

Cotton & Soil Health: A Solution to Global Challenges



With hundreds of easily searchable resources, we're your go-to textile tool for discovering what's possible with cotton.

cottonworks.com



@cotton_works



Type your questions in the Q&A window at any time during the webinar.



Find the presentation slides and other resources at **cottonworks.com** at the conclusion of the webinar.



Please turn off your pop-up blocker to participate in this webinar.

VVebinar Support



Generation Z highly concerned about climate

Environmental issues top list of Gen Z concerns

Most important challenges facing our world today:



Source: CCI & Cotton Incorporated's 2017 Global Environment Survey

Science Based Targets Initiative



Join the companies striving for a 1.5°C future Sign the pledge

Life Cycle Assessment Overview



Source: "The Life Cycle Inventory & amp; Life Cycle Assessment of Cotton Fiber & amp; Fabric." CottonWorks, www.cottonworks.com/wp-content/uploads/2017/11/2016-LCA-1.pdf.

LCA Goal, Scope Functional Units





Source: "The Life Cycle Inventory & amp; Life Cycle Assessment of Cotton Fiber & amp; Fabric." CottonWorks, www.cottonworks.com/wp-content/uploads/2017/11/2016-LCA-1.pdf.

Overall Results for A Knit Collared Shirt





Source: "The Life Cycle Inventory & amp; Life Cycle Assessment of Cotton Fiber & amp; Fabric." CottonWorks, www.cottonworks.com/wp-content/uploads/2017/11/2016-LCA-1.pdf.

Agricultural Phase Details





U.S. Cotton's Sustainability Goals for 2025





Soil Health

Conservation tillage in the U.S.

Two-thirds of U.S. growers use conservation tillage.

2015 Natural Resource Survey of U.S. Cotton Producers. None or Strip (45%) Conventional (35%)

Conservation (17%)







Meeting Brand Needs for More Sustainable Cotton



"Soil organic carbon harbors three times as much carbon as Earth's atmosphere."

Science 2017 355 1420



Soil Health: a Solution to Global Challenges



Cristine L.S. Morgan, Ph.D. Chief Scientific Officer Soil Health Institute





Mission

Safeguard and enhance the vitality and productivity of soil through scientific research and advancement



Wayne Honeycutt, CEO Cristine Morgan, CSO Sheldon Jones, COO Byron Rath , Sustainability Specialist

16 Ph.D. Scientists Soil Scientists - 4 Biogeochemists - 2 Microbiologist - 1 Spatial Scientist - 1 Agronomists - 3 Ag. Economist - 1 **Communications - 3** Interns – 1 to 3











SOIL HEALTH:

The capacity of a soil to function as a vital, living ecosystem that sustains plants, animals, and humans.

What is Regenerative Agriculture?

A system of farming principles and practices that seeks to rehabilitate and enhance the entire ecosystem of the farm by placing a premium on soil health with attention also paid to biodiversity and socioeconomic health of farmers and their communities.

It is a method of farming that "improves the resources it uses, rather than destroying or depleting them," according to the Rodale Institute

Soil Health is the foundation of Regenerative Agriculture





South Dakota





Healthy Soil Cycles Nutrients





Healthy Soil Cycles Water



Infiltration – Brookings County, SD







Healthy Soil Stays in Place





Healthy Soil Keeps Water Clean





Drought Resilience:

Increasing soil organic carbon increases water available to plants





Four Soil Health Practices

(29 recognized & funded by NRCS for reducing C emissions)

Practice	Capacity (Mg ac)	Current Adoption (Mg ac)	Current Adoption (%)
Prescribed Grazing	655	7	Ι
Cover Crops	396	15	4
No Till	396	104	26
Nitrogen Management	396	138	35

US Ag. Census (NASS, 2019); ERS (2017)



GOAL: Achieving Net Zero C Emissions in U.S. Agriculture by 2040





SHI's Comprehensive Strategy to Improve Soil Health





THE MOST CRITICAL INGREDIENT:



GOAL: Assess Profitability of Soil Health Systems

APPROACH: Calculate & Integrate Enterprise Budgets from On-Farm and Experimental Settings





Service

Funders:









Partial Budget Analysis of Adopting a Soil Health Management System

	COTTON\WHEAT-FALLOW		COTTON\GRAI	COTTON\GRAIN SORGHUM		WINTER WHEAT	
	Benefits	Costs	Benefits	Costs	Benefits	Costs	
	Reduced	Additional	Reduced	Additional	Reduced	Additional	
Expense Category	Expense	Expense	Expense	Expense	Expense	Expense	
Cover Crop Seed	0.00	0.00	0.00	12.50	0.00	0.00	
Fertilizer & Amendments	0.00	0.00	0.00	0.00	0.00	0.00	
Pesticides	0.00	9.00	0.00	0.00	0.00	7.38	
Other Inputs	0.00	6.66	0.00	6.66	0.00	0.00	
Fuel & Electricity	9.32	1.34	7.98	2.41	5.53	1.69	
Labor & Services	16.73	4.99	14.70	7.41	9.37	3.93	
Post-harvest Expenses ²	0.00	0.00	0.00	0.00	0.00	0.00	
Equipment Ownership	35.62	9.57	30.32	12.92	21.74	8.50	
Total Expense Change	61.67	31.56	53.00	41.90	36.64	21.50	
	Additional	Reduced	Additional	Reduced	Additional	Reduced	
	Returns	Returns	Returns	Returns	Returns	Returns	
Yield, lb.; bu.	400.00	0.00	400.00	0.00	0.00	0.00	
Price Received, ³ \$/lb.; \$/bu.	0.67	0.67	0.67	0.67	5.60	5.60	
Grazing Value ⁴	0.00	0.00	35.00	0.00	0.00	0.00	
Revenue Change	268.00	0.00	303.00	0.00	0.00	0.00	
	Total Benefits	Total Costs	Total Benefits	Total Costs	Total Benefits	Total Costs	
Total Change	329.67	31.56	356.00	41.90	36.64	21.50	
Change in Net Farm Income	298.11		314.	314.10		15.14	

¹Current expenses and expected yields based on farmer reported production practices.

²Post-harvest expenses for increased cotton yield assumed paid by additional cottonseed value.

³Commodity prices applied to yields based on long-term average prices.

⁴Grazing value per arcre based on grazing days available.





Healthy Soil for Sustainable Cotton

A Comparison of Environmental Benefits using the Fieldprint® Calculator

Typical Cotton Production System

NRCS Crop Management Zone 67: Coastal Plains of NC, SC, Georgia Conventional tillage system Land Grant University nutrient recommendation pests are managed using primarily with chemical control

Famer mentor

No-till Multi-species cover crops Nutrient management plan that follows the 4-R's strategy IPM (integrated pest management) including chemical control Other: Filter strips, field boarders

Challenger Participant

Strip-till with subsoiling to plant their cotton Land Grant University nutrient recommendations Single species cover crops (e.g. cereal rye) terminated early, <12" Other: Filter strips, grass waterways and field boarders



Healthy Soil for Sustainable Cotton

A Comparison of Environmental Benefits using the Fieldprint® Calculator

Famer mentor Challenger Participant Challenger Participant Typical Cotton Production System





Thoughts on Engagement

Provide Information on the Business Case

Measure Outcomes

Adoption is a Social, Economic, and Biological challenge





Thank You!

soilhealthinstitute.org



UNIFY RESTORE PROTECT



Cotton Sustainability

Topics > Sustainability > Cotton Sustainability



Cotton Sustainability Basics

From water conservation to soil health to reducing energy, cotton farming has made immense progress in sustainability.



Recycled Cotton

The use of recycled materials is a growing topic of interest and recycled cotton can find new life in many different products.



Biodegradability of Cotton

What happens when your favorite cotton shirt finally reaches the end of its functional life? Explore this natural fiber's afterlife.



Life Cycle Assessment of Cotton

This presentation will identify key impact areas and elaborate on environmental benchmarking for cotton.



Consumer Perceptions

Explore consumer perceptions relating to cotton and cotton sustainability using ongoing research from Cotton Incorporated.



Cotton LEADS™

The Cotton LEADS²⁴ program strives to make sure cotton is produced responsibly now and for years to come.

Interested in sharing this content with a colleague?

Find this webinar and more at cottonworks.com/ sustainability.





Webinars

Create a free CottonWorks™ account and watch all our past webinars at cottonworks.com/ webinars.

Please allow 24-48 hours for this webinar recording to be added.

Cottonworks"

Technologies to Reduce WEC

Topics > Sustainability > Cotton Sustainability

ADD TO LIST

For over three decades, Cotton Incorporated has been at the forefront of facilitating innovations that help make textile manufacturing more efficient and effective. The *World of Ideas* presents practical and effective technologies for reducing the use of water, energy, and chemicals (WEC) in cotton textile processing, which is best achieved in fabric preparation, dyeing, and finishing processes. Using these solutions, the cotton textile industry can reduce the WEC environmental footprint by at least 50%.



World of Ideas Learn more about

technologies for reducing the use of water, energy, and chemicals in cotton textile processing.



Life Cycle Assessment of Cotton

Topics > Sustainability > Cotton Sustainability

ADD TO LIST

From fiber sourcing to end product, stakeholders and consumers alike are demanding methods of measuring and reducing the environmental impact of textile products. Tools such as Life Cycle Inventories and Assessments can aid in environmental decision-making by identifying key impact areas and benchmarking success over time.

Executive Summary

The Cotton Foundation has completed the most comprehensive assessment of cotton product life cycles to date — The Life Cycle Inventory & Life Cycle Assessment of Cotton Fiber and Fabric. Download the full summary on this topic and then listen to the webinar below for the synopsis. Download the Executive Summary

Webinar

How do your industry decisions impact the earth? Hear from Cotton Incorporated's Mark Messura. Senior Vice President of Global Supply Chain Marketing, and Dr. Ed Barnes. Senior Director of Agricultural and Environmental Research, as they discuss highlights from the cotton LCA including valuable insight for decision-makers in the textile industry. This presentation will identify key impact areas and elaborate on environmental benchmarking for cotton. Life Cycle Assessment (LCA) Learn more about Life Cycle Assessments and how they can aid in environmental decision-making by identifying key impact areas.





Cotton & Soil Health: A Solution to Global Challenges



Submit all final questions now using the Q&A box on your screen.



Please take our brief survey on today's presentation prior to exiting the webinar.