Sustainability Indicators for Agriculture: A Case Study in Collaborative Measurement

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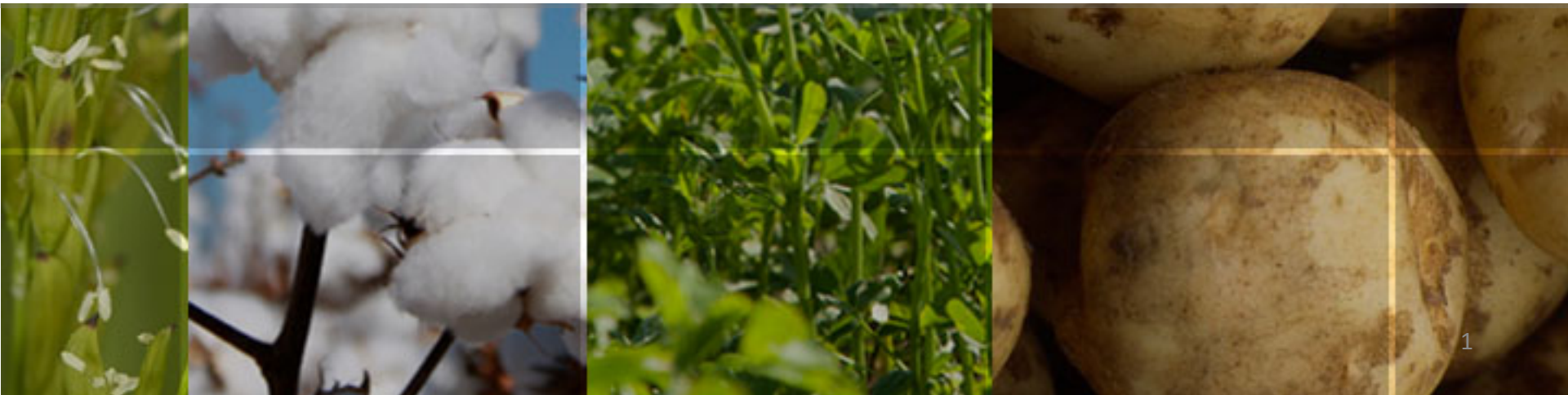
Colorado River Water Users Association Conference



The Keystone Center

- brings together today's public and private sector leaders to advance solutions to society's most challenging problems
- encourages creative thinking and collaborative decision-making in agriculture, energy, environment, education, and public health

"To go fast, go alone. To go far, go together."

THE Keystone CENTER

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Sustainable agriculture means

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, fuel and fiber demands
- Improving the environment
- Improving human health
- Improving the social and economic well-being of agriculture communities

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Field to Market Initiatives

Fieldprint Calculator:

Grower Benchmarking

Supply Chain Projects:

Continuous Improvement

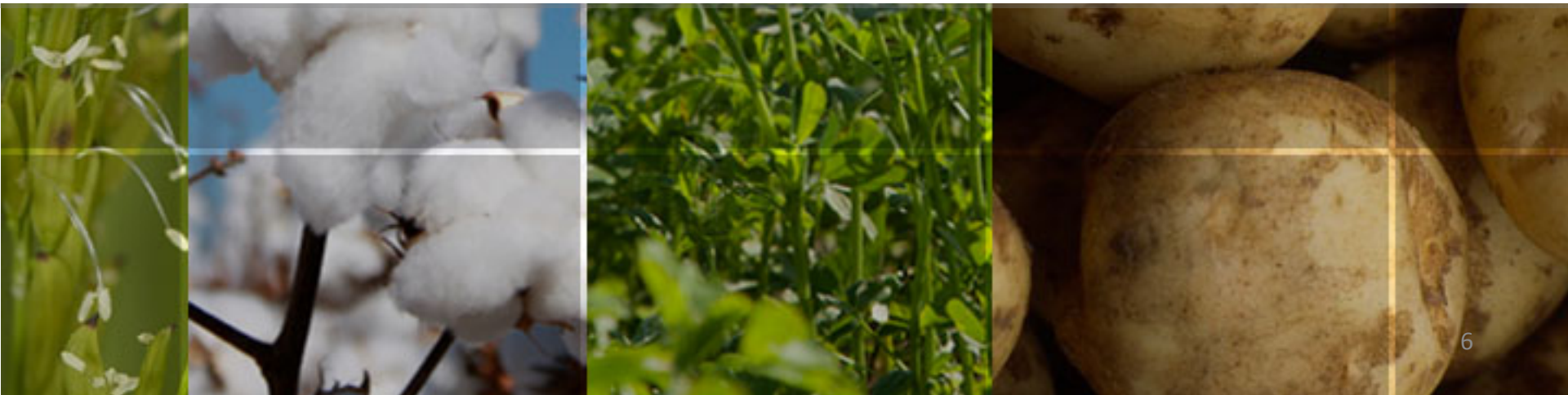
Indicators Report:

National Trends

Defining, measuring, and promoting sustainability

Field to Market National Indicators Report

The Sustainability Story of U.S. Commodity Agriculture



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

Crops	• Corn, cotton, potatoes, rice, soybeans, and wheat
Environmental Indicators	• Production and Yield; Land Use; Soil Erosion; Irrigation Water Applied; Energy Use; Greenhouse Gas Emissions
Socioeconomic Indicators	• Debt to Asset Ratio; Returns Over Variable Costs; National and State Gross Domestic Product; Non-Fatality Injury; Fatality; Labor Hours

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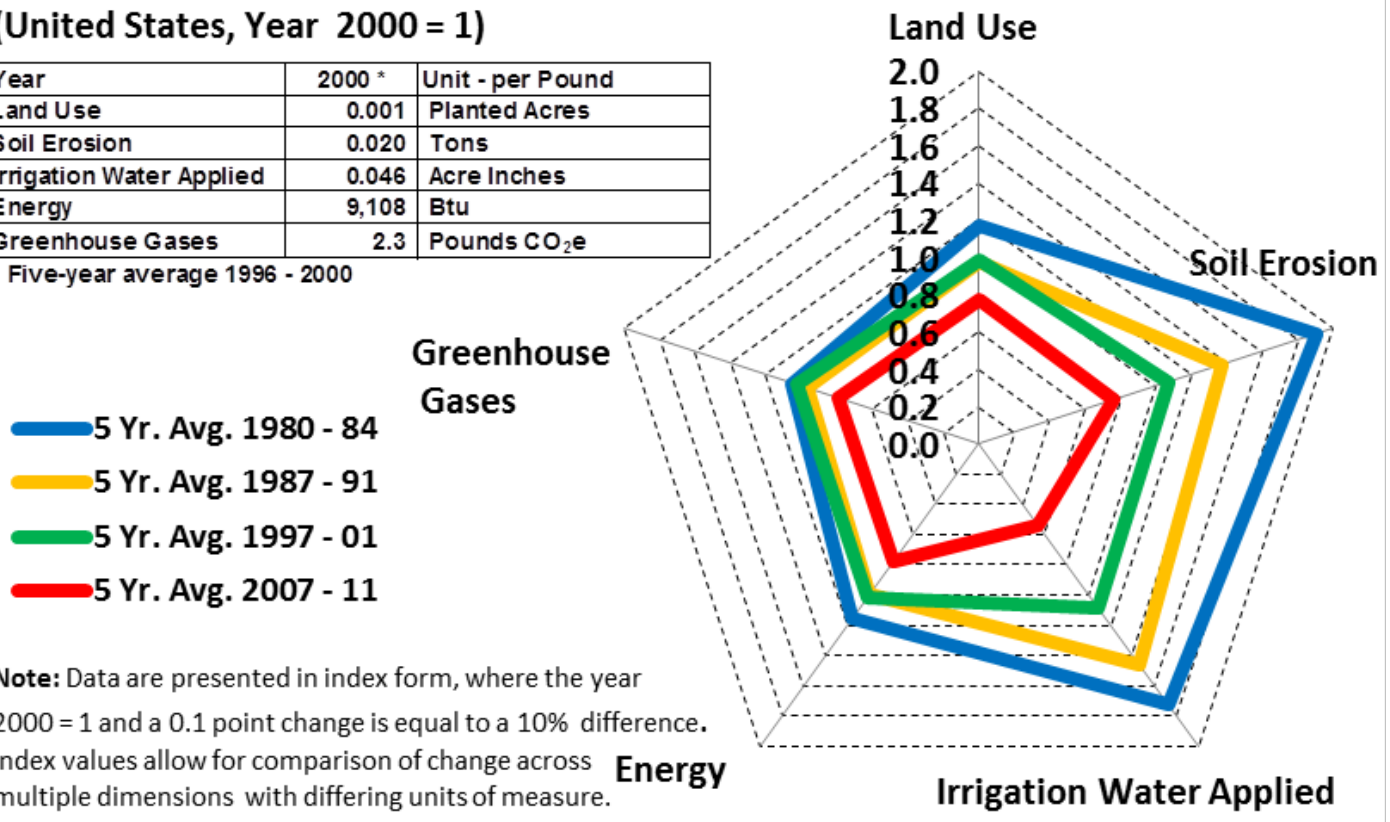
Sample Results:
Resources per bushel, Cotton

Index of Per Pound Resource Impacts to Produce Cotton Lint
(United States, Year 2000 = 1)

Year	2000 *	Unit - per Pound
Land Use	0.001	Planted Acres
Soil Erosion	0.020	Tons
Irrigation Water Applied	0.046	Acre Inches
Energy	9,108	Btu
Greenhouse Gases	2.3	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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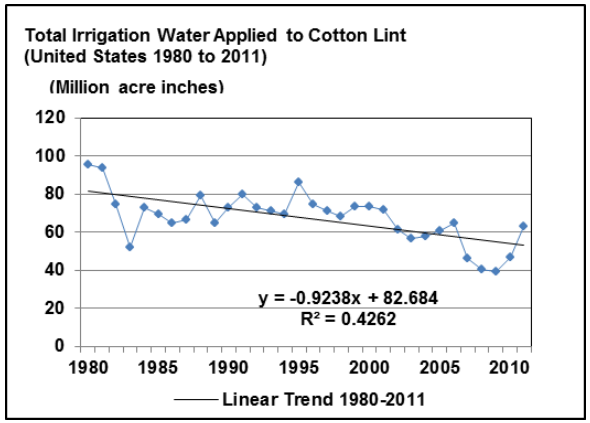
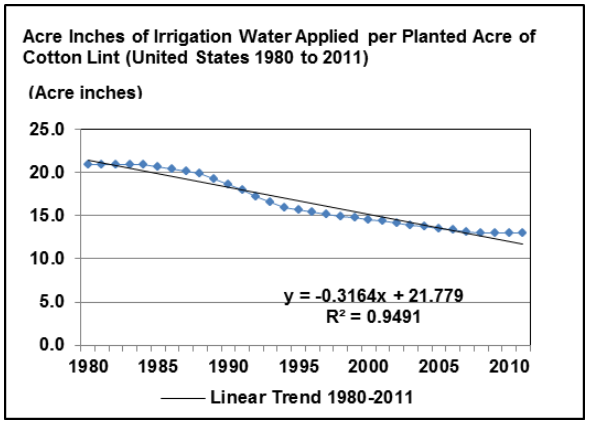
A Closer Look

Cotton Results: Irrigation Water Applied



TOTAL



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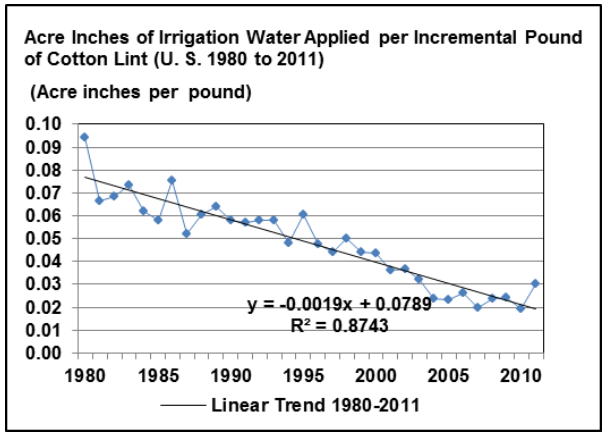

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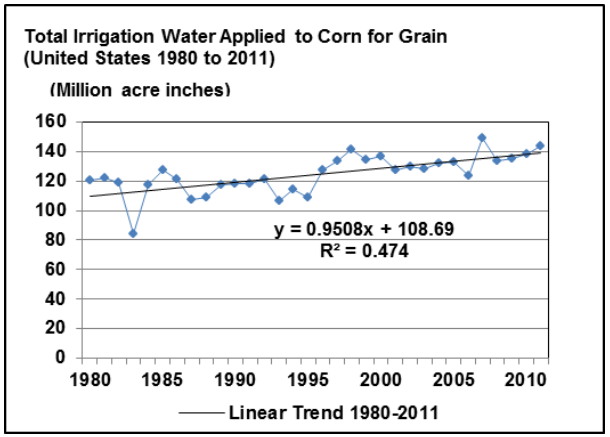
A Closer Look

Corn Results: Irrigation Water Applied



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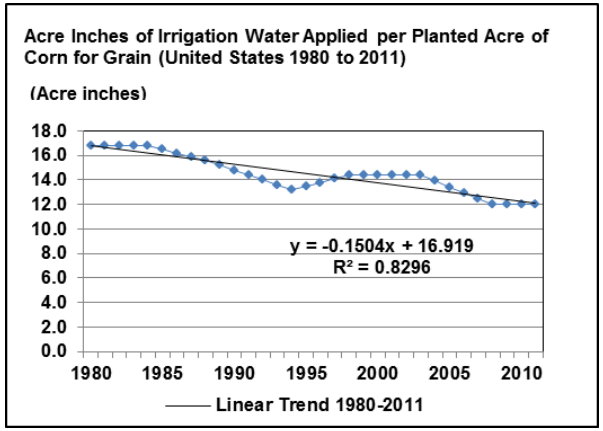

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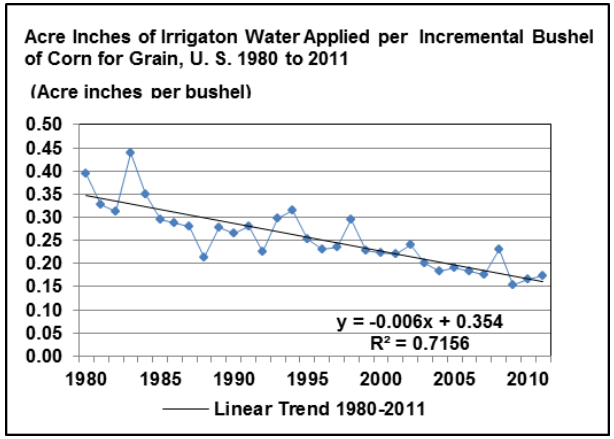

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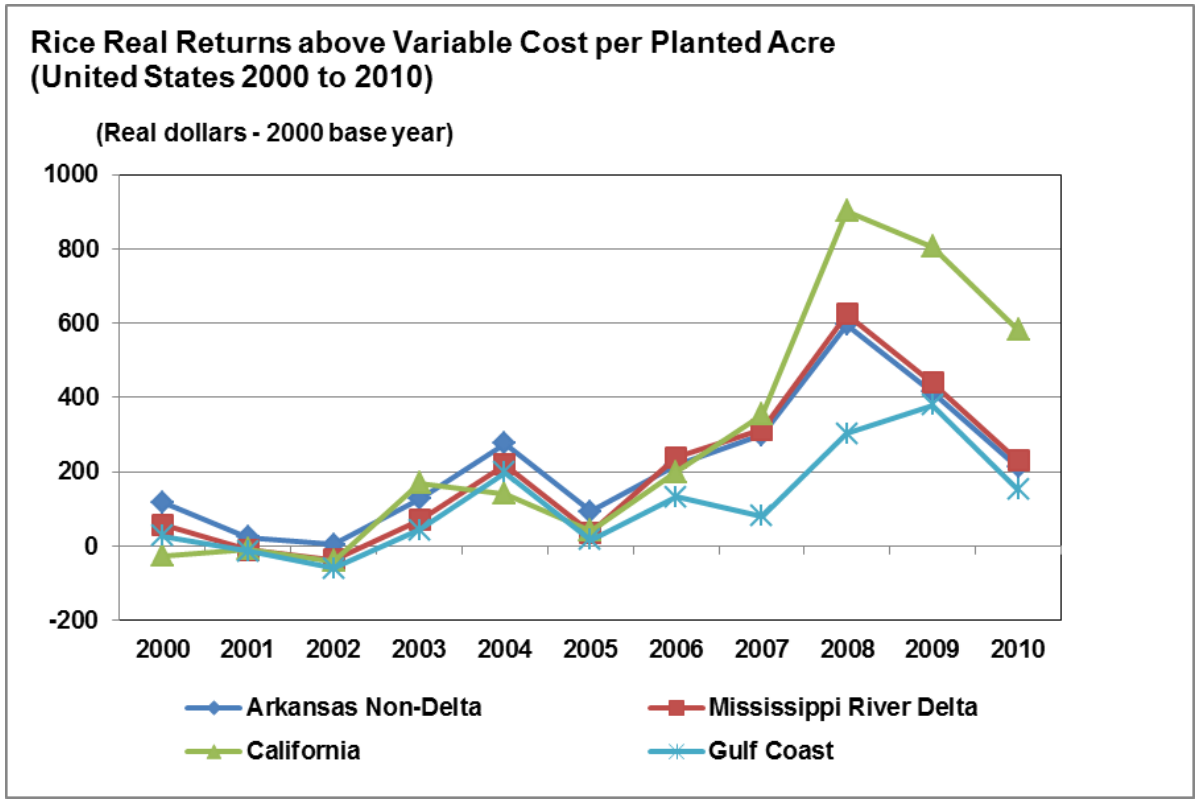
Socioeconomic Results
Rice Returns over Variable Costs



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Socioeconomic Results
Agricultural Contribution to National GDP

	2005 to 2009 Average (Billion dollars)	Rank	Share of Nation	Cumulative Share	1997 - 2009 Trend Growth Rate	Share of the local economy
United States	109.01	1	100.0%		4.0%	0.8%
California	17.91	2	16.4%	16.4%	3.7%	1.0%
Texas	6.13	3	5.6%	22.1%	1.4%	0.6%
Iowa	5.93	4	5.4%	27.5%	7.3%	4.6%
Minnesota	4.62	5	4.2%	31.7%	8.3%	1.8%
Nebraska	4.34	6	4.0%	35.7%	6.9%	5.4%
Illinois	4.30	7	3.9%	39.7%	8.1%	0.7%
Florida	4.01	8	3.7%	43.3%	-0.2%	0.5%
Washington	3.62	9	3.3%	46.7%	4.8%	1.2%
North Carolina	3.26	10	3.0%	49.7%	0.6%	0.8%
Wisconsin	3.22	11	3.0%	52.6%	3.6%	1.4%
Kansas	3.17	12	2.9%	55.5%	5.5%	2.7%
Indiana	2.73	13	2.5%	58.0%	7.9%	1.1%

U.S. Producers Have a Great Story to Tell…

- Efficiency gains over time, along with increased production
- Improvements on a number of economic and social indicators

…As well as opportunities for continued improvement

- Continued challenges ahead for meeting increased demand within total limits of natural resources and social and economic needs

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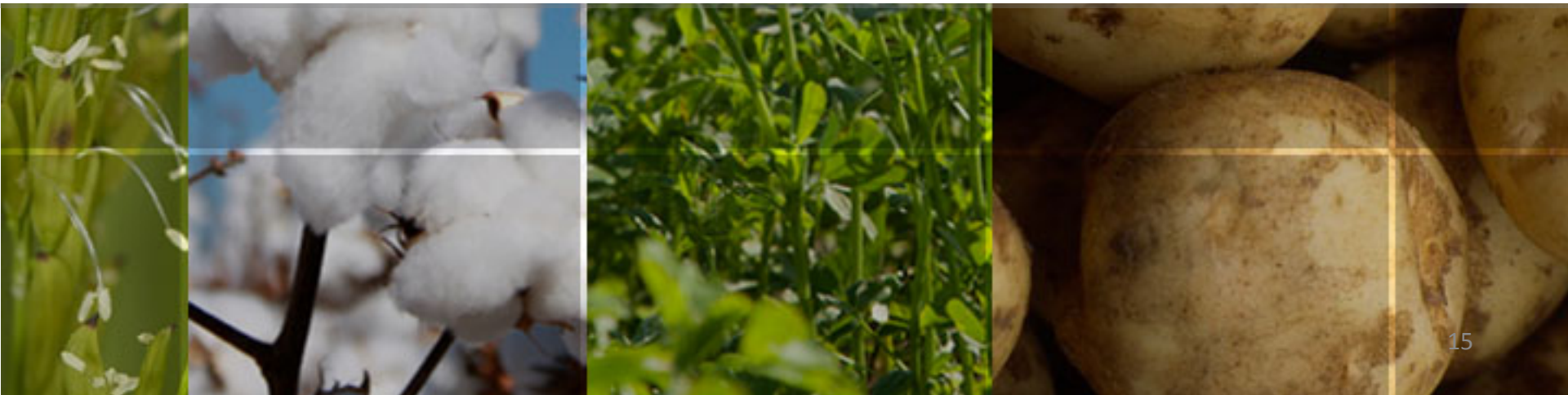
Lessons in Indicator Development



Identifying Indicators

- Collaboration yields broader buy-in and improves outputs
- Agree to key measures– make indicators, not lists
- Consider economic, environmental, social
- A suite of indicators provides the opportunity to look for trade-offs and synergies
- Focus on outcomes – endpoints, not means

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Methodologies

- Clarify definitions and assumptions
- Be prepared to address technical questions *and* value questions
- Assess multiple temporal and spatial scales
- Use public data when available
- Respect the data privacy of individuals
- Balance simplicity and summary with specifics

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Perspective

- Frame around information and improvement, not competition or PR
- Communicate the positive, acknowledge the negatives and note areas that lack understanding
- Recognize that some key indicators are not ripe for measurement – but are still important for management
- Connect trends to opportunities and decisions
- Have patience – strive for continuous improvement
- Don’t let the perfect be the enemy of the good

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For More Information…

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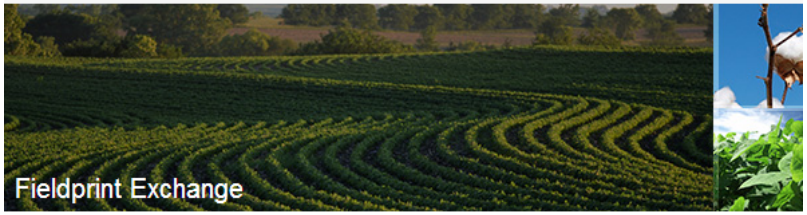
  - www.keystone.org
- FieldtoMarket.org
  - Blog *Fieldprint Exchange*
  - Twitter@FieldtoMarket



Welcome to the NEW Field to Market Blog
Posted on September 30, 2013

By: Fred Luckey, Chairman of Field to Market

Welcome to the first blog post of *Fieldprint Exchange,* a blog by Field to Market, The Alliance for Sustainable Agriculture. I'm excited to launch this blog as a platform to keep you up-to-date on the latest activities of Field to Market. Over the past several years, the organization has grown to more than 50 members strong, working to make sustainable improvements in productivity, environmental quality and human well-being across the agricultural supply chain. We want to tell you more.

Field to Market brings together a diverse group of grower organizations, agribusinesses, food, fiber, restaurant and retail companies, conservation groups, universities and agency partners to focus on promoting, defining and measuring the sustainability of food, fiber and fuel production.

Fieldprint Exchange is an opportunity for industry leaders to exchange the most current knowledge, viewpoints, initiatives and progress made toward sustainable agriculture. Through the blog, Field to Market will highlight updates on membership, Fieldprint Projects and the Fieldprint Calculator, a free online educational tool for growers to voluntarily and securely better understand and communicate how management choices affect overall sustainability performance and operational efficiency.

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