# Field to Market

## The Keystone Alliance for Sustainable Agriculture

January 2012

Field to Market

# What is Field to Market?

- Field to Market Video

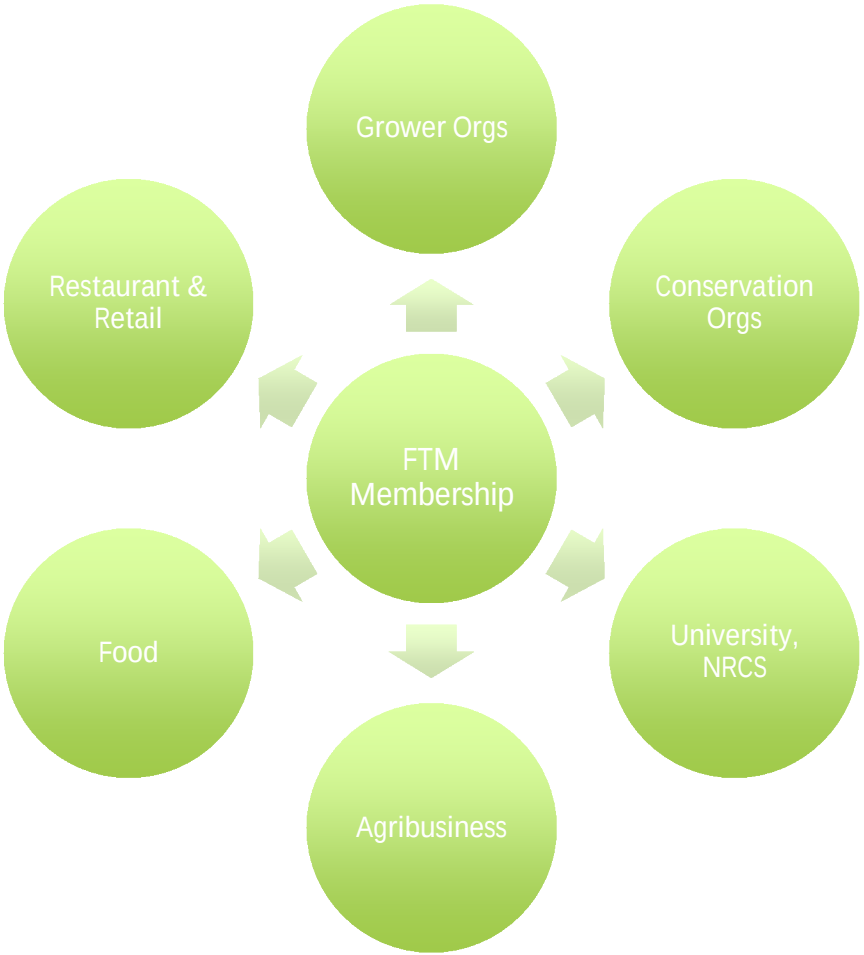
Field to Market

# What is Field to Market?

- A **collaborative stakeholder group** of producers, agribusinesses, food and retail companies, conservation organizations, universities, and NRCS
- Focusing on **defining and measuring** the sustainability of food and fiber production
- Developing **outcomes-based** metrics
- Measuring the **environmental and socioeconomic impacts** of agriculture
- Providing tools to **help growers analyze operations** and **food companies explain** how natural resources are being managed

Field to Market

# Who are our members?




Field to Market

# Who are our members?

NCGA

The Nature Conservancy
Protecting nature. Preserving life.

AMERICAN FARM BUREAU FEDERATION®

BAYER
Bayer CropScience

syngenta

GENERAL MILLS

DUPONT
The miracles of science™

The Fertilizer Institute
Nourish, Replenish, Grow

NATIONAL ALFALFA & FORAGE ALLIANCE
NAFA

American Farmland Trust
Saving the Land that Sustains Us

JOHN DEERE

FLEISHMAN HILLARD
INTERNATIONAL COMMUNICATIONS

FARM PRESS

COLLEGE OF AGRICULTURAL & LIFE SCIENCES
University of Wisconsin-Madison

WWF

CropLife AMERICA

MARS
incorporated

Cargill

ILLINOIS SOYBEAN ASSOCIATION

CTIC
Conservation Technology Information Center

National Cotton Council of America

Field to Market
The Keystone Alliance for Sustainable Agriculture

INNOVATION CENTER FOR U.S. DAIRY
HEALTHY PEOPLE • HEALTHY PRODUCTS • HEALTHY PLANET

NATIONAL POTATO COUNCIL

BUNGE

National Association of Wheat Growers

EDF
ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

National Association of Conservation Districts
conserving natural resources
for our future

ASA
American Soybean Association
If you believe, belong.

Kellogg's

CropLife INTERNATIONAL

UofA
UNIVERSITY OF ARKANSAS
DIVISION OF AGRICULTURE

BASF
The Chemical Company

Coca-Cola
LIVE POSITIVELY

INDIANA SOYBEAN ALLIANCE

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

MANOMET
Center for Conservation Sciences

cotton

Our soybean checkoff.
Effective. Efficient. Farmer-Driven.

LAND O'LAKES, INC.

MONSANTO
imagine®

IPNI
INTERNATIONAL PLANT NUTRITION INSTITUTE

USA Rice
FEDERATION

DARDEN RESTAURANTS
Red Lobster · Olive Garden · LongHorn Steakhouse · The Capital Grille · Bahama Breeze · Seasons 52

WORLD RESOURCES INSTITUTE

GMA
The Association of Food, Beverage and Consumer Products Companies

Field to Market

# Field to Market Strategies

1. Define and communicate the challenge for agriculture
2. Complete suite of sustainability metrics for commodity agriculture with methods for applying them at multiple scales (national to field level)
3. Create shared value throughout supply chain

Field to Market

# First Step:
# Initial Environmental Indicators Report
# January 2009

Field to Market

# Environmental Indicators Report

## Criteria

- Outcomes based
- Practice/technology neutral
- Transparent and credible science
- On-farm production outcomes within a grower's control

## Data & Methods

- Crop-specific focus on four commodities: corn, cotton, soybeans and wheat
- Indicators: land use, soil use, water use, energy use, green house gas emissions
- Analyzed publicly available data from 1987-2007
- U.S. national-scale indicators
- Peer reviewed

## Updates

- Updated report for 2012 – to include updated methodology and inclusion of recent datasets, potatoes, and rice

Field to Market

# Report Conclusions

- Production agriculture has become **increasingly efficient** for many crops and indicators, relying on fewer inputs to produce more
  - For example, soil loss trends have improved substantially by 30 to nearly 70 percent for the four crops evaluated
- Suggests progress toward meeting the **increasing demand while achieving lesser environmental impact per unit of output produced**
- The report **does not define a benchmark level for sustainability**, but does **provide context for focusing on specific challenges and scales**

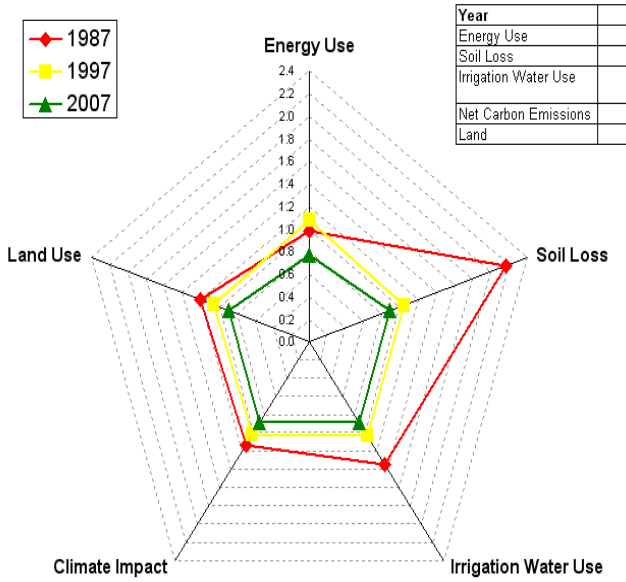
Field to Market

# Corn: Summary of Results

**Per bushel findings:**

- **Productivity** (yield per acre) increased 41 percent
- **Land use** decreased 37 percent
- **Soil loss** decreased 69 percent
- **Irrigation water use** has been variable, with an average 27 percent decrease
- **Energy use** decreased 37 percent
- **Greenhouse gas emissions** decreased 30 percent

Corn Efficiency Indicators (Per Unit of Output, Index 2000 = 1)




| Year | 2000 | Unit |
|---|---|---|
| Energy Use | 0.057 | Million Btu/bushel |
| Soil Loss | 28.7 | Pounds soil/bushel |
| Irrigation Water Use | 5.6 | Thousand gallons/Incremental bushel due to irrigation |
| Net Carbon Emissions | 3.0 | Pounds Carbon/bushel |
| Land | 0.013 | Acres/bushel |

(Values are expressed as 5-year centered averages.)

Total annual trends indicate increases in total annual energy use (28 percent), water use (17 percent), and greenhouse gas emissions (34 percent). Total annual soil loss has decreased 33 percent.

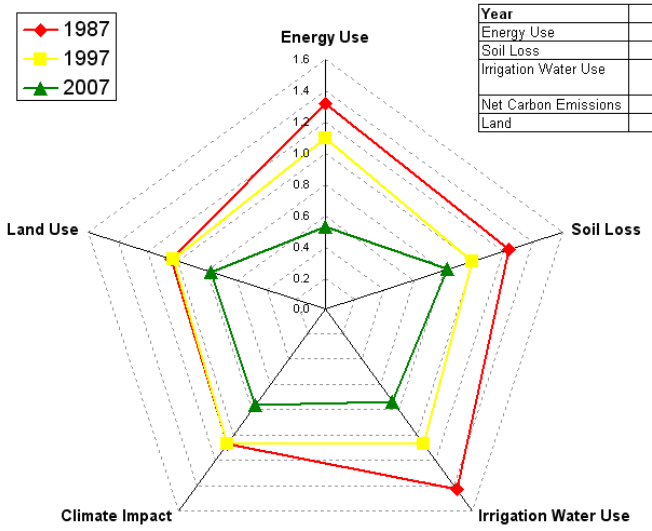
Field to Market

# Cotton: Summary of Results

**Per pound findings:**

- **Productivity** (yield per acre) increased 31 percent
- **Land use** per pound produced has decreased 25 percent
- **Soil loss** decreased 34 percent
- **Irrigation water use** per incremental pound of cotton produced (above that expected without irrigation) decreased by 49 percent
- **Energy use** energy use per pound decreased 66 percent
- **Greenhouse gas emissions** per pound fluctuated. More recent improvements resulting in a 33 percent average decrease

Cotton Efficiency Indicators (Per Unit of Output, Index 2000 = 1)




| Year | 2000 | Unit |
|---|---|---|
| Energy Use | 0.012 | Million Btu/pound |
| Soil Loss | 33.2 | Pounds soil/pound cotton |
| Irrigation Water Use | 1.5 | Thousand gallons/Incremental pound due to irrigation |
| Net Carbon Emissions | 0.5 | Pounds carbon/pound cotton |
| Land | 0.002 | Acres/pound |

(Values are expressed as 5-year centered averages.)

Total annual trends indicate soil loss and climate impact in 2007 are similar to the impact in 1987, with average trends over the study period remaining relatively flat. Total energy use decreased 45 percent and total water use decreased 26 percent.

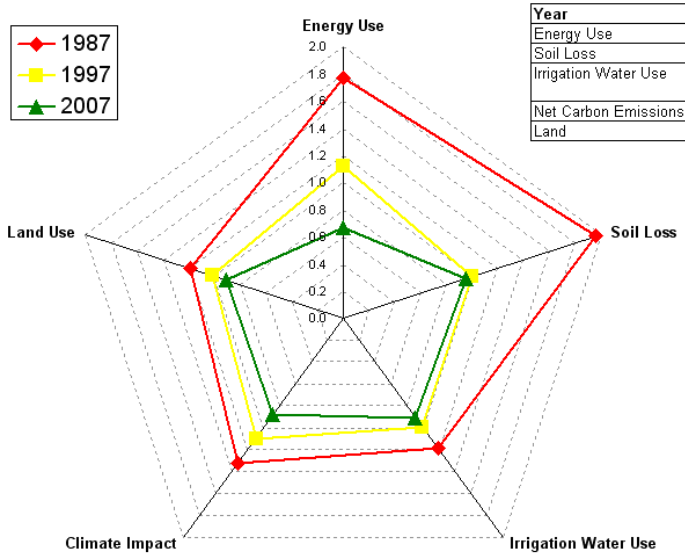
Field to Market

# Soybeans: Summary of Results

**Per bushel findings:**

- **Productivity** (yield per acre) increased steadily by 29 percent
- **Land use** efficiency per bushel improved by 26 percent
- **Soil loss** decreased 49 percent
- **Irrigation water use** improved 20 percent
- **Energy use** decreased 65 percent
- **Greenhouse gas emissions** decreased 38 percent

Soybean Efficiency Indicators (Per Unit of Output, Index 2000 = 1)




| Year | 2000 | Unit |
|---|---|---|
| Energy Use | 0.044 | Million Btu/bushel |
| Soil Loss | 101.0 | Pounds soil/bushel |
| Irrigation Water Use | 19.4 | Thousand gallons/Incremental bushel due to irrigation |
| Net Carbon Emissions | 2.2 | Pounds Carbon/bushel |
| Land | 0.026 | Acres/bushel |

(Values are expressed as 5-year centered averages.)

Total annual trends indicate soybean production's total energy use decreased 29 percent, soil loss decreased 11 percent, irrigation water use increased 39 percent, and climate impact increased 15 percent.

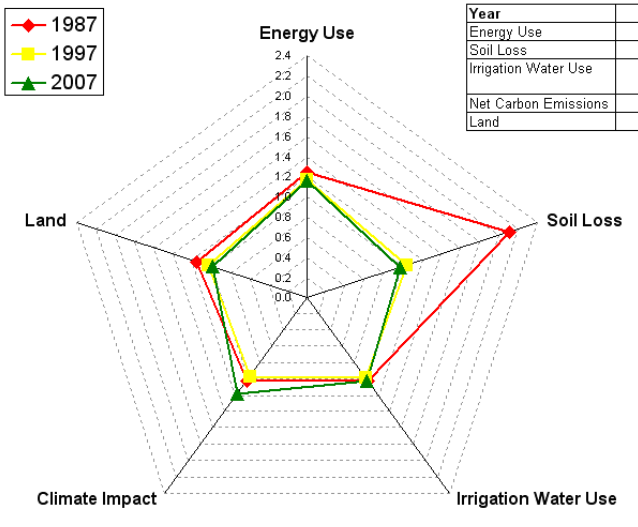
Field to Market

# Wheat: Summary of Results

**Per bushel findings:**

- **Productivity** (yield per acre) increased by 19 percent
- **Land use** was variable, with an average overall decrease of 17 percent
- **Soil loss** improved 50 percent with most improvements over the first half of the study period
- **Irrigation water use** per bushel produced due to irrigation showed an average flat trend
- **Energy use** decreased nine percent
- **Greenhouse gas emissions** increased 15 percent, with a larger increase in the latter half of the study period

Wheat Efficiency Indicators (Per Unit of Output, Index 2000 = 1)




| Year | 2000 | Unit |
|---|---|---|
| Energy Use | 0.069 | Million Btu/bushel |
| Soil Loss | 104.4 | Pounds soil/bushel |
| Irrigation Water Use | 13.2 | Thousand gallons/Incremental bushel due to irrigation |
| Net Carbon Emissions | 4.7 | Pounds Carbon/bushel |
| Land | 0.024 | Acres/bushel |

(Values are expressed as 5-year centered averages.)

Total annual trends indicate total energy use and total irrigation water use were similar in 1987 and 2007, with average trends showing an 18 percent decrease in total energy use and an 11 percent decrease in total water use. Total soil loss has decreased 54 percent. Total climate impact has increased an average of five percent over the study period, with a more significant increase over the past decade.

Field to Market

# Fieldprint Calculator 2.0
# Launched January 2012

Field to Market

# What is the Fieldprint Calculator 2.0?

- First launched in 2009
- An online education and awareness tool
- Helps growers evaluate their farming decisions in the areas of:
  - Efficient land use
  - Soil conservation
  - Soil carbon
  - Water use
  - Energy use
  - Greenhouse gas emissions

Field to Market

# Fieldprint Calculator 2.0

- Launched in January 2012
- Includes county, state and national averages
  - Allows farmers to compare their Fieldprint results with others in their area
- Farmers can save their information and compare the environmental impact of different management decisions on their operation
- The tool is free, voluntary and confidential

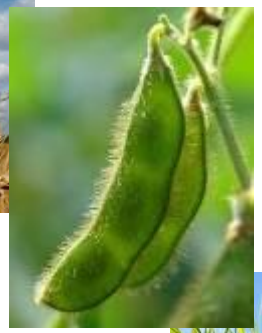
Field to Market

# Fieldprint Calculator 2.0 Highlights

- Streamlined data entry and improved consistency
- Interactive mapping and GIS technology
- Advanced algorithms and expanded data sets
- Incorporation of the Natural Resource Conservation Service (NRCS) RUSLE2 tool
- Incorporation of the NRCS Soil Conditioning Index (SCI)
- Crop rotations
- Enterprise budget analysis

Field to Market

# Field to Market Pilot Projects



- *Bunge, Kellogg & Nebraska corn growers explored the Fieldprint for Frosted Flakes*
- *Corn growers in the Paw Paw watershed of Michigan are working with Van Buren Conservation District, The Coca-Cola Company, The Nature Conservancy, and World Wildlife Fund to analyze management practices*
- *Cotton growers in Louisiana and Texas will explore management practices and connections to NRCS programs*
- *Wheat growers in Idaho are working with General Mills and Syngenta to explore practices and outcomes*
- *Rice, wheat, soybean, cotton, and corn growers in the Southeast worked with Syngenta to explore sustainable practices and identify economic benefits, using FTM metrics and Syngenta's Land.db tool*
- *Oat growers in Canada are working with General Mills to identify historical trends and explore practices for Cheerios*

Field to Market

# Questions/Contact Information

- Sarah Stokes Alexander, Director, Sustainability and Leadership Programs
  - 970-513-5846; salexander@keystone.org
- Julie Shapiro, Senior Associate
  - 970-513-5830; jshapiro@keystone.org
- *Field to Market* Website (includes Fieldprint Calculator and background information)
  - http://www.fieldtomarket.org

Field to Market