



A collaborative approach to measuring sustainability in agriculture

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Field to Market™

The Alliance for Sustainable Agriculture

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My background

The Scottish Highlands





Today's Talk and Discussion

- Sustainable sourcing – what's happening?
- An introduction to Field to Market and *why its different*
- Field to Market initiatives and what has been learnt
- Where is Field to Market going



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Food service and retail companies are driving sustainable sourcing into their global supply chains

- Responding to pressure from environmental groups
- Sustainable Sourcing = procurement of ingredients sustainably produced (e.g., reduced energy, carbon & water)
- Farms matter: ~ 50% of the environmental footprint of food ingredients

**Suppliers requested
to provide
documentation of
Sustainability**



Walmart 
Save money. Live better.



TESCO
SAFEWAY.



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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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The Alliance for Sustainable Agriculture





Guiding Principles underscore broad collaboration

- Engage the full supply chain
- Drive continuous improvement
- Initial focus on commodity crops
- Provide collaborative leadership
- Transparent
- Grounded in science
- Remain technology neutral
- Focused on outcomes
- Offer useful measurement tools & resources
- Coordinated and comprehensive approach



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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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Environmental efficiency indicators were developed as a first step

- **Land Use:** Planted area in acres per bushel
- **Soil Conservation:** Average soil erosion in tons per bushel
- **Soil Carbon:** Annual average change in soil carbon measured as a Soil Conditioning Index (SCI) of -1 to 1
- **Irrigation Water Use:** Quantity of irrigation water applied in acre-inches per bushel (irrigated – dryland yield)
- **Energy Use:** Total energy used (direct & indirect) in BTU's per bushel
- **Greenhouse Gas (GHG) Emissions:** Sum of direct and indirect GHG emissions measured as CO₂ equivalents per bushel



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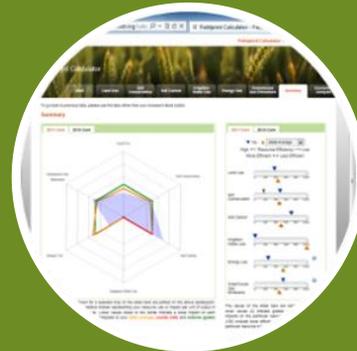
Additional indicators are under development

These indicators are at the core of FTM's deliverables:



National indicators report:

Documentation of overall trends



Grower Fieldprints: Individual opportunities for continuous improvement

Public data and models
Collaboratively developed
Outcomes based



Supply chain projects:

Direct engagement
in continuous
improvement





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



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 loss, irrigation water, energy use, green house gas emissions with 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



Results: Resources per bushel – Wheat

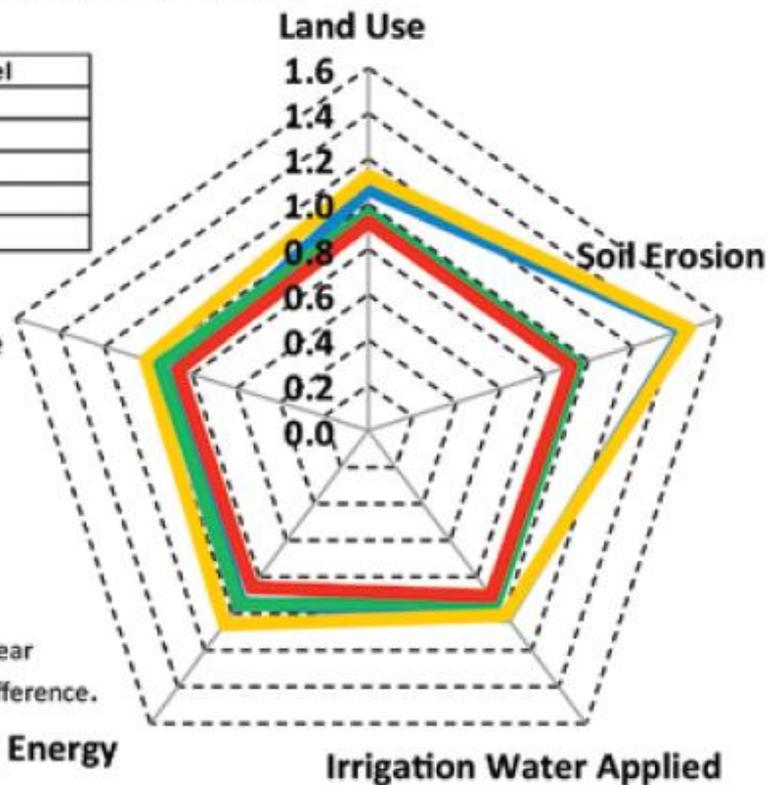
**Index of Per Bushel Resource Impacts to Produce Wheat
(United States, Year 2000 = 1)**

Year	2000 *	Unit - per Bushel
Land Use	0.029	Planted Acres
Soil Erosion	0.152	Tons
Irrigation Water Applied	0.580	Acre Inches
Energy	92,862	Btus
Greenhouse Gases	23.5	Pounds CO ₂ 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.





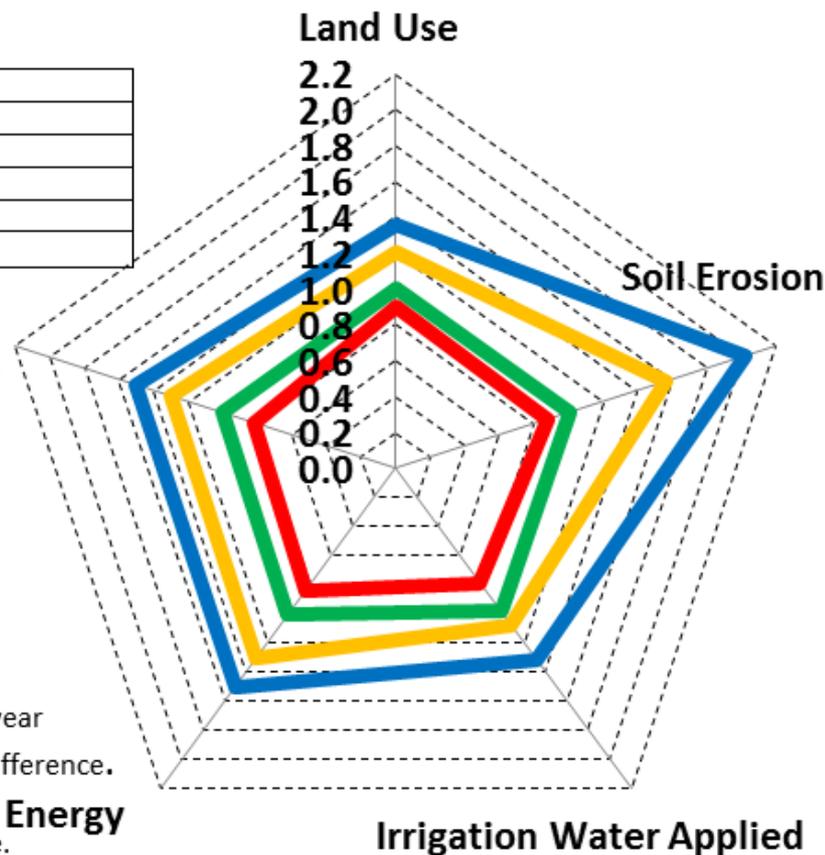
Results: Resources per bushel - Soybean

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

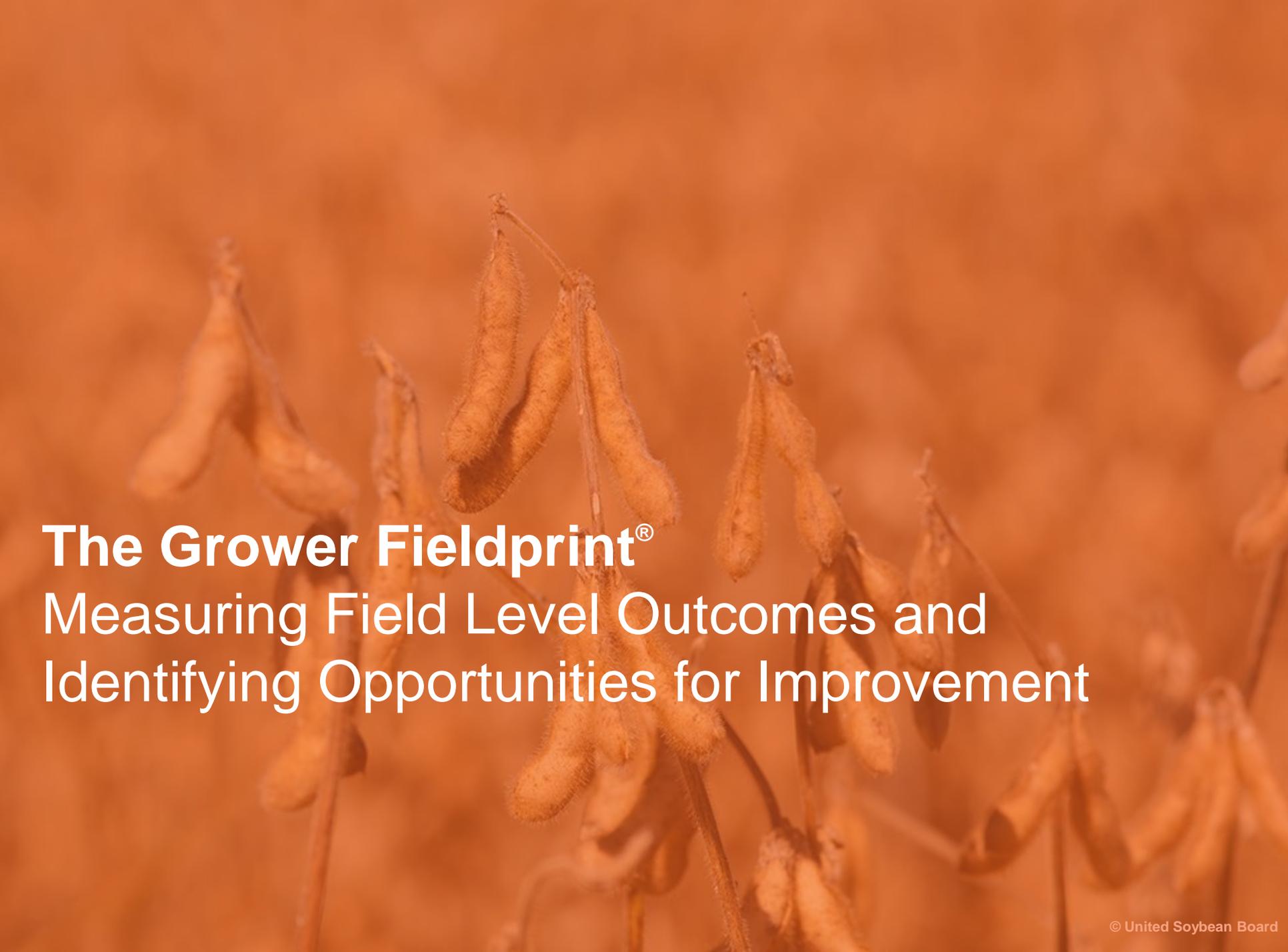
Year	2000 *	Unit - per Bushel
Land Use	0.027	Planted Acres
Soil Erosion	0.131	Tons
Irrigation Water Applied	0.766	Acre Inches
Energy	44,840	Btus
Greenhouse Gases	8.2	Pounds CO ₂ e

* 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.



The Grower Fieldprint[®]
Measuring Field Level Outcomes and
Identifying Opportunities for Improvement



How do growers get a Fieldprint?

- An online Fieldprint Calculator education tool for row crop farmers that indexes their agronomics and practices or....
- Farm management tools from trusted providers with Fieldprint Calculators built-in or linked-in
- Helps growers evaluate their farming decisions and compare their sustainability performance
- Provides comparisons to
 - Their own fields
 - Previous year's performance
 - Regional, 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 tabs for 'Start', 'Land Use', 'Soil Conservation', 'Soil Carbon', 'Irrigation Water Use', 'Energy Use', 'Greenhouse Gas Emissions', 'Summary', and 'Economic Analysis'. The 'Start' tab is active.

Below the navigation bar, a message states: 'To go back to previous tabs, please use the tabs rather than your browser's Back button.' The 'Start' section contains the following text: '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
- Collapsible sections: Soil, Crop Rotation, Management, Transportation, Drying, Planted but not harvested

The right column features a satellite map with a yellow rectangular field boundary overlaid. The map includes navigation controls (directional arrows, zoom in/out), a scale bar (0 to 1000 feet), and coordinates (-94.08448, 43.41567). A 'Data Sources' link is visible in the bottom right corner of the map area.

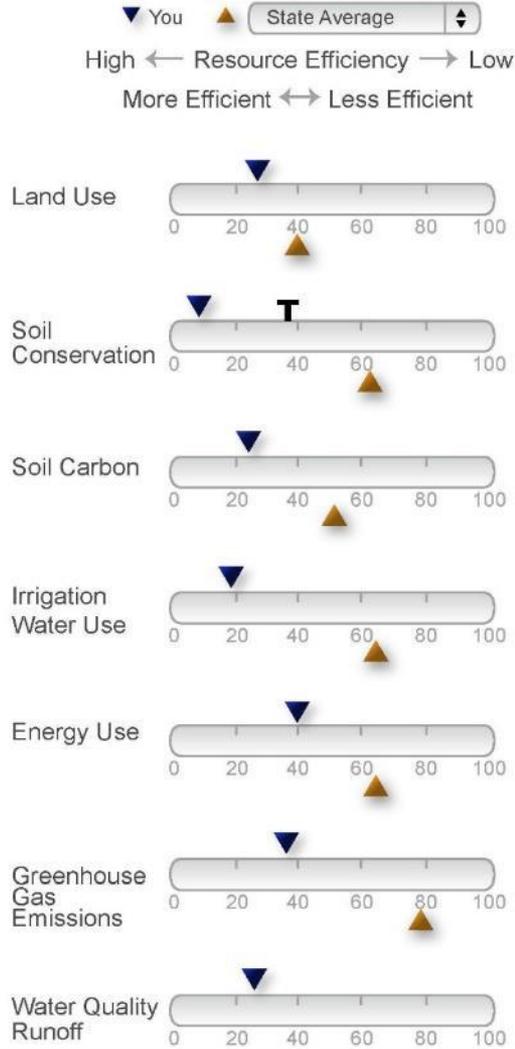
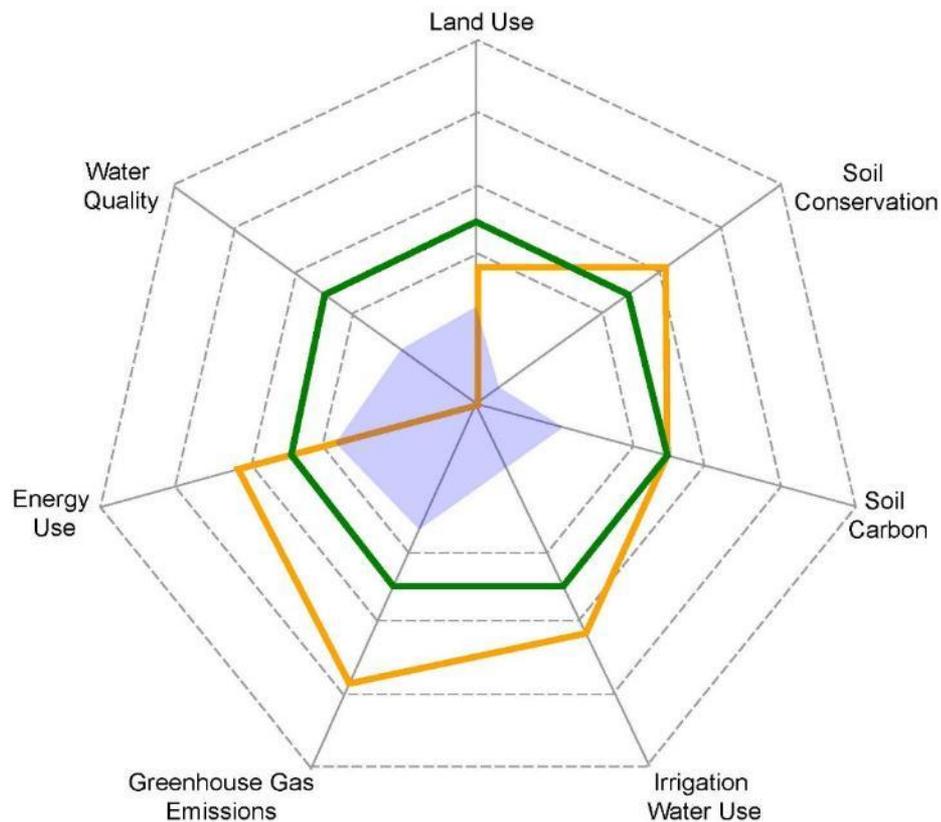
The footer of the application contains navigation links: Home, About Us, Contact Us, Members, Privacy Policy, Sitemap, and a copyright notice: © 2011 Field to Market. All Rights Reserved.



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2012 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), pilot (purple) and national (green) averages (50).

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.



Fieldprint[®] Projects
Implemented through Supply Chain
Partnerships



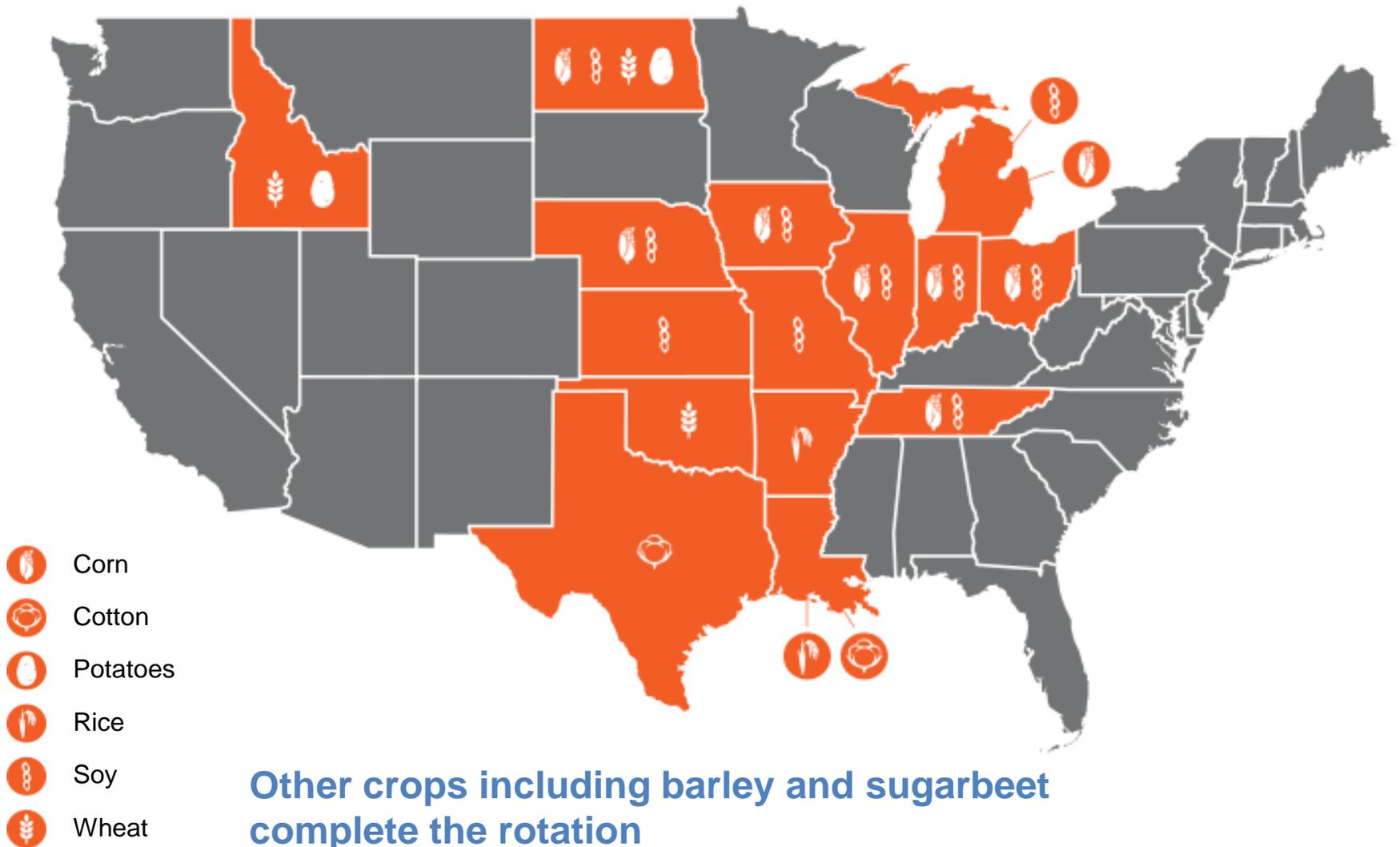
Fieldprint Projects



- Demonstrate implementation of indicators 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



Supply Chain Partnerships in 15 States





Fieldprint Projects include Sugar Beet



What American Crystal set out to do:

- Establish a baseline using Field to Market indicators
- Identify efficiencies that lead to higher productivity and profitability with improved natural resource management.
- Tell the important story of sustainable agriculture.

What has been accomplished?

- Fieldprint data collected from 23 growers for 2013-2014 production.
- 29,000 acres of sugar beets on 239 fields characterized representing over 725,500 crop tons produced.





Grower comments.

Fieldprint Project in Idaho

“Great Report that covers the basics, energy use, land use, water use, way they are farming. Like the way it compares at the national, state & down to the field. Great way to present the information.”

“Think we will use this as a barometer to gauge what we are doing. If we get way out of line, we need to make different choices.”

“Its all here. Can see the important stuff.”

“Can see why power companies and others offer incentives to improve irrigation, because it is the biggest factor of energy.”

“Found this was the easiest farm program to use. Have tried other software. Land.db is the most user friendly, and the service is great.”

“Fair measuring stick. Fun to see how it all came together.”

Source: AgConnections



Future of Field to Market
Building a Supply Chain
Sustainability Program



The Future: FTM's basic functions

1. Becoming the standard for sustainability measurement in commodity agriculture
2. Aggregating information, benchmarks and reporting
3. Identifying credible opportunities for change and improvement
4. Enabling supply chain sustainability claims through coordination with other initiatives

By 2020, engage 50 million acres in the Supply Chain Sustainability Program



FTM connects to supply chain initiatives beyond the farm



- The Sustainability Consortium (TSC) provides tools such as Key Performance Indicators (KPIs)
- These provide a common framework for companies to measure & compare products and suppliers
- TSC KPI's in surveys can be addressed by implementing FTM indicators



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Walmart uses the TSC™ Toolkit in their Sustainability Index

TSC KPI Questions can use FTM information e.g.,

1. _____ kg CO₂e per metric tonne of sugar supply harvested.
2. _____% of our sugar supply, by mass purchased in the last twelve months, is represented by the number reported above.
3. _____ cubic meters of irrigation water use per metric tonne of sugar supply harvested.
4. _____% of our sugar supply, by mass purchased in the last twelve months, is represented by the number reported above.
5. _____ metric tonnes of soil erosion per metric tonne of sugar supply harvested.
6. _____% of our sugar supply, by mass purchased in the last twelve months, is represented by the number reported above.

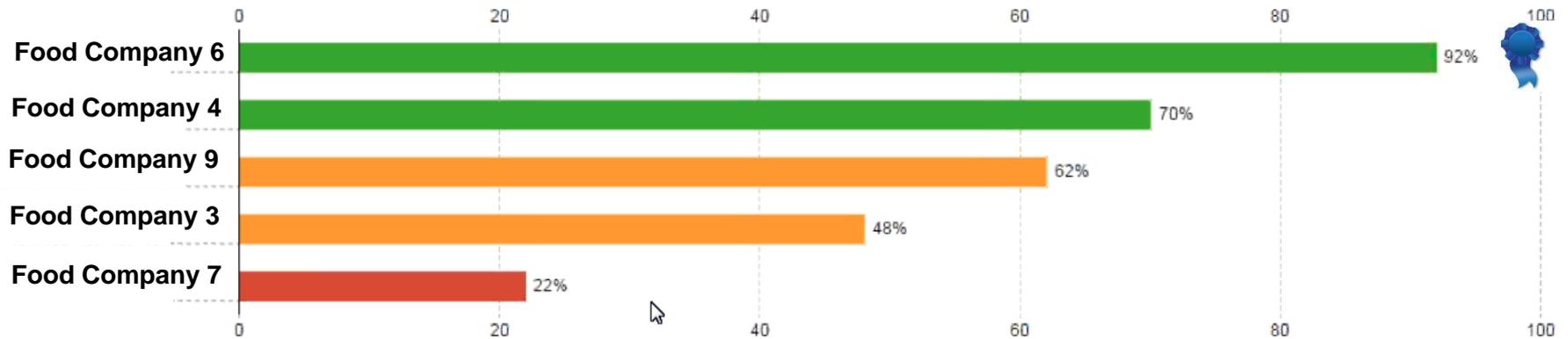


Walmart Sustainability Index Scorecard Example

Survey Result Report for **Breakfast Cereal Category**

Jules Hethur (besttrade)
19.11.2014

Supplier Ranking



KPI Details

Retailers expect consistent reporting in a global economy. Walmart uses providers such as The Sustainability Consortium and The Field to Market Initiative to *rank suppliers* on sustainability.

WALMART SUSTAINABILITY INDEX
KEY INITIATIVES





FTM has a two phase program design

- **Phase One: 2015**

- Scale fieldprint projects through license agreements for Fieldprint Calculator integration or links with other tools/platforms
- Connect to resources (programs, experts, technologies) that drive improvements
- Protocols to support and verify claims of 1) participation 2) measurement and 3) impact

- **Phase Two: 2016 – Beyond**

- Updated and improved metrics & algorithms
- Integration with a greater number of tools/platforms
- Establish additional partnerships for continuous improvement
- Support “Impact” claims





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 information to enable corporate goals and commitments for sustainable sourcing. Coordination with other supply chain initiatives make reporting efficient.
- **Agribusinesses** can realize business opportunities through decision support tools, technologies, programs and initiatives to grower customers.



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Value of the Field to Market Approach

- **Grain buyers** can access aggregated information to enable the supply of sustainably sourced commodities as specified by food and retail companies. FTM Coordination with other supply chain initiatives make reporting efficient.
- **Conservation organizations** have full confidence in a sustainability framework that can become the focal point of their agricultural work and goals for agricultural sustainability.



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Value of the Field to Market approach

- **Farmers & growers** can evaluate their current footprint efficiently across their rotation & connect to tools, technologies and programs that facilitate & document continuous improvement. Opportunity to ensure market access through an outcomes-based, technology neutral approach.
- **Commodity Organizations** have opportunities to support members with market access, and communicating sustainability messages to the supply chain and consumers.



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Thank You

For More Information

Visit www.fieldtomarket.org



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