



**Field to Market<sup>®</sup>**

The Alliance for Sustainable Agriculture





# Meeting the Challenge

Producing enough food, fiber and fuel for more than 9 billion people by 2050, while conserving natural resources has become increasingly complex



**50-70%**  
in middle class



purchasing  
more protein  
rich foods



doubling  
agricultural  
output



facing a  
changing  
climate



decreased  
rainfall



extreme  
weather  
patterns



**70%**  
fresh water  
used



**37%**  
of land use

**1/3**  
edible food  
lost or wasted



# Americans Seek Sustainable Food Options



More than eight-in-10 Americans consider sustainability when buying food and would like to see more options available that protect the environment.



# Understanding Their Impact

Nearly three-quarters of consumers state they want companies to do a better job explaining how their purchases impact the environment.





# Millennials Voting With Their Wallets



Six out of ten millennials (19- to 36-year old consumers) are willing to pay more for environmentally friendly products.

The image shows three young soybean plants with two leaves each, growing out of a bed of brown, fibrous mulch. The plants are in the foreground and middle ground, with a soft, warm light illuminating the scene. The background is a blurred field of similar mulch and other plants.

# Responding to the Challenge

## Corporate Sustainability Commitments



- Reduce GHG emissions across value chain by 25% by 2020
  - Sustainably source key agricultural ingredients by 2020
  - Expand acreage in Field to Market to 1 Million acres by 2020
- 



- Sustainably source 100 percent of 10 priority ingredients by 2020
  - Expand acreage in Field to Market to 2.5 Million acres by 2015
  - Reduce GHG emissions in fertilizer management
- 



- Halve the GHG impact of our products across the lifecycle by 2020
  - Source 100% of our agricultural raw materials sustainably by 2020
  - Halve the environmental footprint of the making and use of our products as we grow our business by 2020
- 



- Reduce and optimize the resources required to produce that food and driving more transparency into its supply chain
- Reduce fertilizer use on 14 Million acres of U.S. farmland by 2020



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**Field to Market: The Alliance for Sustainable Agriculture focuses on defining, measuring and advancing the sustainability of food, fiber and fuel production**





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



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## What is Field to Market®?

- **A collaborative stakeholder group**
  - Producers, agribusinesses, food and retail companies, conservation associations, universities, and NRCS
  - Established as a 501(c)(3) with staff and headquarters in Washington, DC in 2014
- **Identifying supply chain strategies to define, measure, and promote continuous improvement for agriculture**
  - Addressing the challenge of increasing demand and limited resources
- **Developing and implementing outcomes-based, science-based metrics and tools**
  - Fieldprint Calculator®, a free, online tool to help growers analyze their operations and help the supply chain explain how food is produced
  - National Report on environmental and socioeconomic trends over time for U.S. commodity crops



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# How We Define Sustainable Agriculture

Meeting the needs of the present while improving the ability of future generations to meet their own needs by:

- Increasing productivity to meet future food and fiber demands
- Improving the environment
- Improving human health
- Improving the social and economic well-being of agricultural communities



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# Guiding Principles

- Engage the full supply chain including producers
- Focus on commodities crops with unique supply chains and traceability issues
- Science based
- Outcomes based
- Technology neutral
- Commitment to individual grower data privacy
- Measure broad-scale trends and field-scale outcomes



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# Deliverables: What We Are Doing

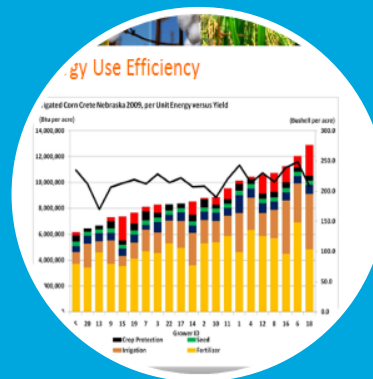


Environmental and Socioeconomic Indicators for Measuring Outcomes of On-Farm Agricultural Production in the United States

National indicators report:  
Documentation of overall trends



Grower Fieldprints:  
Individual opportunities for continuous improvement



Supply chain projects:  
Direct engagement in continuous improvement

Public data and models  
Collaboratively developed  
Outcomes based



**National Indicators Report**  
The Sustainability Story of U.S. Agriculture



# National Indicators Report: Objectives

- **Analyze trends** over time for environmental and socioeconomic sustainability indicators
- **Establish a baseline** against which to measure future improvements
- **Create enabling conditions** for an informed, multi-stakeholder discussion of sustainability
- Advance an **outcomes-based, science-based** approach
- **Provide broad-scale context** for more local efforts



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# National Indicators Report

## Criteria

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

## Data & Methods

- Crops: corn, cotton, potatoes, rice, soybeans, and wheat (2012)
- Indicators : land use, soil use, irrigation water, energy use, green house gas emissions in socio-economic added in 2012
- Analyzed publicly available data, 1980-2011; U.S. national-scale indicators
- Peer reviewed





# Summary Results: Environmental Indicators

- Resource use/impact **per unit of production** (“efficiency”)
  - Improvement for all six crops on all five environmental indicators
  - Driven in part by improvements in yield
  - Helps track resource uses vs. production/demand concerns
- **Total resource use/impact**
  - Variability across crops and indicators (increases, decreases)
  - Driven in part by overall increases or decreases in production



# Sample Results: Resources per bushel – Soybeans

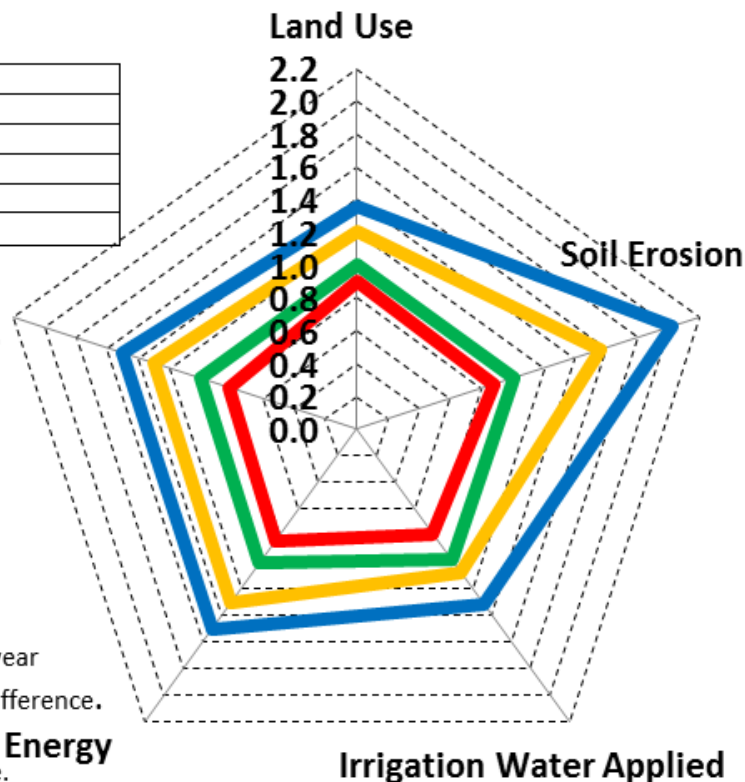
**Index of Per Bushel Resource Impacts to Produce Soybeans  
(United States, Year 2000 = 1)**

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 <sub>2</sub> e

\* Five-year average 1996 - 2000

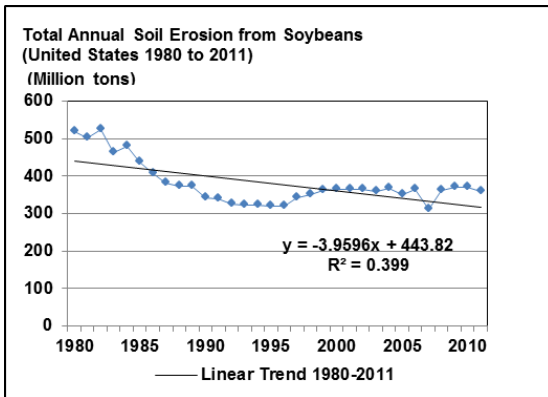
- 5 Yr. Avg. 1980 - 84
- 5 Yr. Avg. 1987 - 91
- 5 Yr. Avg. 1997 - 01
- 5 Yr. Avg. 2007 - 11

**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.

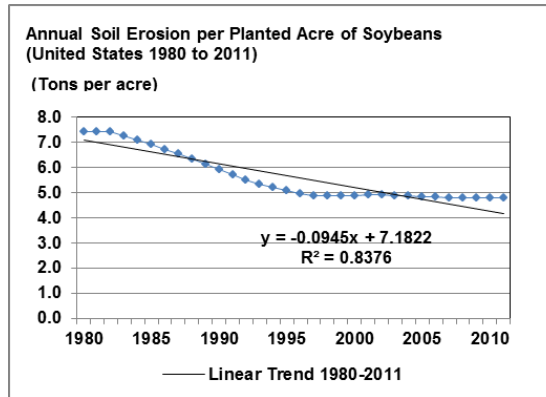




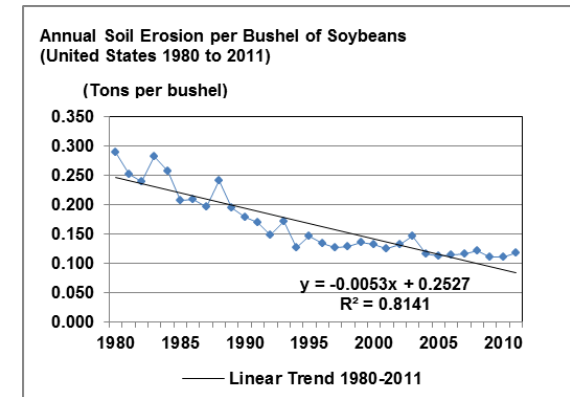
# A Closer Look: Soybean Results – Soil Erosion



## 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)



**The Fieldprint<sup>®</sup> Calculator**  
Measuring Field Level Outcomes and  
Identifying Opportunities for Improvement



# 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
- Biodiversity (in development)

- **Comparing against:**

- Their own fields
- Their own performance over time
- County, state and national averages





# Measuring at the Field Level

The screenshot shows the 'Fieldprint Calculator' web application. The browser address bar displays 'http://www.fieldtomarket.org/calculator'. The page header includes the 'Field to Market' logo and navigation links for 'Fieldprint Calculator', 'My Account', and 'Logout'. A main navigation bar contains buttons for 'Start', 'Land Use', 'Soil Conservation', 'Soil Carbon', 'Irrigation Water Use', 'Energy Use', 'Greenhouse Gas Emissions', 'Summary', and 'Economic Analysis'. Below this, a 'Start' section provides instructions: 'To go back to previous tabs, please use the tabs rather than your browser's Back button.' and 'On this page, you will locate your field and enter information about its soil and your crop rotation, management system, transportation, and drying practices. This information will be used to calculate your Fieldprint for a variety of indicators on the following tabs.'

The main content area is divided into two columns. The left column contains a form with the following fields:

- Session: Demo - IA Corn
- Units: U.S. Customary
- Location section:
  - State: Iowa
  - County: Kossuth County
  - Field Name: My Typical Corn Field
  - Field Lat (optional): [ ] dec. deg.
  - Field Lon (optional, negative value for U.S.): [ ] dec. deg.
  - Area: 158.97 acres
- Buttons: Zoom, Submit
- Expandable sections: Soil, Crop Rotation, Management, Transportation, Drying, Planted but not harvested

The right column features a satellite map with a yellow field boundary. It includes navigation controls (directional arrows, zoom in/out), a scale bar (200 m / 1000 ft), and coordinates (-94.08448, 43.41567). A 'Data Source' link is visible in the bottom right of the map area.

The footer contains navigation links: Home, About Us, Contact Us, Members, Privacy Policy, Sitemap, and a copyright notice: © 2011 Field to Market. All Rights Reserved.



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# Fieldprint Summary

Fieldprint Calculator | My Account | Logout

Fieldprint Calculator

Start Land Use Soil Conservation Soil Carbon Irrigation Water Use Energy Use Greenhouse Gas Emissions **Summary** Economic Analysis

To go back to previous tabs, please use the tabs rather than your browser's Back button.

### Summary

2011 Corn 2010 Corn

The Fieldprint values shown for a selected crop on the slider bars are plotted on the above Spidergram. The Spidergram axes are relative indices representing your resource use or impact per unit of output in each of the five resource areas. Lower values closer to the center indicate a lower impact on each resource. Your results (blue) are compared to your state (orange), county (red) and national (green) averages (50).

Create Report

2011 Corn 2010 Corn

You State Average

High ← Resource Efficiency → Low  
More Efficient ← Less Efficient

Land Use: 0 20 40 60 80 100

Soil Conservation: 0 20 40 60 80 100

Soil Carbon: 0 20 40 60 80 100

Irrigation Water Use: 0 20 40 60 80 100

Energy Use: 0 20 40 60 80 100

Greenhouse Gas Emissions: 0 20 40 60 80 100

The values on the slider bars are relative indices, where lower values (0) indicate greater efficiency and/or lower impacts on the particular resource area and higher values (100) indicate lower efficiency and/or higher impacts on the particular resource area.



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A photograph of a cornfield at sunset. The sky is a vibrant orange and red, with some clouds. The corn plants are in the foreground, and the field extends to the horizon.

# Fieldprint<sup>®</sup> Projects

## Supply Chain Partnerships for Continuous Improvement





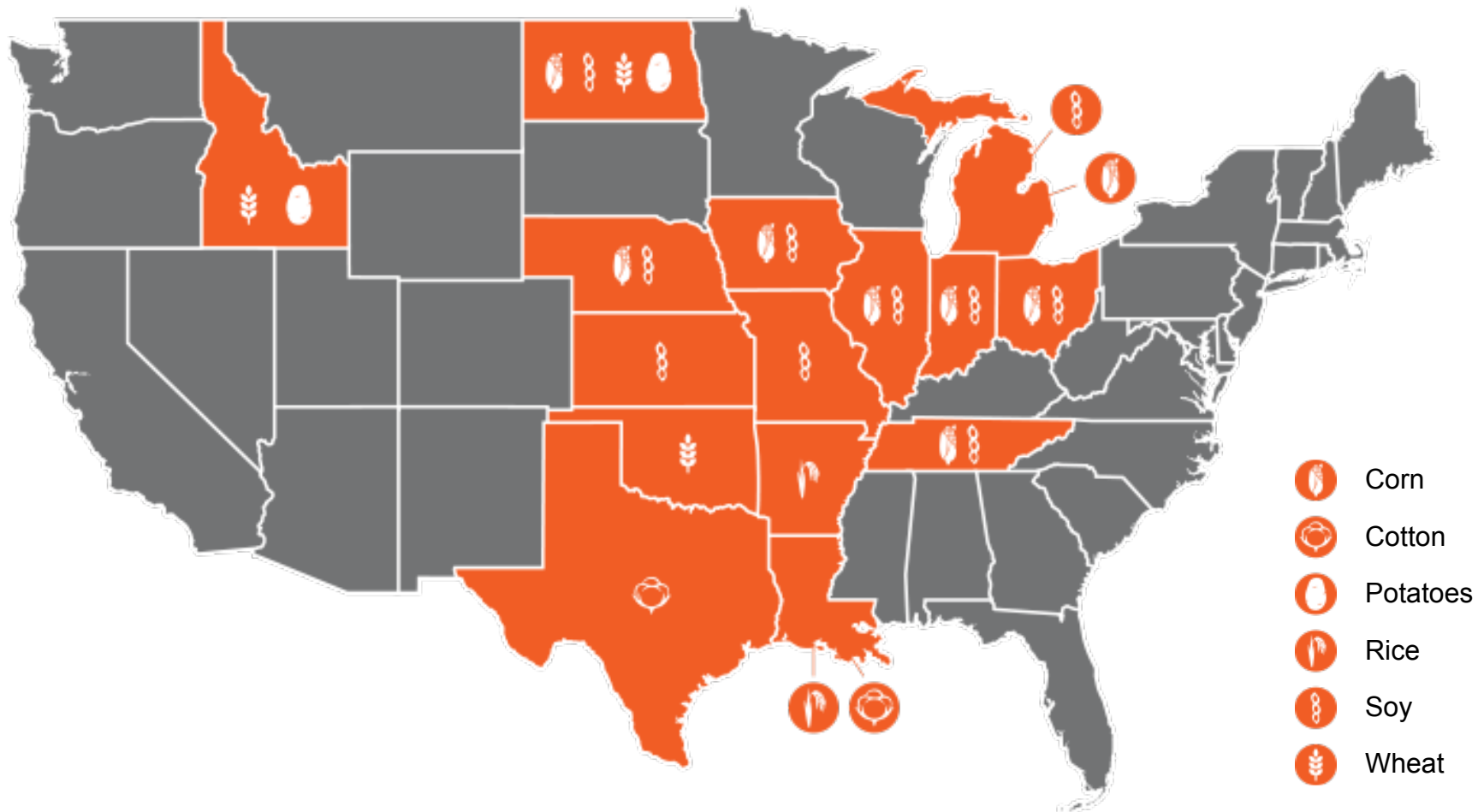
# Fieldprint Projects



- Demonstrate use of calculator on the ground to test utility at the grower level and through the supply chain
- Engage farmers across geographies, crops, and supply chains
- Sponsors include grower organizations, supply chain companies, conservation organizations, and NRCS



# Field to Market's Fieldprint Projects





# Mackinaw Watershed Fieldprint Project

**Location:** McLean County, Lake  
Bloomington and Evergreen Lake  
Watersheds, IL

**Timeline:** 2013-2015

**Acres:** 3,200

**Growers:** 20

**Crops:** Corn, Soy

## Field to Market Sponsors:



## Project Partners:

BCS, LLC (certified crop consultants);  
McLean County Soil and Water  
Conservation District; NRCS; The City of  
Bloomington; Walton Family Foundation

## Goals and Objectives

- Work to involve the majority of the growers in the Decatur Sourcing Area in a continuous improvement program by 2020.
- Create a scalable model and implement the model in other parts of the Mississippi River Basin.
- Through economically viable improvements in nutrient use efficiency and soil health, contribute to water quality improvements locally and regionally and reduce greenhouse gas emissions from farming.



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# Snake River Valley Fieldprint Project

**Location:** Snake River Valley, ID  
**Timeline:** 2009-2015  
**Acres:** 10,000  
**Growers:** 30  
**Crops:** Wheat, Potatoes, Sugar Beets, Barley

## Field to Market Sponsors:



.....  
GENERAL MILLS

syngenta

## Project Partners:

Thresher Wheat, Miller Coors

## Goals and Objectives

- Integrate crop production output data with Field to Market metrics across the full crop rotation
- Create a baseline from which improvements are continuously measured
- Develop effective farm management practices to drive improvements
- Generate actionable information to increase resource management and gain efficiencies while retaining and improving farm profitability



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**Future of Field to Market**  
Building a Supply Chain  
Sustainability Program



# The Future: FTM's Three Basic Functions

1. Benchmarking and data collection
2. Identifying opportunities for continuous improvement by leveraging existing tools/programs/initiatives
3. Aggregating information and enabling supply chain sustainability claims





# Program Expansion

- New headquarters and staff in Washington, DC will oversee licensing of FTM assets
- Technology development key to exponential growth in Fieldprint Calculator participation
  - Interface with existing farm management and recordkeeping programs to reduce duplicate data entry
- Participation in ISEAL is shaping program verification and enabling sourcing claims
- Established goal of engaging 20% of US cropland by 2020



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# Two Phase Program Design

- **Phase One: 2014 – 2015**
  - Development of APIs & license agreements for Fieldprint Calculator integration with other tools/platforms
  - Development of protocols for linking to continuous improvement programs / conservation resources / technical assistance
  - FTM supporting “Participation” claims
- **Phase Two: 2016 – Beyond**
  - Updated metrics & algorithms (FPC 3.0)
  - Integration with a greater number of tools/platforms
  - Established partnerships for continuous improvement
  - FTM supporting “Measurement” and “Impact” claims







# Workgroups

- **Verification and claims:** Continue to use ISEAL guidance to develop a protocol for the FTM program
- **Goals:** Provide further clarity and recommendations for collective near-term, mid-term and long-term goals
- **Metrics:** Identify which metrics need to be updated, and possible new metrics and process and timeline
- **Technology:** Fieldprint Calculator maintenance, including integration of new benchmarks, crops, and metrics. Review integration/coordination with other platforms.
- **Continuous improvement:** Establish protocols for continuous improvement options, including partnerships and reporting





# Key Objectives in 2015

- Updating our metrics to incorporate newly available science
  - Greenhouse gases
  - Water use and water quality
  - Soil health
- Harmonizing metrics with aligned programs and initiatives
- Preparing for rollout of version 3.0 of the Fieldprint Calculator
  - Updated user interface
  - Integration into other farm management software through an API
- Developing partnerships for continuous improvement
  - Sustainability curriculum for CCAs, etc.
- Establishing verification protocols for sustainable sourcing claims
- Membership expansion to strengthen downstream pull



**Value of Field to Market**  
A Common Sustainability Framework  
from Farm to Fork



# Value of the Field to Market Approach

- **Food and retail companies** can access aggregated data in a pre-competitive fashion to make sustainable sourcing claims.
- **Agribusinesses** have a business opportunity to provide relevant decision support tools, technologies, programs and initiatives to growers.



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# Value of the Field to Market Approach

- **Grain buyers** can report the sustainability of their sourcing areas through a single platform rather than responding to multiple, competing surveys that may not have the same degree of supply chain support or recognition.
- **Conservation organizations** have full confidence in a sustainability framework that can become the focal point of their agricultural work and goals for production and supply chain sustainability.



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# Value of the Field to Market approach

- **Farmers** can evaluate their current footprint and connect with tools, technologies, programs and initiatives that will facilitate continuous improvement within their operations.
- **Growers** can benefit from an outcomes-based, technology neutral sustainability platform that will help ensure market access while reducing or eliminating a proliferation of supply chain surveys.
- **Commodity Organizations** have opportunities to partner with the agricultural supply chain in communicating sustainability messages to the general public.



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**Thank You**

For More Information visit **fieldtomarket.org** or  
follow **@FieldtoMarket** on Twitter.

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