

No-Till/Strip-Till Systems

Doubling the acres of No-Till Nationally would reduce fuel consumption by 434,000,000 gals.

Compare Tillage Systems

- **Mulch-Till:** These systems involve primary tillage of chisel plows or other non inversion implements followed by one or more secondary tillage.
- **No-till/Strip-Till:** These systems consist of fertilizer and planting operations in narrow strips or slots that involve disturbance of less than one third of the inter row area.

Edit View Favorites Tools Help

Back Search Favorites

http://ecat.sc.egov.usda.gov/CMZ.aspx?Zip=46135

Go

United States Department of Agriculture
Natural Resources Conservation Service

Energy Estimator

Energy Consumption Awareness Tool: Tillage

Home | About Estimator | Help | Contact Us

You are here: Home / Step 2: Crop Zone

Step 2: Crop Management Zone

Search USDA

Go

Energy Tools

- Why these crops?
- What is a crop management zone?
- Energy Estimator: Nitrogen

Other Resources

- Link to your Local NRCS Office
- NRCS Programs in IN
- Energy in Agriculture
- Conservation Technology Information Center
- CSP Energy Job Sheets

Feedback

- Comment on Energy Estimator: Tillage

These crops were identified as having the greatest harvested crop acreage in the crop management zone identified by your zip code using production data from the National Agricultural Statistics Service for 2004. They may not be the most common crops in your immediate neighborhood but are significant crops in the crop management zone indicated in red on the map.

Enter the number of acres you plant for each of these crops:

GREENCASTLE, IN 46135

Crops	Acres
Corn	1000
Oats	
Sorghum	
Soybeans	
Wheat	

Start Over Continue

Last Modified: 02/23/2006

You are here: Home / Step 2: Crop Zone / Step 3: Fuel / Step 4: Cost

Step 4: Fuel Cost

If you want to checkout different fuel prices, enter a different price per gallon and click "RECALCULATE": $ 2.70

Recalculate

Total Diesel Fuel Cost Estimate (in dollars per year) based on $2.70/gallon

Crop	Acres	Conventional Tillage	Mulch-Till	Ridge-Till	No-Till
Corn	**1,000**	$13,446	$11,097	$8,991	$7,479
Total Fuel Cost		$13,446	$11,097	$8,991	$7,479
Potential Cost Savings over Conventional Tillage			$2,349	$4,455	$5,967

Total Farm Diesel Fuel Consumption Estimate (in gallons per year)

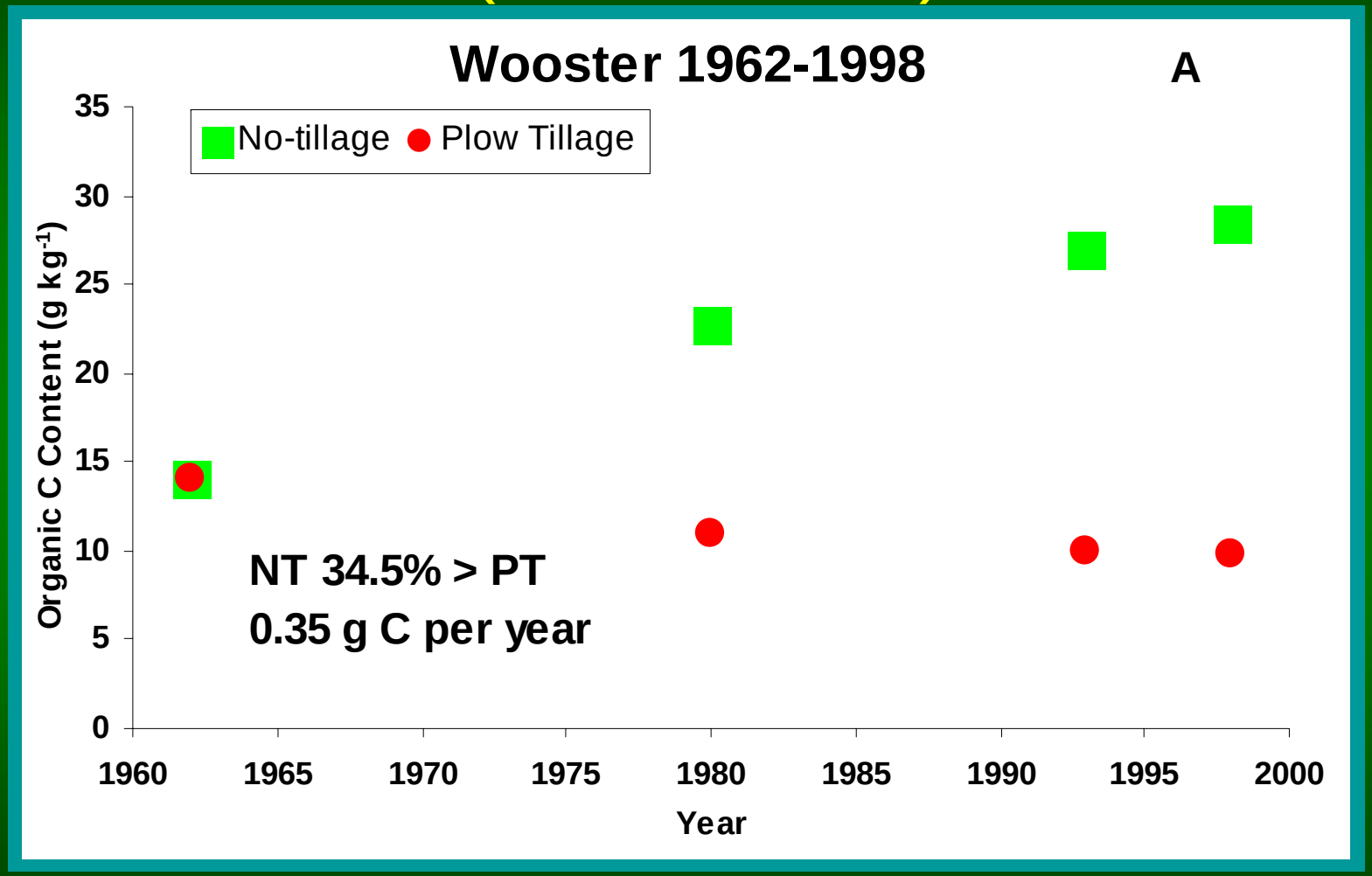
Crop	Acres	Conventional Tillage	Mulch-Till	Ridge-Till	No-Till
Corn	**1,000**	4,980	4,110	3,330	2,770
Total Fuel Use		4,980	4,110	3,330	2,770
Potential Fuel Savings over Conventional Tillage			870	1,650	2,210
Savings			17%	33%	44%

27% reduction

Back Print Start Over

Last Modified: 02/23/2006

Wooster OH Carbon Study
(0-2 inches)

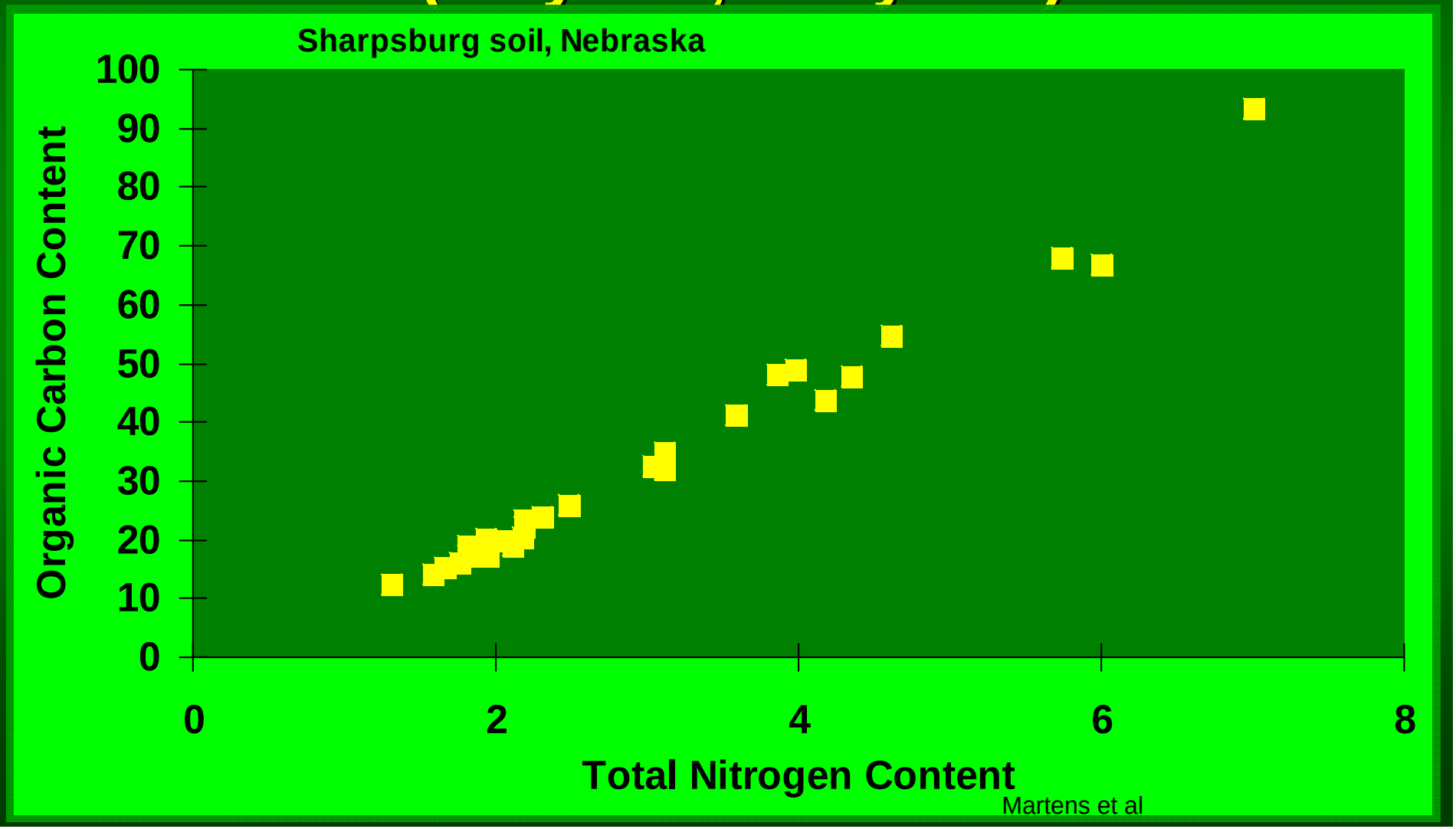


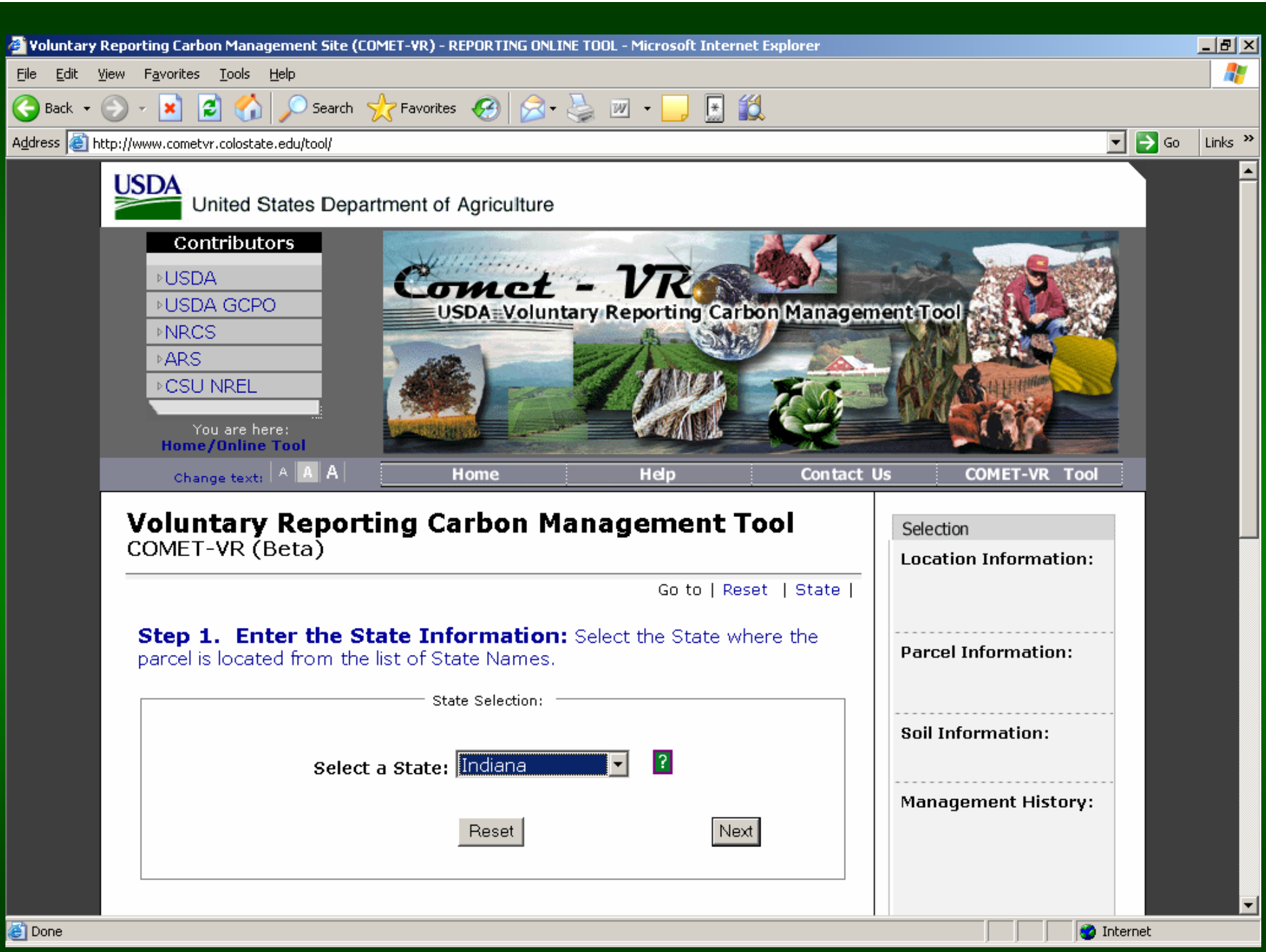
Continuous corn

Martens et al.

Organic Carbon to Total Nitrogen Relationship

(Silty soil, 130 years)




Voluntary Reporting Carbon Management Site (COMET-VR) - REPORTING ONLINE TOOL - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://www.cometvr.colostate.edu/tool/
Go Links
USDA United States Department of Agriculture
Contributors
USDA
USDA GCPO
NRCS
ARS
CSU NREL
You are here:
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USDA Voluntary Reporting Carbon Management Tool
Change text: A A A
Home Help Contact Us COMET-VR Tool
Voluntary Reporting Carbon Management Tool
COMET-VR (Beta)
Go to | Reset | State |
Step 1. Enter the State Information: Select the State where the parcel is located from the list of State Names.
State Selection:
Select a State: Indiana
Reset
Next
Selection
Location Information:
Parcel Information:
Soil Information:
Management History:
Done
Internet

Voluntary Reporting **Carbon Management Tool COMET-VR**

Carbon Storage Report

Report Year: 2007

Parcel Description

Parcel Name:	Parcel 1
Parcel Size:	1 Acres
Location:	FOUNTAIN, Indiana
Soil:	Non-hydric Silt Loam

Parcel Management History

Historic:	upland non-irrigated (pre 1970's)
70's to 90's:	dryland: corn-soybean-winter wheat; Intensive Tillage
Current:	dryland: corn-soybean; Reduced Tillage
Report Period:	dryland: corn-soybean; No Till Tillage

Predicted Change in Soil Carbon for the Parcel

Annual Change for 2007

	Change in Carbon	% Uncertainty
Total Tons Carbon per year:	0.08	7.78
Total Tons CO2 Equivalent per year:	0.30	7.78

Values recorded in English units. One **ton** of carbon is equivalent to 3.664 **tons** of carbon dioxide.

Back Reset Next

Soil Quality is Good for the Air

- **Each 1 % of O.M. contains:**

10,000 lbs. of C

1000 lbs. of N

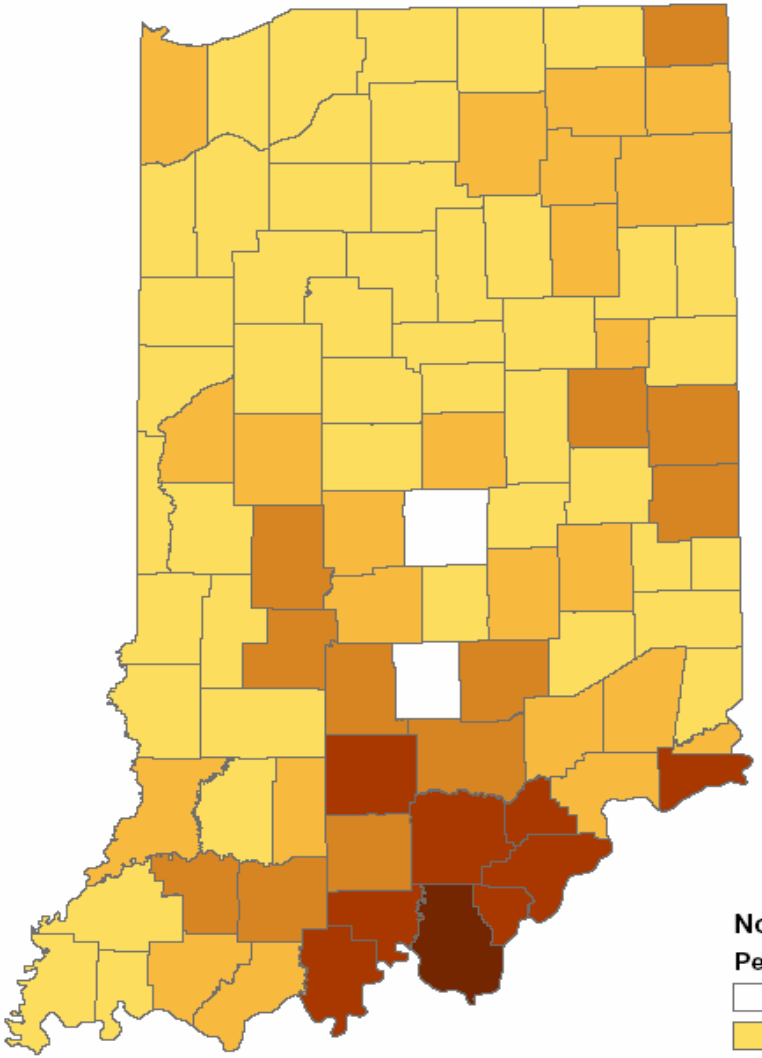
100 lbs. of P

100 lbs. of S

- The Potential Impact of No-Till Adoption on Air Quality Improvement is Huge!

2004 CONSERVATION TILLAGE REPORT

No-till Corn Percentages by County



Indiana Department of Natural Resources
Division of Soil Conservation
Geographic Information Systems
December 8, 2004

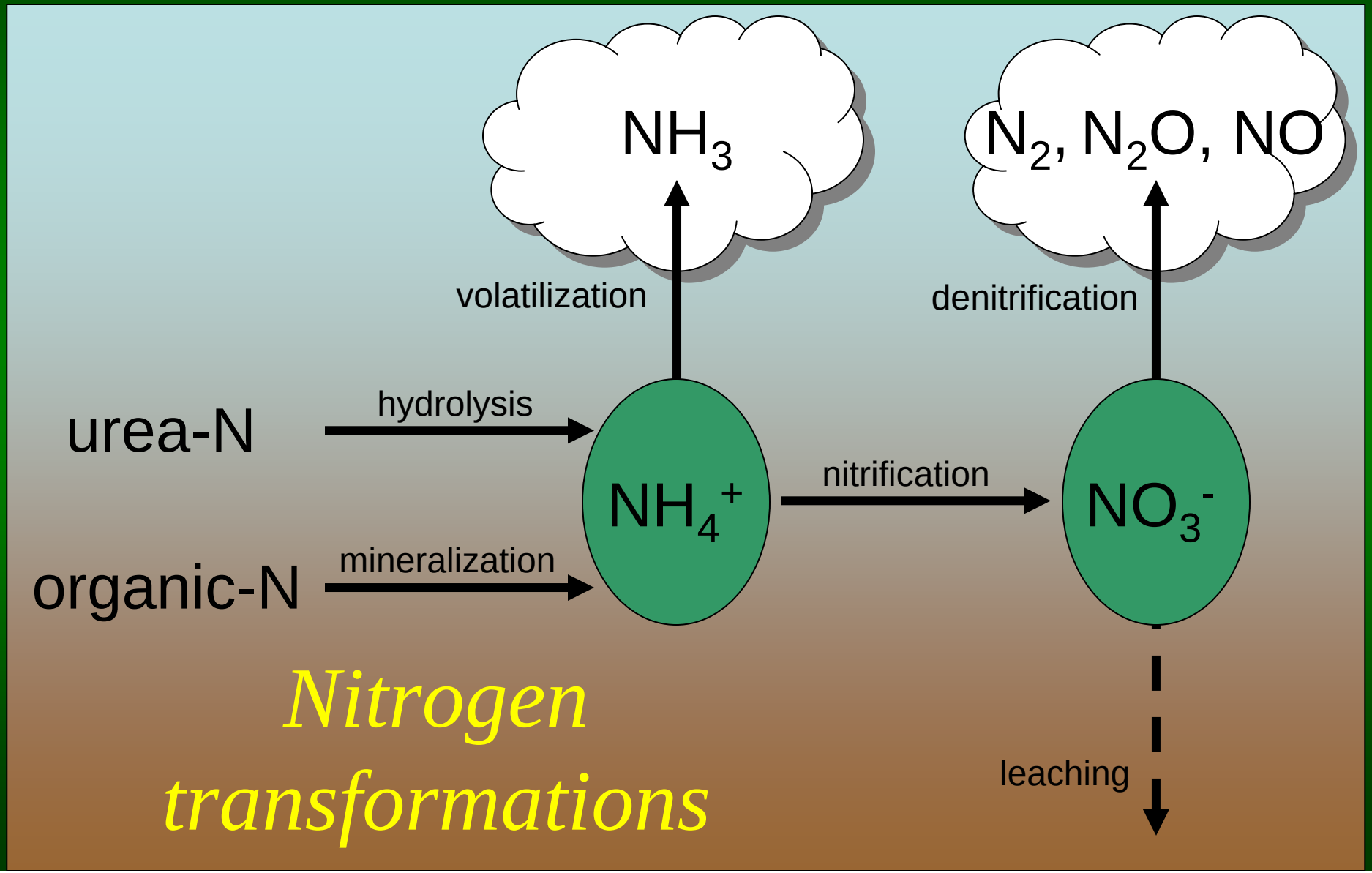
Nitrogen Costs More Than Doubled in the Past Two Seasons

What can we do about Nitrogen costs?…

…while offering solutions for the off-site risk potential?

Nitrogen Management

The Key is to Manage the Fate of Nitrogen



Nitrogen transformations

NCASTLE, IN 46135

Step 4: Alternatives

Comparison of Nitrogen Fertilizer Management Systems

The table below indicates your nitrogen fertilizer cost by crop under your current nitrogen management system and compares it with our projected cost under the most efficient and cost-effective nitrogen management alternative for the crop(s) you selected. Factors considered in the analysis include availability, cost and efficiency of nitrogen materials, timing of fertilizer application, fertilizer placement, and the use of a nitrogen loss inhibitor. *This tool does not provide field-specific recommendations*. It evaluates alternatives based on user input. Application rates for alternative practices will effectively supply the same level of N to the crop as the user's current practice.

Corn, Grain or Silage	**Current**	**Alternative Practice(s)**		
Form Of Nitrogen:	UAN	UAN	Anhydrous Ammonia	Urea
Application Timing:	Spring	Split Spring	Split Spring	Split Spring
Fertilizer Placement:	Surface Broadcast	Incorporate/ Inject	Incorporate/ Inject	Incorporate/ Inject
N-loss Enhanced Efficiency Product:	N	Y	Y	Y
Fertilizer Cost ($/lb N):	$0.44	$0.44	$0.30	$0.41
Acres Planted:	1000	1000	1000	1000
Application Rate (lb N/ac):	180	146	144	146
Cost:	$79,200	$64,114	$43,342	$59,761
Savings:		$15,086	$35,858	$19,439
To see a more in-depth analysis of management alternatives for Corn, Grain or Silage, click here.				

* Numbers in parentheses represent an increase in cost compared with the current practice.
* The above calculations do not consider application methods or the cost of any enhanced efficiency product. For these products to be economically feasible, their cost must be offset by a

Cover Crops

Carbon and Nitrogen Cycles Can Be Managed On a Broad Scale

- General rule of thumb- 20# of N is mineralized from every 1% of organic matter.
- To get this mineralization a relative amount of CO_2 must be released
- Mineralization happens later in the season in No-Till

Annual Ryegrass Cover Crop

Mike Plumer- U of I plots

- 84# N from top growth

Farmers will need to reinvest $$ in New Conservation Systems

Technical Assistance is Key to Management Changes

NRCS

Conservation Tillage Initiative