U.S. Cotton’s Journey To Sustainability

1970’s +

Cotton Producers

Increased Management and Environmental Practices
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Increased Management and Environmental Practices

2006

Field to Market

Alliance for Sustainable Agriculture focuses on defining, measuring and advancing the sustainability of commodity crop production in the U.S.
Field to Market: The Alliance for Sustainable Agriculture focuses on defining, measuring and advancing the sustainability of commodity crop production in the United States.
Resource Use Efficiency for Cotton

<table>
<thead>
<tr>
<th>Resource</th>
<th>2000 *</th>
<th>Unit</th>
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<tbody>
<tr>
<td>Land Use</td>
<td>0.001</td>
<td>Acres per pound</td>
</tr>
<tr>
<td>Soil Conservation</td>
<td>13.1</td>
<td>Tons per acre</td>
</tr>
<tr>
<td>Irrigation Water Use</td>
<td>0.046</td>
<td>Acre-in per pound</td>
</tr>
<tr>
<td>Energy Use</td>
<td>8,964</td>
<td>BTU per pound</td>
</tr>
<tr>
<td>Greenhouse Gas Emissions</td>
<td>2.313</td>
<td>Pounds CO₂e per pound</td>
</tr>
</tbody>
</table>

* Five year average 1996–2000
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2013

Cotton LEADS
Producers’ commitment to sustainability. Message conveyed to Manufacturers, Brands and Retailers with over 500 partners.
## KEY POINTS ABOUT THE COTTON LEADS PROGRAM

<table>
<thead>
<tr>
<th>CREATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Created in 2013 as a means of promoting sustainability of US and AU cotton to retailers, brands and manufacturers</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>DESIGN</th>
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</thead>
<tbody>
<tr>
<td>Founded on 5 principles</td>
</tr>
<tr>
<td>Strategically designed to address sustainability concepts, benevolence, and bale identification (traceability)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint promotion, with individual bragging rights</td>
</tr>
<tr>
<td>Cotton LEADS website features U.S. growers, researcher profiles, and videos. We control content of US postings and almost all the direct outreach to and meetings with Cotton LEADS partners.</td>
</tr>
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2017

Cotton USA Sustainability Task Force
More information needed from Supply Chain. Emphasis on continuous improvement. Set national goals for key environmental metrics with a target date of 2025.
COTTON USA Sustainability Task Force

**Producers**
- Aaron Barcellos
- Matt Coley
- Dahlen Hancock
- John Hardwick
- Mark Nichols
- Ted Schneider
- Gregory Wuertz

**Cottonseed**
- Fred Serven

**Merchants**
- Steve Dyer
- Tim North

**Cooperatives**
- Kevin Brinkley
- Hank Reichle

**Ginner**
- Curtis Stewart

**Warehouse**
- Coalter Paxton III

**Manufacturers**
- Garry Bell
- Charles Little
- Jim Martin

**Advisors**
- Jesse Daystar
- Bill Gillon
- Andy Jordan
- Marty Matlock
- Berrye Worsham
U.S. Cotton’s Sustainability Goals for 2025

1. Soil Carbon: Increase by 30%
2. Land Use Efficiency: Increase by 13%
3. Greenhouse Gas Emissions: Decrease by 39%
4. Soil Loss Per Acre: Decrease by 50%
5. Energy Use: Decrease by 15%
6. Water Use: Decrease by 18%
BY ACHIEVING GOALS, THE FOOTPRINT SHRINKS

10 year goal
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More information needed from Supply Chain. Emphasis on continuous improvement. Set national goals for key environmental metrics with a target date of 2025.

U.S. Cotton Trust Protocol
Engage producers in continuous improvement. Will help the industry measure and track against its 2025 goals. Will provide aggregate data to the supply chain.
U.S. COTTON TRUST PROTOCOL

• Two questions to answer

✓ What is the Trust Protocol?

✓ Why do we need it?
U.S. COTTON TRUST PROTOCOL

- Single-Member LLC within the National Cotton Council
- Governed by a Board comprised of growers, ginners, merchants, coops, spinning mills, civil societies, and Brands/Retailers. This includes people from the following organizations:
  - World Wildlife Fund
  - Environmental Defense Fund
  - Tesco
  - Levi Strauss & Co.
  - Louis Dreyfus Company
U.S. COTTON TRUST PROTOCOL

• A voluntary farm-level program designed to engage growers in continuous improvement

• A program that can help the industry reach its 2025 goals

• A system that will provide aggregate data that can be passed through the textile supply chain which includes: producers, merchandisers, manufacturers, brands and retailers and others
KEY REQUIREMENTS FOR THE PRODUCER

• Self-assessment against standards

• Use of a data tool for environmental metrics

• Verification by an independent party
SELF-ASSESSMENT QUESTIONNAIRE

• 9 categories with approx. 100 questions

• Choices for answers
  A. I do this now on my operation
  B. I am implementing on 1 or more of my fields
  C. I will consider in next 3 years
  D. Not appropriate for my farming operation
Sample Questions for Water Management

Water Management

1. On installation of new wells or existing wells (where applicable), comply with local and state requirements including licensing if appropriate.

Management Planning

2. Conserve and utilize natural rainfall and/or tail water through use of cover crops, terraces, furrow diking, holding ponds, reservoirs or conservation tillage.

Irrigation

4. Utilize variable rate irrigation (VRI) on fields with known spatial variability in soil types, topography, and/or non-crop areas.

5. Utilize flow meters to measure water use.

6. Use soil, climate, or plant-based measurements such as infrared guns or potential evapotranspiration (PET) data to monitor soil and crop water status.

7. Keep records of application dates, materials and rates to track efficiency and identify opportunities for improvement.
The first step in developing the farm’s soil management plan is to evaluate each field for erosion potential. Important factors include slope, slope length, soil type, rainfall potential, wind erosion potential and residue. The soil management plan should correct situations with potential for erosion.

### Management Planning

3. Utilize conservation tillage practices such as minimum, strip, mulch or no-till.

4. Prevent or alleviate soil compaction through prescribed tillage operations, controlled traffic patterns and avoidance of traffic where soil moisture is above field capacity.

5. Use permanent and/or annual windbreaks to reduce wind erosion.

6. Apply practices to minimize plant damage from wind erosion (e.g., surface residue or sand fighters).

7. Orienting rows along contours.

8. Construct and maintain erosion control structures such as contour terraces, catch basins, diversion channels and grassed waterways.

### Soil and Residue Management

9. Rotate cotton with other crops.
Sample Questions for Crop Protection

Crop Protection

Use Integrated Pest Management (IPM) practices defined as an ecosystem management approach managing pests that anticipates and prevents pests from reaching economically damaging levels by all suitable means before pest populations reach the economic threshold.

14. Use licensed qualified consultants or certified crop consultants to monitor crop and pest status and make recommendations for management.

15. Use plant-based measurements to help determine economic thresholds.

16. Use science-based action thresholds to initiate insecticide treatments.

17. Monitor for pest resistance and follow resistance management guidelines.

18. Use production practices that promote healthy stands such as appropriate date of planting, optimum soil temperatures, seeding rate to avoid dense stands, seed vitality and seedbed preparation.

19. Keep annual records of fields and weed, insect, disease pressure.

20. Inspect and document fields in spring and fall for weed species and density to select appropriate weed strategy.

Chemical Control

21. Manage weed seed bank by spot-applying post-emergence and layby herbicides or hand-rogue sporadic infestations to prevent seed buildup.
# SELF-ASSESSMENT QUESTIONNAIRE

<table>
<thead>
<tr>
<th>Categories</th>
<th>Required Practices</th>
<th>Recommended Practices</th>
<th>Total</th>
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<tr>
<td>Soil Health</td>
<td>1</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Nutrient Management</td>
<td>1</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Water Management</td>
<td>1</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Crop Protection</td>
<td>13</td>
<td>10</td>
<td>23</td>
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<tr>
<td>Harvest Preparation</td>
<td>2</td>
<td>7</td>
<td>9</td>
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<tr>
<td>Wildlife Habitat</td>
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<td>5</td>
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<tr>
<td>Fiber Quality and Traceability</td>
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<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Farm Management</td>
<td>9</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>Worker Relations</td>
<td>11</td>
<td>5</td>
<td>16</td>
</tr>
</tbody>
</table>
SELF-ASSESSMENT QUESTIONNAIRE

• 33% Required Management Practices

• 67% Recommended Management Practices with 4 Choices

• Provides Cumulative Data as Producers Answer Questionnaire
Plant cover crops with a goal to have living roots on as many months of the year as possible to protect soil and improve soil organic matter.
Conserve and utilize natural rainfall and/or tail water through use of cover crops, terraces, furrow diking, holding ponds, reservoirs or conservation tillage.
Utilize flow meters to measure water use
Use soil, climate, or plant-based measurements such as infrared guns or potential evapotranspiration (PET) data to monitor soil and crop water status.
Test drinking water used by family and farm workers periodically to assure bacteria, nitrate and other pollutants do not exceed safe levels.
Utilize conservation tillage practices such as minimum, strip, mulch or no-till
DATA TOOLS

• Field to Market tool named the FieldPrint Platform
  – Record inputs into a system that measures the environmental impacts of crop production and identify opportunities for improvement

• Additional qualified data management Field to Market partners who can make these recordings for the producer
Sensitivity Analysis Field 27

Before:

• Conventional tillage
• Includes erodible area
  o 150 acres cultivated
  o 50 acres poor productivity
• Average slope 1.5%
• Cultivated crop to bayou

After:

• No-till
• Excludes erodible area
  o 100 acres cultivated
  o 50 acres in native vegetation
• Cultivated slope 0.5%
• Riparian buffer
## Impacts

### Yield and Inputs - Constant (1000 lb/a)

**Before:**
- Soil loss t/ac: 9.4
- Soil Carbon Index: -1.0
- Green House Gas CO2e: 2.3 lb.
- Energy Btu: 12,000
- Water Quality Index: 5.0

**After:**
- Soil loss t/ac: 1.1 T/ac
- Soil Carbon Index: + 0.42
- Green House Gas CO2e: 1.9
- Energy Btu: 9,000
- Water Quality Index: 9.4
VERIFICATION

• Validate accurate use of the on-line enrollment tool such as the self-assessment questionnaire and the data tool.

• A statistically valid random sample of the producers will be selected each year for an independent third-party verification of their questionnaire and data.
• Two questions to answer

✓ What is the Trust Protocol?

✓ Why do we need it?
Why? To Drive Continuous Improvement

• Annual quantitative measurements

• Feedback for the producer

• How do you compare?
## Industry’s 10-Year Goals For Environmental Metrics

<table>
<thead>
<tr>
<th></th>
<th>Reduce Land Use by 13%</th>
<th>Increase Irrigation Efficiency by 18%</th>
<th>Reduce GHG by 39%</th>
<th>Reduce Energy Use by 15%</th>
<th>Reduce Soil Loss by 50%</th>
<th>Increase Soil Carbon by 30%</th>
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<tr>
<td><strong>Environmental</strong></td>
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<tr>
<td>Soil Health</td>
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<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
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<td>✓</td>
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<td>Wildlife/Biodiversity</td>
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<tr>
<td><strong>Social</strong></td>
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<td>Worker Relations</td>
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<td></td>
</tr>
</tbody>
</table>

### Why? To Achieve Industry Goals

**Best Management Practices**

- **Environmental**
  - Soil Health
  - Nutrient Management
  - Water Management
  - Crop Protection
  - Harvest Preparation
  - Wildlife/Biodiversity

**Social**

- Worker Relations: Provide a safe work place for all employees, assure fair treatment and compensation.
- Farm Management: Maintain household and farmstead operations which assure safety for family, workers, farm animals and the environment.
- Fiber Quality/Traceability: Work to assure fiber quality is maximized by selecting appropriate varieties, managing for fiber quality consistent with yield goals and preserving quality during harvest and ginning.
"It's the Wild West out there right now," says Paul Magel, president of the business applications and technology outsourcing division at CGS, a software company that works with retail clients.

- The needs of customers will vary
- Many brands/retailers accept U.S. cotton as sustainable or responsibly produced
- However, not all have done so. They point to the lack of a standard or independent verification
- We must be flexible in the ability to pass data to the textile supply chain
Why? To Reclaim Market Share
Why? To Be the Supplier of Choice

• The Protocol is NOT about
  • One grower or one bale being more sustainable than another, or
  • Guaranteeing a premium
• The Protocol IS about U.S. cotton
  • Competing in every market and every supply chain
• The United States cannot afford to lose market access because of a perceived lack of sustainability
U.S. Cotton is Poised to Compete

With 14 million acres and increasing yields, there is excellent potential for 20-25 million bales of production.

But, we must have the demand base!
Compete in Every Market & Every Supply Chain

• To be the Supplier of Choice, We Must Meet the Customer’s Needs for
  • Quality
  • Cleanliness
  • Timeliness
  • Sustainability

• The Protocol allows U.S. cotton to tell an even stronger story to our customers and provide support for their various reports.
OUR PLEDGE:
We will enable brands to meet their sustainability goals.
U.S. Farmers produce the most sustainable cotton in the world and are leading the Cotton Supply Chain to a viable future by reducing environmental impact.

Register Your Organization
General Information About the U.S. Cotton Trust Protocol

- What is the U.S. Cotton Trust Protocol?
- Why did the U.S. cotton industry create the U.S. Cotton Trust Protocol?
- What are the primary components of the U.S. Cotton Trust Protocol?

U.S. cotton producers will enroll their farm operation in the U.S. Cotton Trust Protocol by:
1. Completing a series of questions about their current farming operation and methods (self-assessment); and
2. Providing field-level data concerning production practices for a specific percentage of their farming operation (Data Tool).

The Protocol will utilize a second-party and third-party independent verification system to validate the Producer’s self-assessment responses and the use of a Data Tool for field-level data. Cotton produced on operations enrolled in the U.S. Cotton Trust Protocol will be deemed to be “Protocol Cotton.” Data provided through the self-assessment and Data Tool will be aggregated and utilized to measure the industry’s progress toward its long-term sustainability goals.

- What is U.S. Cotton’s 2025 Sustainability Goals
- What definition of “sustainability” has been adopted by the Trust Protocol?
4 Pillar Approach

Enrollment Journey

Awareness & Education

Engagement

Registration

Completed Enrollment

**What Growers Need To Know About The US Cotton Trust Protocol**

- Why?
  - A lot of these practices save me money and make my farm more profitable.

- Why?
  - The consumer may not know we’re already doing it right, so we have to show them.

- Why?
  - “The consumer may not know we’re already doing it right, so we have to show them.”

- Why?
  - “U.S. cotton growers have the best story to tell.”

**DON’T FORGET**

Your enrollment is almost complete.

Enroll in the U.S. Cotton Trust Protocol at TrustUsCotton.org.