WHAT AGRICULTURE (COTTON) FACES

• MULTIPLE INITIATIVES AND DRAFT STANDARDS
  – LEONARDO ACADEMY/ANSI DRAFT STANDARD
  – THE SUSTAINABILITY CONSORTIUM
  – INTERNATIONAL COTTON ADVISORY COMMITTEE – EXPERT PANEL ON SOCIAL, ENVIRONMENTAL AND ECONOMIC PERFORMANCE OF COTTON (*ICAC-SEEP*)
  – BETTER COTTON INITIATIVE

• AND MANY MORE INITIATIVES (>30)
WHO/WHAT ARE DRIVERS

• WALMART, UNILEVER, NESTLE
• LEVI STRAUSS, H&M, MARKS & SPENCER, GAP AND LIKE BRANDS AND RETAILERS
• CONSUMERS (?)
• GOVERNMENTS (SWITZERLAND, SWEDEN, NETHERLANDS, et al)
• NGO’s

• ALL ULTIMATLTY WITH GOAL TO DRIVE THEIR AGENDA(s) THROUGHOUT THE MARKETING CHAIN, USUALLY INCLUDING USE OF CERTIFICATION
WHAT COTTON HAS AND IS DOING

• FIELD TO MARKET ALLIANCE

• CONDUCTED LIFE CYCLE INVENTORY (LCI) AND LIFE CYCLE ANALYSIS (LCA)
Field to Market
The Alliance for Sustainable Agriculture
Field to Market Membership
How We Define Sustainable Agriculture

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

- Increasing productivity to meet future food and fiber demands
- Improving the environment
- Improving the social and economic well-being of agricultural communities
National Indicators Report:
The Sustainability Story of U.S. Agriculture
2012 Indicators Report

Criteria

- National scale trends over time
- Transparent and credible science, public data
- Outcomes-based
- Practice/technology neutral
- On-farm production outcomes within a grower’s control

Data & Methods

- Crops: corn, cotton, potatoes, rice, soybeans, and wheat
- Indicators: environmental and socioeconomic
- Data: publicly available, 1980-2011
- Methods: based on available science
- Peer reviewed
2012 Indicators Report

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
Cotton Results

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

<table>
<thead>
<tr>
<th>Year</th>
<th>2000 *</th>
<th>Unit - per Pound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use</td>
<td>0.001</td>
<td>Planted Acres</td>
</tr>
<tr>
<td>Soil Erosion</td>
<td>0.020</td>
<td>Tons</td>
</tr>
<tr>
<td>Irrigation Water Applied</td>
<td>0.046</td>
<td>Acre Inches</td>
</tr>
<tr>
<td>Energy</td>
<td>9,980</td>
<td>Btu</td>
</tr>
<tr>
<td>Greenhouse Gases</td>
<td>2.6</td>
<td>Pounds CO₂e</td>
</tr>
</tbody>
</table>

* Five-year average 1996 - 2000

Improved:
- All per pound measures
- All soil erosion and irrigation water applied measures
- Yield and total production

Decreased:
- Total land use
- Total energy use
- Total GHG emissions

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.
IN SUMMARY
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 limits of natural resources and social and economic needs
• With the collaboration of U.S. farmers, tools and metrics are emerging to help track and communicate progress and identify opportunities for continued improvement
The Fieldprint Calculator:

Measuring Field Level Outcomes and Identifying Opportunities for Improvement
What is the Fieldprint Calculator?

• An online education and awareness tool
• Free, voluntary, and confidential
• Helps growers evaluate their farming decisions in the areas of:
  
  – *Current:*  
    • Land use 
    • Soil conservation 
    • Soil carbon 
    • Water use 
    • Energy use 
    • Greenhouse gas emissions 
  
  – *In development:*  
    • Water quality 
    • Biodiversity
Field to Market Pilot Projects

- Demonstrate use of calculator on the ground
- Test utility at the grower level and through the supply chain
- Member-led pilots engaging farmers across geographies, crops, and supply chains
VISION 21, A Cotton Foundation Project
Cotton Life Cycle Assessment
Conducted by COTTON INCORPORATED
Components of a Life Cycle Assessment

ISO Compliant Process

- Goal Definition and Scope
- Inventory Analysis (LCI)
- Impact Assessment (LCIA)

Interpretation

Mitigation, Establish Best Practices

LCI Data
Data Integrity

• ISO Complaint Data/Report -
  – Expert Critical Review Panel

• Carbon Trust Certification
Research Directives

• Continue water & nitrogen use efficiencies
• Improve LCI toxicity methodology:
  – Further analysis of pesticide models
  – Work with the USETox community to improve pesticide data
• Fill data gaps in foreign cotton production:
  – India
  – China