2021 – 2022

Data Driven.
Traceable by Design.

A SMARTER COTTON FUTURE.

U.S. COTTON
TRUST PROTOCOL®

Report.TrustUSCotton.org

EST. 2020 · U.S. COTTON TRUST PROTOCOL ·

Barry Evans
Grower,
Texas

Introduction

As a society, 2021/22 has been one of transition as the world began to cautiously learn to co-exist with COVID-19. It has been one of perseverance as U.S. cotton growers faced rising production costs and weather extremes. At the same time, it has been one of evolution as brands and retailers witnessed a changing regulatory landscape in the European Union and the United States that provided increased scrutiny, amid a backdrop of macroeconomic uncertainty.

For the U.S. Cotton Trust Protocol, that meant focusing on foundational growth and making innovative decisions in a thoughtful way. Once more, we encompassed listening to the full industry by meeting members at events, holding learning sessions, and hosting farm tours. Those moments and conversations reaffirmed our commitment to more sustainable cotton production and increased supply chain transparency.

We also continued to lay the groundwork to be further recognized as a sustainable cotton sourcing option that brands and retailers can use to fulfill their sustainability commitments.

As a result, the Trust Protocol was accepted as an ISEAL Community Member, approved as a standard for sustainable cotton by German Federal Government Initiative *Siegelklarheit*, and recognized and published in the standard mapping process by the International Trade Centre.

We saw the supply chain positively respond as we doubled the number of acres enrolled in the program, increased mill and manufacturer membership by more than 50%, and successfully completed pilots in our Protocol Consumption Management Solution.

Long-term, we understand that crucial to the program's success will be our unwavering commitment to, and support of, our growers as they work towards the U.S. cotton industry's 2025 National Goals for Continuous Improvement. Maintaining a focus on innovation and implementation of the latest technologies will also be required to further improve our environmental footprint.

Finally, our commitment to innovation, transparency, and providing measurable, verifiable data will remain at the forefront of our efforts.

Thank you to our members, partners, team, and collaborators for their further dedication to continuing our part in protecting and preserving the planet. We look forward to the work that lies ahead as we strive to meet our goals.

Dr. Gary Adams
President,
U.S. Cotton Trust Protocol

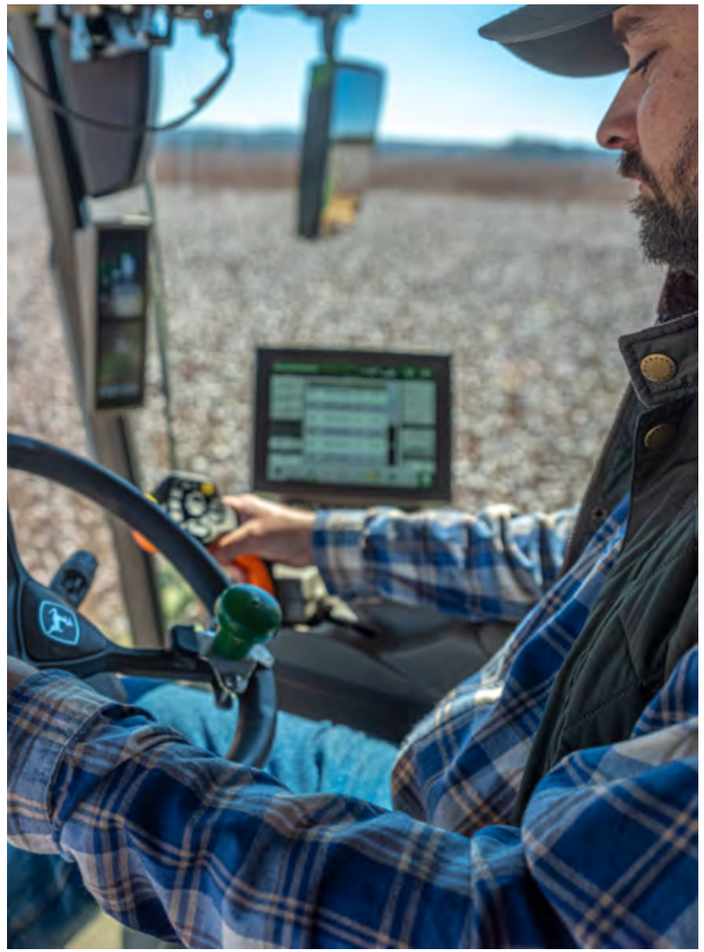
Theory of Change

MISSION

To bring quantifiable and verifiable goals and measurement to the key sustainability metrics of U.S. cotton production.

VISION

To set a new standard in sustainable cotton production where full transparency is a reality and continuous improvement to reduce our environmental footprint is the central goal.



CORE VALUES

A commitment to U.S. cotton's legacy of authenticity, innovation and excellence, environmental stewardship, caring of people, and personal and corporate integrity.

The Trust Protocol created a **Theory of Change** grounded in science-based measurement and feedback illustrating how the program supports growers, brands and retailers implement best practices outlining interventions, outputs, outcomes and impacts leading to an improved environmental footprint and increased supply chain transparency.

Program Summary

The U.S. Cotton Trust Protocol is a voluntary, farm level science-based sustainability program that is setting a new standard for delivering value to all stakeholders across the entire supply chain from farm to finished products. Combining verified cotton growing data with blockchain-enabled value chain transparency delivers the assurance that brands and retailers need to evidence their responsible sourcing practices and demonstrate progress toward environmental targets.

The program was built on a foundation of science-based data capture, aggregation and reporting that drives continuous improvement across **six key sustainability metrics**:

The Trust Protocol integrates these sustainability metrics from Field to Market's Fieldprint® Platform, enabling enrolled growers to measure the environmental impacts of their operation and identify opportunities for continuous improvement, while empowering brands and retailers to report on aggregate sustainability data which is verified by Control Union Certification.

GHG Emissions

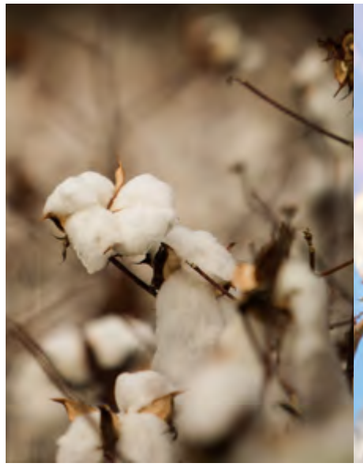
Water Use

Soil Conservation

Soil Carbon

Land Use

Energy Use



2021

**The Protocol Year runs August 1 – July 31.*

NOVEMBER

- Inaugural **annual report** released
- Trust Protocol showcased at **Textile Exchange** conference
- **Claims Framework 1.0** released

DECEMBER

- Trust Protocol hosts **second virtual farm tour** for global brands and retailers
- Equipment manufacturer **John Deere** and Trust Protocol collaborate to launch pilot of streamlined field-level data capture
- ***Earth with John Holden*** releases documentary showcasing the Trust Protocol

2022

JANUARY

- Trust Protocol recognized and published in **ITC Standards Map**
- Grower **Rusty Darby** featured in Gildan 'U.S. Cotton: A Story of Trust'

FEBRUARY

- Growers able to authorize crop consultants to aid with enrollment and data entry
- Trust Protocol hosts cross-industry supply chain transparency roundtable with **Sourcing Journal**
- Signed **Memorandum of Understanding** with International Cotton Association

APRIL

- Trust Protocol **doubles grower participation**
- J.Crew and Trust Protocol participate on panel for Fairchild Media Group's **Sustainability Summit**
- Trust Protocol hosts **EU Politico Webinar**
- Program participates in regenerative agriculture panel at **Draper's Sustainable Fashion Conference**

MAY

- Streamlined three-year enrollment for growers implemented
- **J.Crew** is the first brand to release a line of products entirely made from Protocol Cotton

JUNE

- Recognized as a standard for sustainable cotton by German Federal Government Initiative ***Siegelklarheit***
- Confirmed as **ISEAL Community Member**
- Trust Protocol participates in the **Global Fashion Summit** in Copenhagen

JULY

- Trust Protocol featured in **J.Crew** and ***Madewell*** sustainability reports

AUGUST

- **Next PLC** becomes first brand in the world to fully track U.S. Cotton into finished products
- **Mill and manufacturer members top 800 globally**

Membership

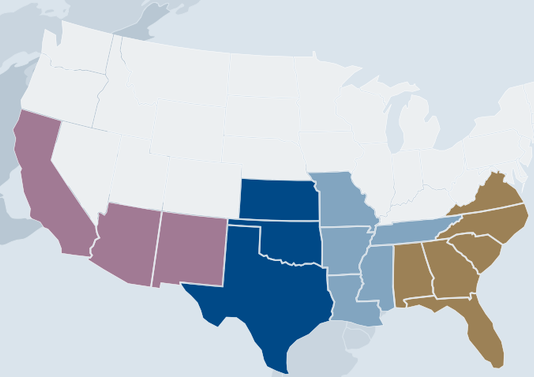
There are multiple steps from farm to finished product, and the Trust Protocol has seen increased membership in every category, providing trust and transparency throughout the supply chain.

50%
increase in Mills & Manufacturers membership over 20/21 figures

GROWERS

In 21/22, 1.1 million planted U.S. cotton acres were enrolled in the Trust Protocol, doubling the amount from the previous year.

Percentages show the participation by region.



West	Southwest	Southeast	Midsouth
5%	49%	26%	20%

BRANDS AND RETAILERS

7TH STREET · GAP · LEVI STRAUSS & CO. · SIGNATURE by LEVI STRAUSS · ADVANCE DENIM

Gap Inc. · Levi's · amazon

TARGET · OLD NAVY · TESCO · LAUREN RALPH LAUREN

Madewell · DOCKERS · NEXT · Ralph Lauren Luxury

BANANA REPUBLIC · DENIZEN FROM LEVI'S

J.CREW · ATHLETA · RALPH LAUREN CORPORATION

MILLS AND MANUFACTURERS

Bangladesh
Cambodia
China
Colombia
Dominican Republic
Ecuador
Egypt
El Salvador
Guatemala
Haiti
Honduras
India
Indonesia
Japan
Kenya
Mexico
Nicaragua
Oman
Pakistan
Peru
Philippines
Portugal
Republic of Korea
Sri Lanka
Taiwan
Thailand
Tunisia
Turkey
United States
Vietnam

30
member countries with all major regions represented

POLO RALPH LAUREN · Calvin Klein · ALSTYLE APPAREL & ACTIVEWEAR · COGGI

CHAPS · TOMMY HILFIGER · American Apparel

GYMSHARK · GILDAN · COMFORT COLORS

PVH · GILDAN ACTIVEWEAR · Suburbia

Urbanliving (Shanghai) Co., LTD
Servicios Liverpool SA de CV
Night's Home (Changhai) Co., LTD
Nantong Wconcept Textile Co., Ltd.
Jiangsu Cerulean Home Co., Ltd.
Clonhadas LTDA

Protocol Consumption Management Solution

The technology solutions that record and track the movement of U.S. Cotton and Protocol Cotton through brand and retailer member's supply chains into their finished products.

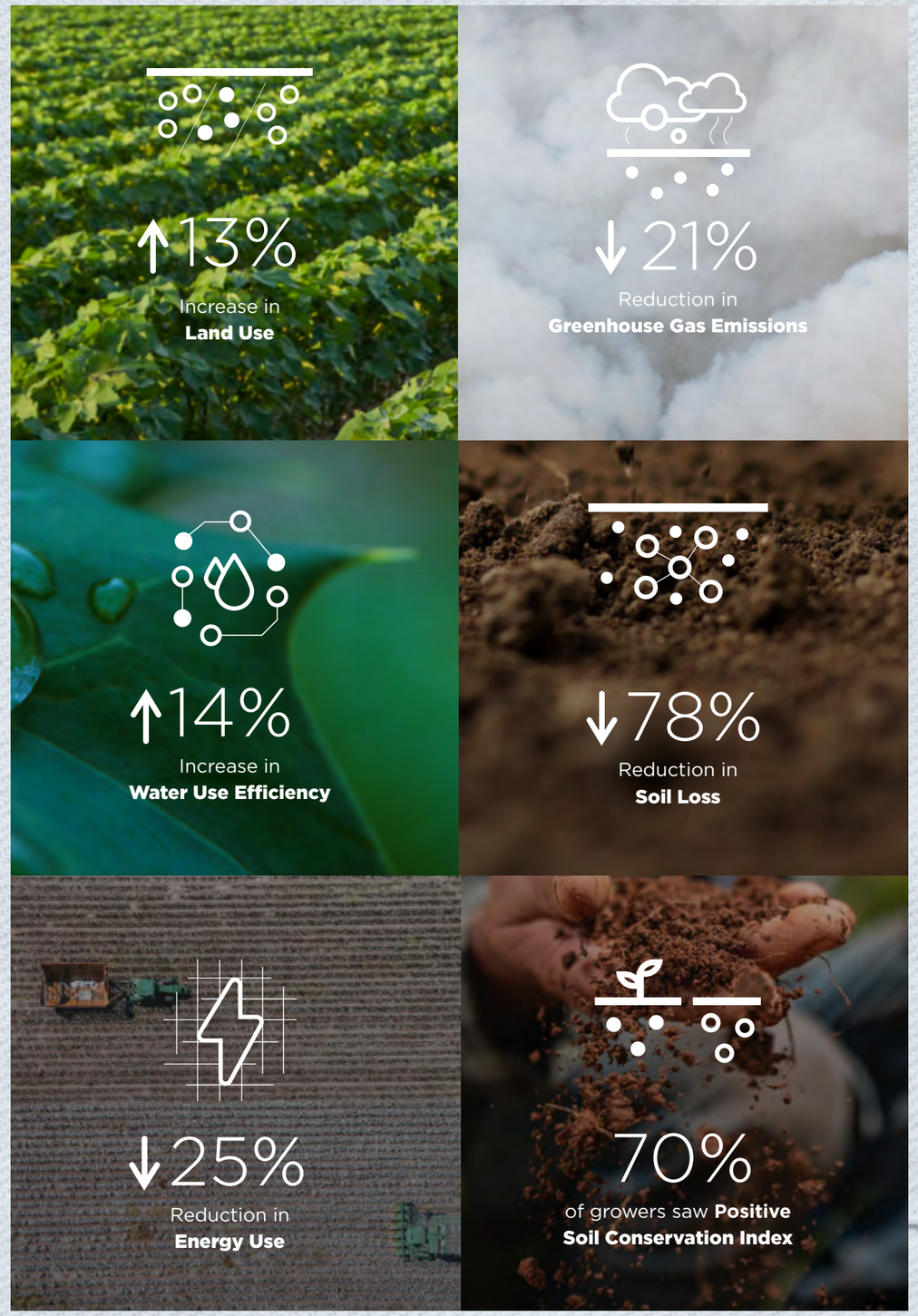
9
pilots completed with global brands and retailers

150
mills involved in the 9 completed pilots

15
confirmed pilots to be initiated

125
additional mills

Data highlights



**Based on 2021/22 Trust Protocol grower member data compared to 2015 Trust Protocol baseline.*

Industry Alignment and Recognition

Gaining recognition across multiple sustainability initiatives, as well as being published as a sustainable standard, has been an important milestone in 21/22. Additionally, the program worked to further align with industry programs, which helps brand and retailer members utilize the tools provided by the Trust Protocol to further evidence their commitment to these specific initiatives.

ACCEPTED AS A SUSTAINABLE COTTON OPTION:

Partnership for Sustainable Textiles

TextileExchange

FORUM FOR THE FUTURE COTTON 2040

SECTOR INTEGRATION:

Sustainable Apparel Coalition

iseal

International Trade Centre

INDUSTRY ALIGNMENTS:

SUSTAINABLE DEVELOPMENT GOALS

SCIENCE BASED TARGETS

FASHION PACT G7 FRANCE

American Farmland Trust

United Nations Climate Change Global Climate Action

SOIL CARBON INITIATIVE

Farmers for a Sustainable Future

Building Credibility and Trust

After a successful launch year, the Trust Protocol ambitiously continued laying the groundwork to be further recognized by leading industry initiatives as a sustainable cotton sourcing option that brands and retailers could use to fulfill their commitments.

In May 2022, the Trust Protocol was approved by *Siegelklarheit*, an initiative of the German Federal Government. As a result, members of the Partnership for Sustainable Textiles can use the program as another system to calculate their share of sustainable cotton. The program was also recognized and published in the standard mapping process by the International Trade Centre, the world's largest database for sustainability standards, offering users access to comprehensive, verified, and transparent information.

Only 18 months after the program's launch, the Trust Protocol was accepted as an **ISEAL Community Member** in June 2022 following a rigorous and meticulous approval process. ISEAL Community Members must be committed to continually improving their systems through learning and innovation, with an emphasis on the importance of collaboration. They are also required to be transparent about how their programs work and how they measure impacts. In line with membership requirements, we are actively detailing and refining our assurance approach, modeling, and processes.

The Trust Protocol is aligned with recognized sustainability initiatives that brands and retailers are also affiliated with, helping our members utilize the tools provided by the Trust Protocol to further demonstrate their commitment to sustainability. This includes the UN Sustainable Development Goals, G7 Fashion Pact, UNFCCC Fashion Industry Charter, Science Based Targets Initiative, American Farmland Trust, and Farmers for a Sustainable Future. The Trust Protocol is working towards assessing further organization opportunities and will prioritize those that are of most relevance to our members and program growth.

Membership: Growth and Achievements

Foundational growth across all membership subsets was a key aim and achievement in the program's efforts.

2x **Grower participation** for the 21/22 crop doubled since the program's pilot year,

1.1m with an estimated **1.1 million cotton acres** enrolled across all 17 cotton producing states.

88 This equates to an additional **88 counties across the Cotton Belt** as well as doubling the data sample size.

9 **successful pilots** in the Protocol Consumption Management Solution with global brands and retailers.

With increased scrutiny on sustainability, brands and retailers want to ensure what they purchase is what they receive with raw material sourcing more important today than ever before.

In 21/22, mill and manufacturer membership increased by more than 50% over the prior year now representing over 820 companies from 30 countries.

The program has also welcomed 40 international brands and retailers since its launch, including:

TARGET · Gap Inc. · J.CREW · LEVI STRAUSS & CO.

This year also saw nine successful pilots in the Protocol Consumption Management Solution (PCMS) with global brands and retailers along with nearly 150 mills. The first products made with Protocol Cotton were also released by J.Crew, and Next PLC became the world's first retailer to fully track U.S. Cotton into finished products through the PCMS.

After listening closely to industry feedback, the Trust Protocol announced both a three-year grower enrollment and more streamlined process for the 2022 through 2024 crops. In 20/21, growers were required to complete all enrollment steps before uploading bales into the system, which could have required multiple sittings. The new streamlined, three-year enrollment process was designed to be easy and efficient and enables growers to upload bales into the Protocol Platform with the previous year's field data and thereby complete all requirements in one sitting.

To assist with enrollment, crop consultants can also now be authorized to enter information and ensure accuracy on a grower's behalf. Additionally, in December 2021 the Trust Protocol partnered with global equipment manufacturer John Deere for their Operations Center software to

pre-populate up to 40% of the data needed to complete Field to Market's Fieldprint analysis.

At the other end of the supply chain, brands and retailers are experiencing increased scrutiny on sustainability claims and outcomes. The Trust Protocol remains the only system that provides quantifiable, verifiable goals and measurement in six key sustainability metrics and article-level supply chain transparency. Together, this represents one of the most ambitious and robust sustainability initiatives available.

For mills and manufacturers, membership in the Trust Protocol provides the ability to be identified as part of a fully transparent supply chain and selected by brands and retailers as they look to source U.S. Cotton fiber.

In addition, a simplification of our terminology was undertaken as part of our commitment to transparency. Protocol Eligible Cotton (PEC) is now tracked as U.S. Cotton and Protocol Verified Cotton (PVC) is now tracked as Protocol Cotton, providing a clearer distinction between the two.

In line with this period of scaling, the program reviewed and updated its Claims Framework with the addition of new claims for those related to volume, on-product, and data use. Consultation was undertaken in the form of a brand and retailer working group, expert review, and a thorough analysis of the regulatory landscape.

What has changed?

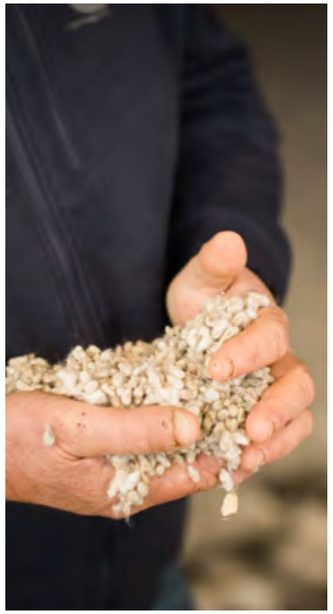
In line with program maturity, the following claims categories have been added:

VOLUME RELATED CLAIMS

- Brand and retail members will be able to demonstrate the volume of cotton taken up through the program.
- Brand and retail members will be able to talk about value chain transparency in relation to the cotton they have sourced through the program.

ON-PRODUCT CLAIMS

- Brand and retail members will be able to highlight their program participation to customers.
- Brand and retail members will be able to state product content in relation to the U.S. Cotton and/or the Protocol Cotton in their products, as tracked through the program.



DATA USE

- Brand and retail members will be able to utilize the environmental metrics associated with their specific volume consumption for their internal purposes, such as Scope 3 Emissions calculations for raw materials.
- Language refinement.
- Claims statements updated to reflect the two sourcing routes and respective claims available to members for U.S. Cotton and Protocol Cotton.

The Trust Protocol also developed a toolkit of member assets, allowing for direct to customer and co-branding opportunities. Through these assets, the Trust Protocol hopes to help reinforce brands' and retailers' efforts towards **transparency** and **social and environmental responsibility.**

TRANSPARENCY

SOCIAL RESPONSIBILITY

ENVIRONMENTAL RESPONSIBILITY

Trust Protocol hopes to help reinforce brands' and retailers' efforts towards these values.

Case Study

Gaining Insights from Either Side of the Supply Chain: Raw Material and Finished Product

Strong relationships are built on a desire to understand and learn from one another. While attending an industry meeting, Rusty Darby, a Trust Protocol grower member from South Carolina, met Chuck Ward, president of sales, marketing and distribution for Gildan.

The two had a mutual interest in learning from one another and gained an appreciation of their unique and important roles within the industry. Today that allows for open conversations through the Trust Protocol which enables them to work together to make impactful changes.

GILDAN®

"Cotton is our primary raw material, and we think that making sustainable products is key for us and our consumers. Every time I've been to a producer's farm, I'm amazed at the technology and practices being implemented. By joining the U.S. Cotton Trust Protocol, we are excited about the potential to have access to program-level verified data that will help support our commitment to purchasing ethical and sustainable cotton," said **Chuck Ward**.

"I want to learn from my end customers about what they need and how I can deliver a better product.," said **Rusty Darby**. "Sustainability has changed significantly in my 57 years and now we are able to document and measure. We improve when we better understand each other's priorities, changes and commitments."

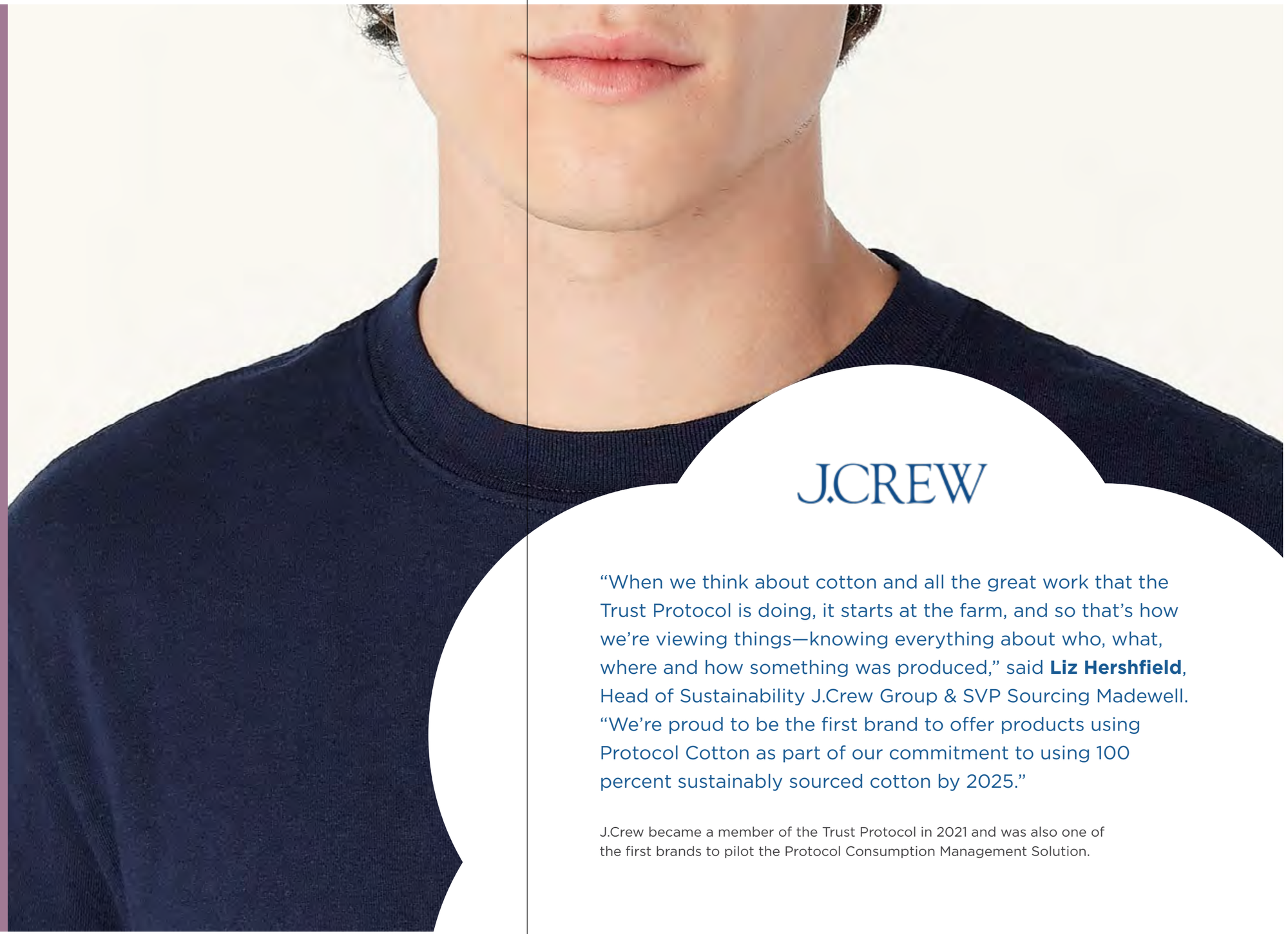
Watch more here

Case Study

First Products Created with Protocol Cotton Released by J.Crew

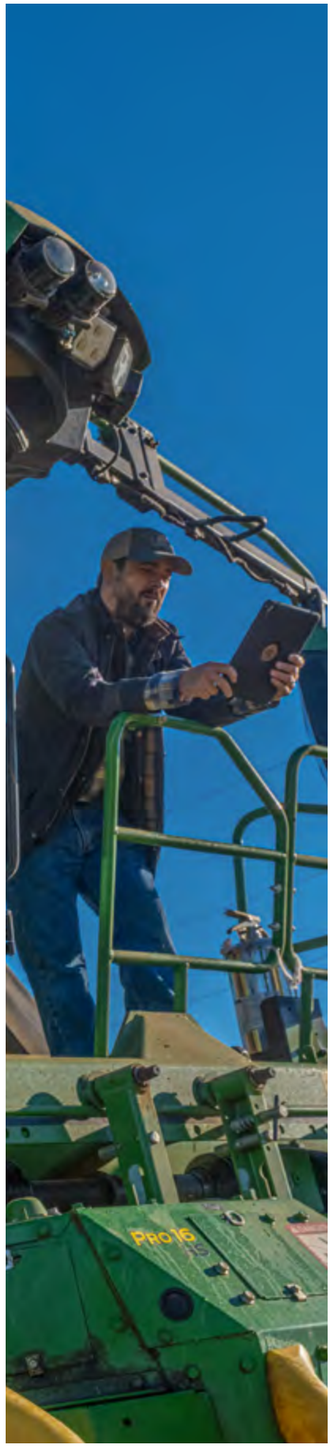
Cotton is J.Crew's number-one raw material by volume and makes up nearly 70 percent of the brand's total fiber consumption. Converting to more sustainable cotton is a key part of advancing their sustainability strategy and is critical to achieving their goals.

The result was the release of J.Crew's Made-in-the-USA line of t-shirts, which was produced from durable, comfortable seven-ounce cotton jersey that was grown, sewn and dyed entirely in the United States.



"When we think about cotton and all the great work that the Trust Protocol is doing, it starts at the farm, and so that's how we're viewing things—knowing everything about who, what, where and how something was produced," said **Liz Hershfield**, Head of Sustainability J.Crew Group & SVP Sourcing Madewell. "We're proud to be the first brand to offer products using Protocol Cotton as part of our commitment to using 100 percent sustainably sourced cotton by 2025."

J.Crew became a member of the Trust Protocol in 2021 and was also one of the first brands to pilot the Protocol Consumption Management Solution.



Article-level Supply Chain Transparency

The Trust Protocol is the world's first sustainable cotton fiber program to offer unparalleled article-level supply chain transparency through the Protocol Consumption Management Solution (PCMS).

The platform was created to record and verify the movement of U.S. Cotton and Protocol Cotton throughout the entire supply chain, starting at the gin and ending at the finished products delivered to brand and retailer members. The PCMS was designed as a 'fiber forwards' system, with the ability to capture details of transactions in near real time.

Unlike other solutions available to the textile and apparel industry today, assurance has been built in where the PCMS offers two levels of verification for every transaction captured in the system.

01

FIRST LEVEL OF VERIFICATION

Occurs within the blockchain-enabled inventory ledger that ensures production volumes shipped never exceed the volume of available raw materials in any individual company's system account.

02

SECOND LEVEL OF VERIFICATION

Ensues on the commercial invoices and shipping documents that each supplier must upload in support of shipments recorded in the system.

In 2021/22 pilots have been completed with nine global brands and retailers and nearly 150 mills, tracking purchase orders as well as individual units. Throughout the process, participating companies are provided with technical support and training by experts.

ENHANCEMENTS

Data security + Confidentiality provisions

Enhancements, based on feedback and experiences, are also being implemented to future-proof the system. This includes initiating work with gin software to capture bales earlier in the process, creating coding for packaged and mixed goods, and integrating the option of forensic verification. Further data security and confidentiality provisions have also been incorporated, as this is of utmost importance to the Trust Protocol and our members.

15

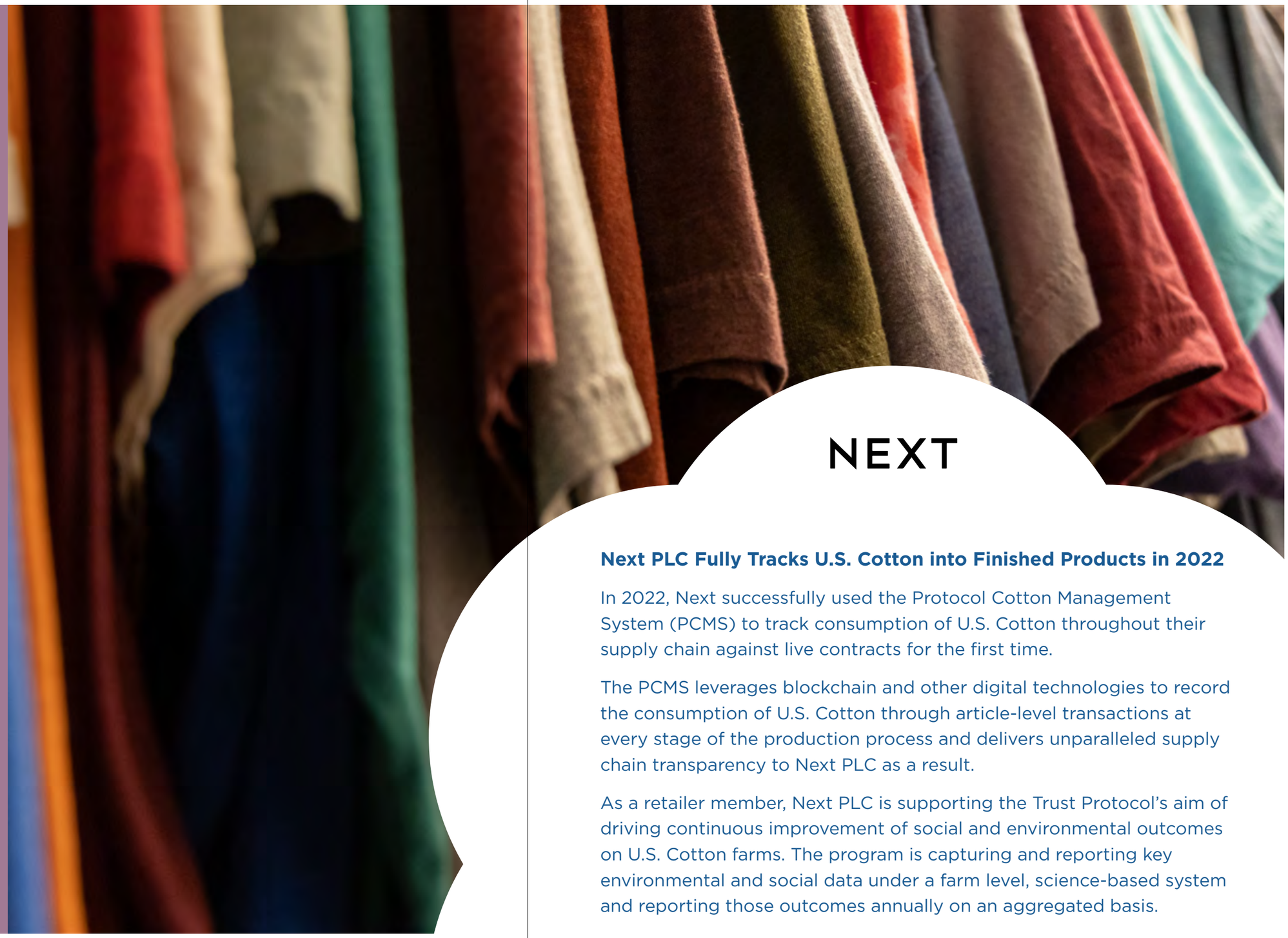
Additional pilots confirmed with global brands and retailers

Case Study

Next PLC Becomes First in the World to Fully Track U.S. Cotton into Finished Products

In 2022, Next PLC became the first global retailer to successfully use the PCMS to track consumption of U.S. Cotton throughout their supply chain against live purchase orders.

The PCMS leverages blockchain and other digital technologies to record the consumption of U.S. Cotton and Protocol Cotton through article-level transactions at every stage of the production process and delivered unparalleled supply chain transparency to Next PLC as a result.



Next PLC Fully Tracks U.S. Cotton into Finished Products in 2022

In 2022, Next successfully used the Protocol Cotton Management System (PCMS) to track consumption of U.S. Cotton throughout their supply chain against live contracts for the first time.

The PCMS leverages blockchain and other digital technologies to record the consumption of U.S. Cotton through article-level transactions at every stage of the production process and delivers unparalleled supply chain transparency to Next PLC as a result.

As a retailer member, Next PLC is supporting the Trust Protocol's aim of driving continuous improvement of social and environmental outcomes on U.S. Cotton farms. The program is capturing and reporting key environmental and social data under a farm level, science-based system and reporting those outcomes annually on an aggregated basis.

Continous Improvement

Learning through Data

The U.S. Cotton Belt spans the lower half of the United States, stretching from Virginia to California and encompassing 17 states. Across this vast region, soil types and weather patterns vary greatly, meaning sustainability practices are not one-size-fits all. This variability offers the ultimate opportunity for on-farm research and experimentation, with growers regularly implementing new practices and learning from peers across the country.

17

States in the United States that encompass the U.S. Cotton Belt, stretching from Virginia to California

Thanks to robust technology, not only is peer-to-peer information sharing more accessible than ever before, but so is aggregated sustainability data through the Trust Protocol. Year-on-year data allows growers to anonymously measure and analyze the impact of implemented changes and further fine-tune their practices as they work to continuously improve. The program is also partnering with global agricultural equipment manufacturer John Deere to enable growers to collect up to 40% of the sustainability data needed for program enrollment through their Operations Center software, which will provide greater data accuracy.

In Section Four, you will see a full analysis of our science based, field level data for six metrics: water use, energy efficiency, land use, soil health, soil carbon and greenhouse gas emissions.

Supported by Technology

The advanced technology that cotton growers employ allows them to not only measure, evaluate and improve—but to do so with precision. Over 50% of cotton growers use GPS-enabled swath control to ensure they are not overlapping crop practices such as planting, fertilizer applications, and crop protection applications. Nearly 7 in 10 growers surveyed also use GPS auto-steering functions on their equipment, such as tractors and pickers.

With precision mapping technologies, growers can determine the most productive areas of their fields and then identify areas better suited for wildlife or pollinator habitats to increase biodiversity.

50% of cotton growers use **GPS-enabled swath control**

7/10 growers surveyed also use **GPS auto-steering functions** on their equipment

Regenerative Practices

Trust Protocol growers are continually improving techniques, including incorporating regenerative agriculture practices, which aim for net positives (ie., putting more into the land than they take out) and encourage growers to incorporate practices such as conservation tillage and cover crops, to aid soil health and increase soil carbon levels.

Over 1,000 U.S. cotton farmers will be provided with technical and financial assistance

https://bioresources.cnr.ncsu.edu/resources/sustainability-trends-and-natural-resource-use-in-u-s-cotton-production/)

U.S. Climate Smart Commodities Grant Secured

A proposal was submitted by the Trust Protocol in April 2022 for the United States Department of Agriculture's Climate Smart Commodities opportunity after which the initiative was announced as the lead recipient of a $90 million grant to implement the U.S. Climate Smart Cotton Program in September.

The project will build markets for Climate Smart Cotton and provide technical and financial assistance to over 1,000 U.S. cotton farmers to advance the adoption of climate smart practices on more than one million acres.

This will allow the production of more than four million bales of Climate Smart Cotton over five years. Implementation will begin in 2023 with 75%-80% of program funds going back to growers for their sustainable practices.

4 million

bales of Climate Smart Cotton expected to be produced **over five years**

75-80%

of 2023 program **funds going back to growers** for their sustainable practices

Climate Smart partners include the National Cotton Council's export arm Cotton Council International, Cotton Incorporated, the Soil Health Institute, Soil and Water Outcomes Fund, Texas A&M AgriLife Research, Agricenter International, Alabama A&M University, and North Carolina A&T State University.

Adapting Within a Changing Regulatory Landscape

2022 was an important year for the implementation of the European Union's (EU) Green Deal. While still recovering from the ramifications of the COVID-19 pandemic and ongoing Ukraine crisis, Europe's main climate and environmental initiative continued to forge ahead.

However, supply chain bottlenecks together with Russian gas shortages have led to a further increase of energy prices, soaring inflation and delays in key legislative initiatives.

Corporate Sustainability and Due Diligence Across Supply Chains

The European Commission has proposed legislation in three key areas where Trust Protocol members could be impacted which coincide with the pillars of the program. Most are still in negotiation stages with the European Parliament and Council providing input ahead of final adoption.

In February of this year, the European Commission introduced the Corporate Sustainability Due Diligence initiative to foster better corporate governance and corporate sustainability reporting, highlighting the importance of environmental and social considerations.

The textile sector has been identified as a high impact sector, meaning that

rules will apply to companies that have more than 250 employees and a net turnover of more than EUR 40 million worldwide, even if they are not based in the Union.

As such, this will impact the cotton sourcing of every major brand and retailer.

Companies will need to identify, prevent or mitigate actual and potential human rights and environmental impacts in their entire supply chain, including sub vendors, while monitoring and communicating the implementation of their due diligence. In parallel, the European institutions are close to finalizing legislation on deforestation-free supply chains.

While this does not apply to cotton, the provisions in the legislation may set a precedent for other commodities and reporting standards. The Trust Protocol is ready to engage on this topic, sharing its best practices and expertise in ensuring full transparency and data-driven environmental footprint improvement.

Substantiating Green Claims on Sustainable Products

The European Commission is also introducing new policies with the aim of promoting a more circular economy, via two legislative packages.

01

LEGISLATIVE PACKAGE 01

Published in March 2022, includes an **EU strategy** for sustainable and circular textiles and a proposal for a regulation on **ecodesign** for sustainable products.

02

LEGISLATIVE PACKAGE 02

Anticipated in November 2022, will feature a proposal on substantiating green claims. The aim of this initiative is to make green claims more reliable across the EU to guide buyers, investors and consumers towards making informed choices.

Simultaneously, a group of stakeholders with a secretariat run by the Sustainable Apparel Coalition have worked on creating technical guidance on measuring a product's environmental footprint for the apparel and footwear sector. Their Product Environmental Footprint Category Rules (**PEFCR**) will provide guidance on how green claims should be substantiated. While the PEF is a European Commission initiative, the PEFCR are not a Commission responsibility, but they will be key for complying policy initiatives that will require use of the PEF methodology (if any).

Clear rules for what can and cannot be claimed on products (and with what data) has the potential to shake up the global textile industry. The Trust Protocol is following these developments closely as it strives to provide data that is in line with the requirements needed to make green claims.

Focus on Biodiversity and a Reduction in Agricultural Chemical Use

The Farm to Fork strategy is a key pillar of the Green Deal, with a clear focus to improve biodiversity. In June 2022, two key **proposals** were published – the nature restoration law and the sustainable use of pesticides regulation. The aim is to reduce the use and risk of chemical pesticides by 50% and to halve the use of more hazardous pesticides. The EU also intends to improve the availability of monitoring data and promoting the use of innovative technologies.

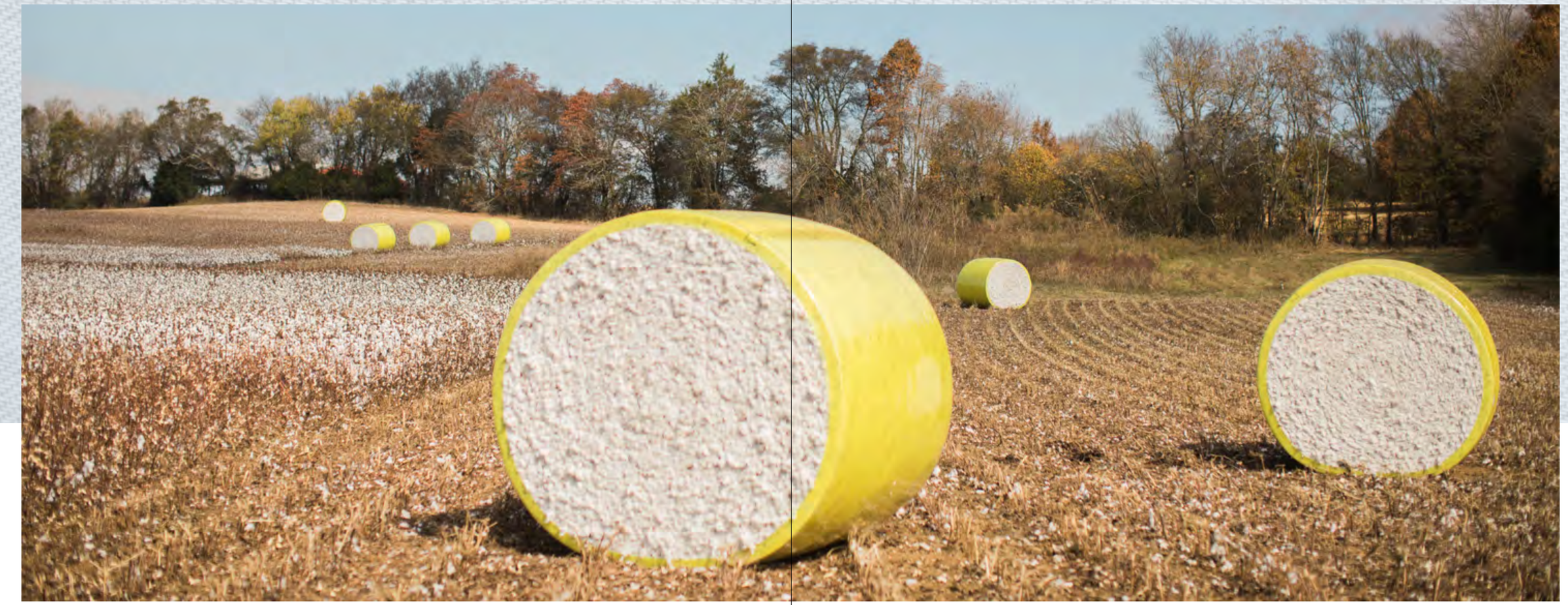
Trust Protocol grower members report on their efforts to improve biodiversity as part of the enrollment questionnaire. Their efforts include commitments to integrated pest management and the eradication of key invasive pests that threaten the cotton crop.

50%

The Green Deal aims to reduce the use and risk of chemical pesticides by 50%

1/2

The Green Deal aims to reduce the use of more hazardous pesticides by half



Taking Stock of the Regulatory Landscape

Taking stock of this evolving regulatory landscape, the Trust Protocol follows EU developments closely to contribute positively to the Green Deal's objectives, and to ensure that the data it provides will help its members comply with newly introduced legislation.

Through learning and exchanging views at the EU level through public consultations and engaging with policymakers, the Trust Protocol is fostering continuous improvement for the U.S. cotton industry.

U.S. Legislation

The Trust Protocol also continues to survey U.S. legislation, including enactment of the Uyghur Forced Labor Prevention Act, and outline the potential areas in which the program can assist our members.

As the landscape evolves our commitment to continuous improvement and full transparency will remain at the forefront of all decisions and actions.

Grower Testimonial

"Precision agriculture allows us to use less water, less fertilizer, and less plant protection products in our fields. We've incorporated soil sampling, GPS mapping and variable rate fertilizer application, which allows us to precisely monitor our inputs. It drives our continuous improvement so we can be our best environmentally."

– Sledge Taylor, *grower*

Mississippi

Measured, Verified Farm-Level Data

Overview of the 2021 Data Set

In 2021/22, the Trust Protocol data set included farming practices for 624 grower members on more than 1.1 million cotton acres producing over 1.6 million bales with only 1% of the reported Fieldprint acres being abandoned.

Enrollment Changes and How it Affects Data Reporting

In 2020/21, the Trust Protocol required grower members to complete all enrollment steps before uploading the bales into the system, which took multiple sittings. However, in 2021/22, the Trust Protocol changed into a three-year enrollment process to streamline the data collection so that the growers can complete all requirements in one sitting.

With the change, the grower members can upload bales into the Protocol Platform with the previous year's field data, meaning for 2022/23, the grower members are providing the 2021 planted Fieldprint data. There will be annual updates in the report on the change of practices, yield, and inputs if any, and the Trust Protocol will revise the data inputs and questionnaire every three years. Changes are made with the assurance of ensuring the quality and timeliness of data.

1.1m

More than 1.1 million cotton acres producing over 1.6 million bales were included in our 2021/22 data set.

Map of U.S. Cotton Trust Protocol Participation

The data reported under the Trust Protocol was received from 17 cotton-growing states and 258 counties (Figure 1) across the United States. Each state and county are divided into four cotton-producing regions with three of those regions further delineated as irrigated or non-irrigated: Southwest irrigated, Southwest non-irrigated, Midsouth irrigated, Midsouth non-irrigated, Southeast irrigated, Southeast non-irrigated and Far West irrigated.

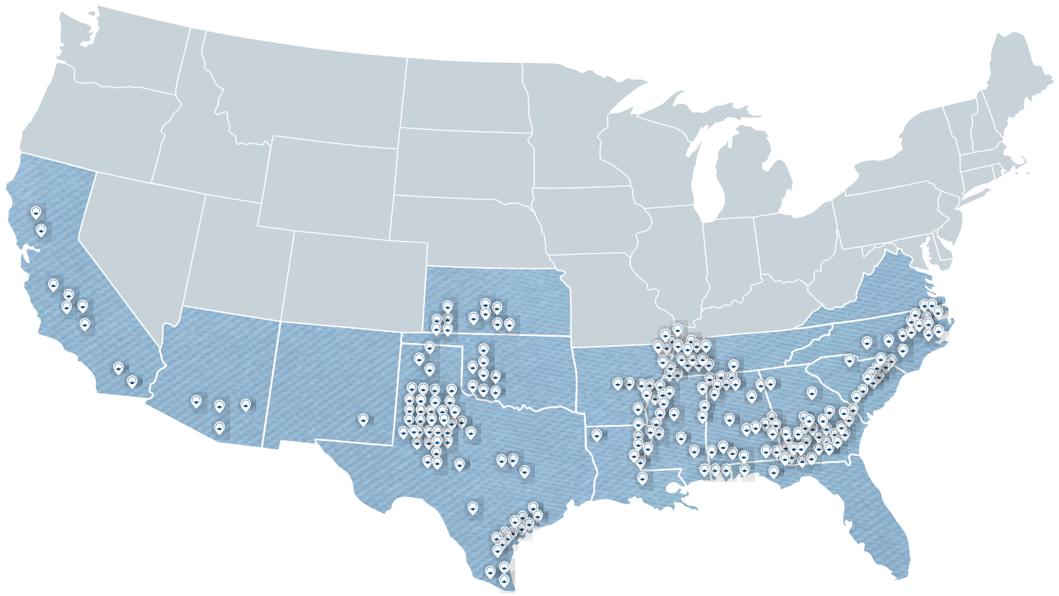


Figure 1: 2021/22 U.S. Cotton Trust Protocol map representing 17 states and 258 counties across the United States.

Trust Protocol Sustainability Measurement Methodology

Sustainability measurement charts for the environmental metrics involve three sets of data – the 2015 Trust Protocol baseline, 2025 sustainability goals, and the 2021 Trust Protocol aggregate data.

DATA SET 01

2015 TRUST PROTOCOL BASELINE

2015 Agricultural (Ag) district reports across the cotton-growing states were used to generate 1,500 archetypes for the representative group dataset. The Trust Protocol chose Ag district reports as they represent actual crop management practices for 2015 from each area or state expert. The Trust Protocol derived the baseline from a five-year yield average from each crop management district to remove the effects of annual fluctuations from weather or other natural phenomena. The Trust Protocol created the archetypes on the sustainability metrics using the University Extension enterprise budget publications from 2011 to 2015 to provide then input data. Using the Field to Market Fieldprint Platform, the field inputs from the publications generated the baseline sustainability metrics using the weighted average calculation method. The multi-year weighted average minimizes the weather effect across years and creates representative archetypes simulated using the same algorithms currently used in the Trust Protocol, allowing a valid comparison. The numbers are subject to change with new versions and evolutions of algorithms in the Field to Market tool.

DATA SET 02

2025 SUSTAINABILITY GOAL

These goals are aligned with national goals but for sustainability measurement of the Trust Protocol, the values indicated in the charts and figures are based on the 2015 Trust Protocol baseline.

DATA SET 03

2021/22 U.S. COTTON TRUST PROTOCOL AGGREGATE

In 2021/22 the Trust Protocol has changed the reporting on data. Instead of reporting each year, which is subject to many variables, one of the major factors being the weather, all data going forward will use a weighted moving average. For 2021/22, we have only two years of data as the program is only two years old. However, for subsequent years, all reported data will reflect a three-year weighted moving average for the six environmental metrics. The weighted moving average puts more weight on the recent data and less on the past data, and it helps in looking past random fluctuations showing the major trend of a data set. A significant advantage of weighted moving averages is a smoother estimate of the trend cycle. Instead of observations entering and leaving the calculation at full weight, their weights slowly increase and then gradually decrease, resulting in a smoother curve.

1,500

Archetypes generated for the representative group dataset, across the cotton-growing states.

Trust Protocol Sustainability Narration/ Reporting

In 2021/22, the Trust Protocol introduced continuous improvement trends in addition to the program aggregate data. Program aggregate will provide a weighted moving average based on three years of data, while continuous improvement trends will provide year-on-year aggregate data for a cohort group of growers. The Trust Protocol enrolled the cohort group of growers who have provided Fieldprint Calculator data since the beginning of the program in 2020 to track their improvement over the years.

U.S. Cotton Trust Protocol Management Practices

The Trust Protocol brings quantifiable and verifiable goals and measurements to more sustainable cotton production by driving continuous improvement in six key sustainability metrics – land use and yield, water management, energy use, greenhouse gas emissions, soil conservation, and soil carbon. Trust Protocol farm management practices cover both environmental and social factors.

All data in this report shows the 2021/22 U.S. Cotton Trust Protocol aggregate, involving only the 2021/22 enrolled acreage reported as of June 2022. Any field data collected from 2021/22 beyond June 2022 will be reported in the 2022/23 Annual Report. The charts and numbers with statistics have been derived using the Tableau business intelligence and data visualization tool.

A. Environmental

1. YIELD AND LAND USE

Cotton yield is measured as the quantity of raw cotton fiber harvested per acre. Yield is influenced by the genetics of the plant, management practices, and environmental factors such as temperature, radiation, humidity, and water availability. Trust Protocol growers adopt the best management practices to secure the best yields. In 2021/22, the U.S. average[1] yield was 819 lbs./acre and the 2021/22 Trust Protocol aggregate yield was 1,133 lbs./acre (Figure 2). The 2015 Representative group derived from the Ag district reports reported an average yield of 867 lbs./acre and the 2025 Sustainability goal is to increase the yield to 980 lbs./acre.

The 2025 Sustainability **goal for land use efficiency is an increase of 13%**

Land use is calculated as the inverse of the yield. The 2025 Sustainability goal for land use efficiency is an increase of 13%. In 2015 (Figure 3), the Trust Protocol baseline average for land use was 48 square feet required for producing a pound of cotton. In 2021/22, Trust Protocol grower members used 41 square feet, a 13% improvement per pound of cotton fiber produced meeting the 2025 Sustainability goal on land use efficiency.

1 United States Department of Agriculture, National Agricultural Statistics Service, https://www.nass.usda.gov

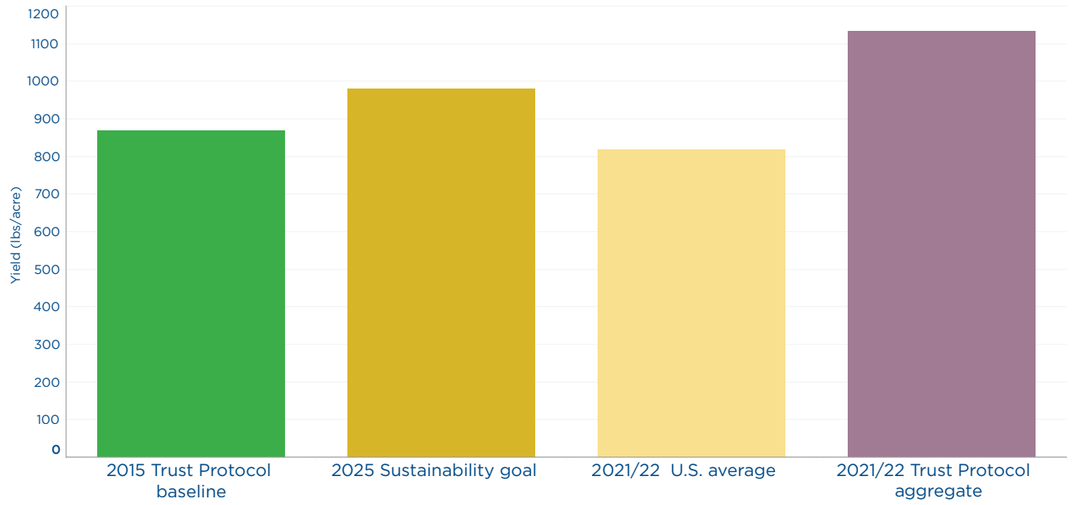


Figure 2: 2015 Trust Protocol baseline, 2025 Sustainability goal, 2021/22 U.S. average (data source – USDA-NASS), and 2021/22 U.S. Cotton Trust Protocol aggregate for yield in lbs./acre

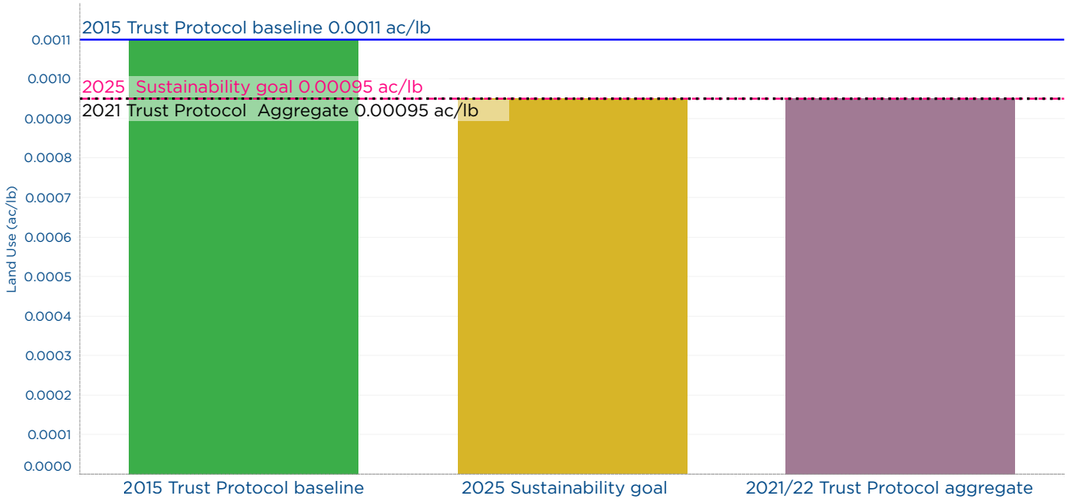


Figure 3: 2015 Trust Protocol baseline average, 2025 Sustainability goal and 2021/22 U.S. Cotton Trust Protocol aggregate for land use in ac/lb.

2. WATER USE EFFICIENCY

The irrigation water use efficiency metric (acre-inches of water applied per additional units of production over dryland production) reflects the average increase in crop yield per unit of water applied. The irrigation water use metric is calculated as irrigation water applied in acre-inches divided by the difference in the irrigated yield and the expected non-irrigated yield. The value for non-irrigated yield is reported by Trust Protocol grower members and is typically grounded on either an estimate based on experience or the yield from an unirrigated corner of an otherwise irrigated field. The metric measures the application of irrigation necessary to produce additional units of cotton fiber and is only valid for irrigated growers.

In 2015, the Trust Protocol baseline produced 0.016 additional pounds of fiber for each cubic foot of water, equating to a water use of 63 cubic feet for each additional pound of cotton produced. In 2021/22 (Figure 4), the Trust Protocol grower member aggregate was 0.018 lb/ft3, meaning that for every cubic foot of water used, there was a gain of 0.018 pounds of cotton fiber, reducing water use to 56 cubic feet for each additional pound of cotton production. The 2025 Sustainability goal for water use is to increase efficiency by 18%, which equates to reducing water use by 53 cubic feet for each additional pound of cotton or producing 0.019 additional pounds of fiber for every cubic foot of water. In the 2021/22 Trust Protocol grower members improved their irrigation water metric by increasing the efficiency by 14%, similar to grower members from 2020/21.

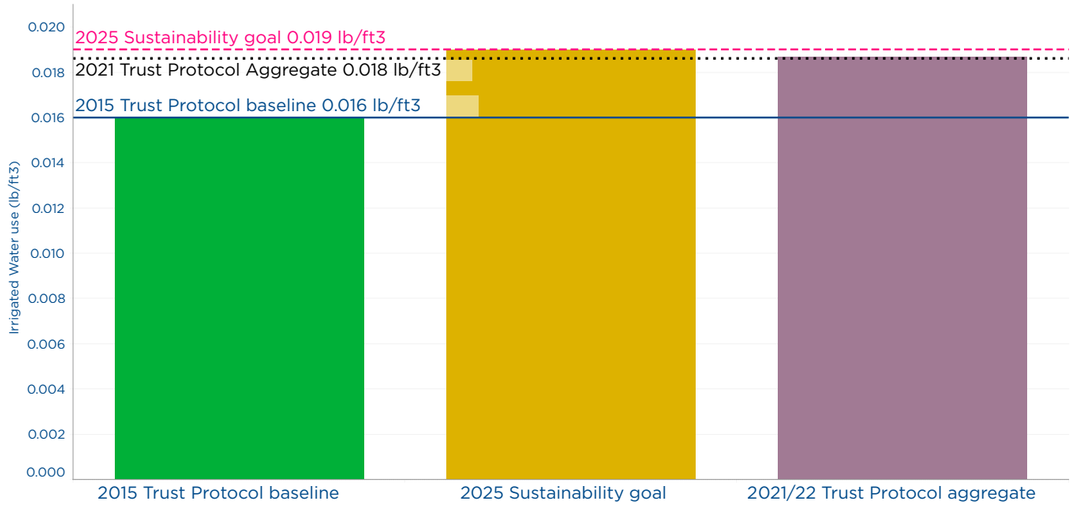


Figure 4: 2015 Trust Protocol baseline and 2021/22 U.S. Cotton Trust Protocol aggregate with the 2025 sustainability goal for irrigated water use efficiency in lb/ft3.

Trust Protocol grower members efficiently **reduced energy use by 25%** in 2021/22

3. ENERGY USE

The energy use metric calculates all energy used in the production of one crop in one year from pre-planting to post-harvest activities. The indicator includes the major energy-intensive areas of on-farm crop production, such as direct diesel fuel use for operation of farm equipment, electricity for pumping irrigation water, and electricity and natural gas for ginning. Also included are the indirect or embedded energy use from fertilizer mining, production and transport and crop protectant manufacturing[2]. Farm input information such as yield of the crop, irrigation for the crop, fuel used for farm operations, embedded energy of plant health products, and fiber ginning are provided to the greenhouse gases, regulated emissions, and energy use in transportation. The GREET model sponsored by the Argonne National Laboratory is a full lifecycle model for calculating total energy consumption on the farm. The energy use indicator is represented in units of energy using British thermal units, Btu/lb. of fiber.

In 2021/22 the U.S. Cotton Trust Protocol grower member aggregate (Figure 5) was 5,995 btu/lb., which is lower than the 2015 Trust Protocol baseline average of 8,049 btu/lb. Trust Protocol grower members efficiently reduced energy use by 25%, currently surpassing the 2025 Sustainability goal of 15% reduction.

2 Field to Market, National Indicators Report, https://fieldtomarket.org/national-indicators-report/

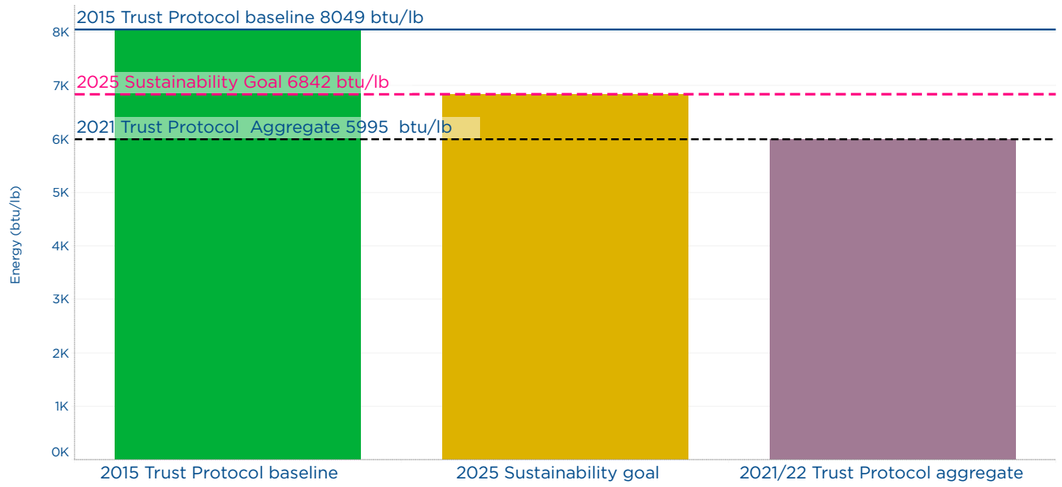
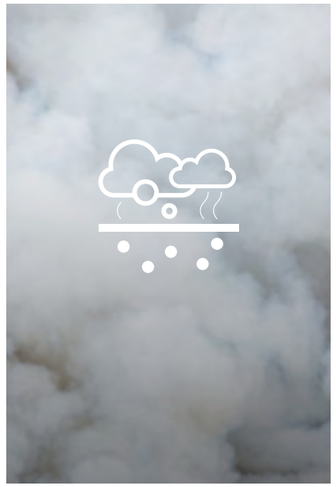


Figure 5: 2015 Trust Protocol baseline and 2021/22 U.S. Cotton Trust Protocol aggregate with 2025 sustainability goal for energy use in btu/lb.



The 2025 Sustainability goal is to **reduce GHG emissions by 39%** from the 2015 baseline.

4. GREENHOUSE GAS EMISSIONS (GHG)

GHG is a measure of emissions of carbon dioxide, nitrous oxide, and methane reported as pounds CO2e/pound cotton lint associated with cotton production and ginning. As discussed in the previous section, the metric shares many of the exact boundaries of calculations as the energy use indicator and uses the same energy data sources. Besides energy-related emissions, the Trust Protocol accounts for soil gaseous carbon dioxide emissions from residue decomposition and nitrous oxide emissions from fertilizers. The DayCent model developed by the Natural Resource Ecology Laboratory is used to simulate the GHG emissions from soil. GHG emissions come from three primary sources[3]. The first one is the emissions associated with energy use, which depend on the amount of energy and the form (such as diesel, electricity, etc.) of that energy. Second is direct emissions from respiration and biological nutrient cycling in agricultural soils, which release nitrous oxide and methane. The third is from burning crop residues to clear the fields after harvest; however, in the United States, it is not common to burn the cotton residues after harvest.

The 2025 Sustainability goal is to reduce GHG emissions by 39% from the 2015 baseline. The 2021/22 (Figure 6) Trust Protocol grower member aggregate for GHG emissions per pound of fiber is 1.9 CO2e. Relative to the 2015 representative group, 2021/22 Trust Protocol grower members showed improvement by reducing GHG emissions by 21% towards the path to reaching the 2025 sustainability goal.

3 Field to Market, National Indicators Report, https://fieldtomarket.org/national-indicators-report/

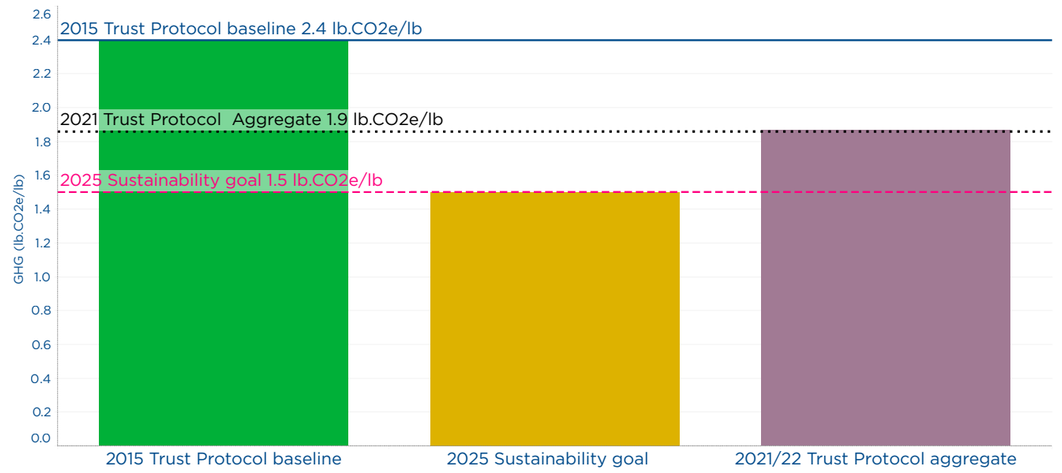


Figure 6: 2015 Trust Protocol baseline and 2021/22 U.S. Cotton Trust Protocol aggregate with 2025 Sustainability goal for GHG emissions in lb.CO2e/lb. of fiber.

5. SOIL CONSERVATION

Soil conservation (net soil loss) is a measure of soil loss due to erosion from water and wind and is reported as tons of soil lost per acre per year. The USDA/NRCS revised universal soil loss equation (RUSLE2) is used to predict water erosion on a field and the wind erosion prediction system equation (WEPS) simulates soil loss due to wind. Together these equations simulate the total annual soil loss on each farmer's field. Components that impact this metric are field operations such as tillage methods, crop residue, crop rotation, crop type, type of irrigation system, and the field's physical features such as tile drains, terraces, and wind barriers. In addition to field operations, historic climate data along with field slope, slope-length, and soil texture associated with every field are stored in a national cloud database of field information in the United States and automatically entered into the RUSLE2 and WEPS models for predicting the net soil loss due to wind and water.

2015 Trust Protocol baseline average soil loss was 12.6 tons/ac/year, and the goal is to reduce soil loss by 50% by 2025. 2021/22 (Figure 7) Trust Protocol grower member aggregate for soil loss was 2.8 tons/ac/year showing a reduction in soil loss by 78% compared to the 2015 Trust Protocol baseline. Growers demonstrated that by adopting novel techniques to improve soil health, they could reduce soil loss to levels that can assure crop productivity and can be sustained economically and indefinitely. The Trust Protocol has capped soil conservation at 20 tons/ac/year in the aggregate reporting as we believe from our statistical analysis that on a few fields having unexplained and unforeseen input parameters, the WEPS model becomes unstable producing erroneous predictions of soil loss. Further analytical investigation is currently being conducted on 4% of the Trust Protocol fields with extremely high soil loss values.

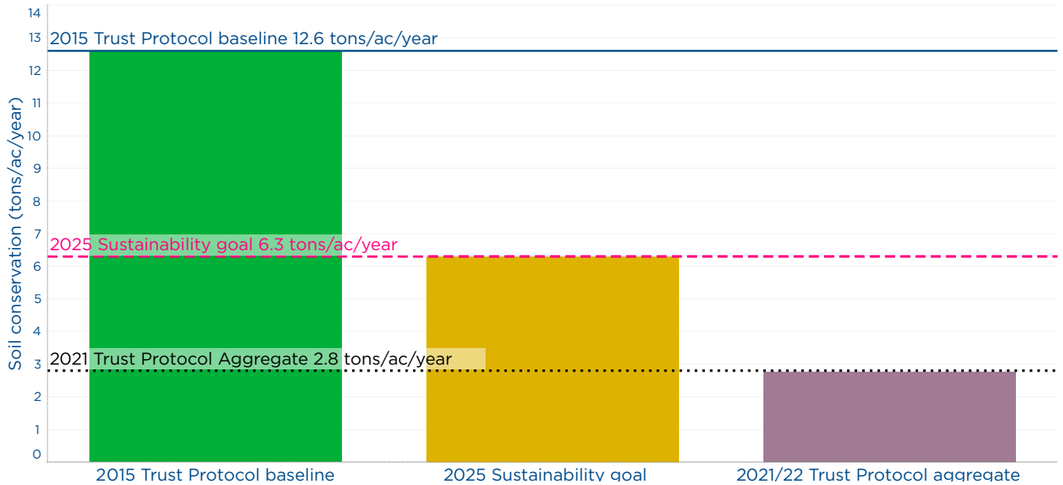
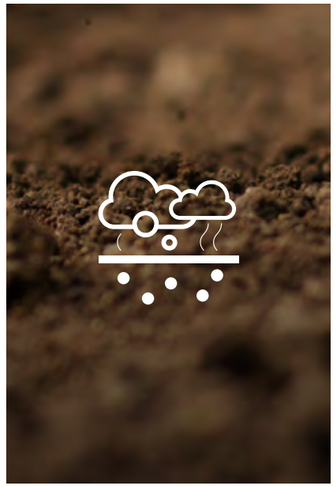


Figure 7: 2015 Trust Protocol baseline average and 2021/22 U.S. Cotton Trust Protocol aggregate with 2025 Sustainability goal for soil conservation in tons/ac/year.



In 2021/22, **70%** of Trust Protocol grower members **had a positive index value**

6. SOIL CARBON

Soil carbon is important in supporting water infiltration, water and nutrient-holding capacity, crop productivity, and carbon storage. Due to the difficulty in quantifying the amount of change in soil carbon in a single year, the Fieldprint Calculator utilizes a qualitative and directional measure of soil carbon. The soil carbon metric utilizes a USDA NRCS tool, the Soil Conditioning Index (SCI), which is also a direct representation of practices that improve soil organic matter.

The SCI index ranges from -1.0 to +1.0. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system and if the index has a positive value, soil organic matter levels are predicted to increase. The Trust Protocol target is to focus on 30% of grower members to be in positive SCI improvement by 2025 (Figure 8). The 2015 Representative group average for SCI was –0.4 while the 2021/22 Trust Protocol member growers were at 0.2 indicating soil health improvement. In 2021/22, 70% of Trust Protocol grower members had a positive index value, meaning the soil health is well maintained.

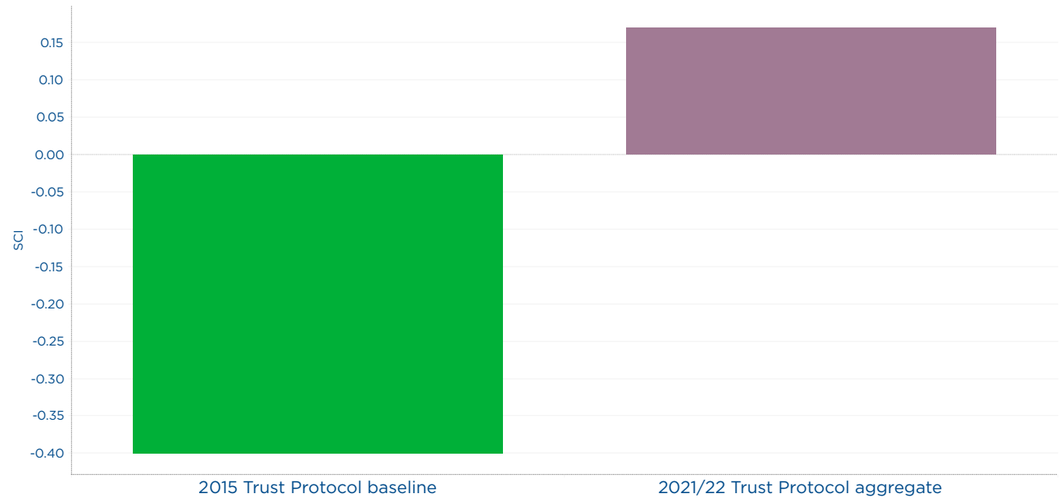


Figure 8: Soil Conditioning Index for 2021/22 U.S. Cotton Trust Protocol member growers and 2015 Trust Protocol baseline.

Grower Testimonial

"Soil is a living organism and the more we help it, the more productive it will be. I'm constantly changing my approach and strategy to be more sustainable, and the Trust Protocol is a large part of that."

– Nathan Reed
grower

Continuous Improvement Trends

The core foundation of the Trust Protocol is continuous improvement.

The program's Theory of Change is based on science-based measurement and feedback, where our grower member contribution involves adopting continuous improvement measures to reduce the environmental footprint in the field.

To track the effort for continuous improvement, the Trust Protocol identified a cohort group of growers who have re-enrolled in 2021/22 and therefore provides us with a dataset that shows year-on-year trend lines for the six key environmental metrics for those specific growers who have been reporting Fieldprint data since the beginning of the program. In 2021/22, 212 growers had re-enrolled, thus documenting two years of field data.

LAND USE AND YIELD

For land use and yield, the cohort group of growers showed an increase in yield, thereby decreasing land usage to generate a pound of cotton compared to the 2020/21 aggregate results.

It is important to remember that both environmental and genetic interactions affect yield. Cultivars respond differently to different growing conditions, implying the genetic influence on the lint yield with one of the major challenges for yield being erratic weather, such as drought that limits boll setting, and high heat causing boll shedding.

WATER USE

The cohort group of growers produced more fiber with the same water usage in 2021/22 compared to 2020/21. The growers also measured the increase in the use of integrated water management in 2021/22. Cotton is a drought-tolerant crop, and in many parts of the Cotton Belt where summer precipitation is adequate, it can be grown without supplemental irrigation. In more arid regions, where irrigation is required to produce the crop, growers have several application methods to choose from depending on their location. Water quantity, quality, and drainage are essential considerations in determining the best method to irrigate cotton.

ENERGY USE AND GHG

In 2021/22, the cohort group of growers reported a continuous decrease in both energy use and GHG emissions. Factors that affect energy use and GHG emissions such as yield; irrigation data such as operating pressure, pumping depth, and amount of water applied; operational inputs including the number of trips, type of fuel for fertilizer application, as well as tillage activities; and application inputs such as embedded energy in fertilizers applied. With the rising cost of fertilizer and plant protection products, especially in 2021, growers have adopted different soil health-building practices that have directly contributed to decreasing emissions and energy use.

SOIL HEALTH

The Trust Protocol recorded similar data for both soil conservation and soil conditioning index. There has been a decrease in soil loss and an increase in soil carbon in 2021/22 when compared to the 2020/21 cohort group of growers. This could be connected to a variety of factors including the use of precision farm machinery and equipment, rising input costs, and a U.S. government mandate requiring reduced rates of inputs.

B. Social

All data under the social aspect is analyzed using the self-assessment questionnaire responses submitted by the growers. The self-assessment questionnaire has a total of 119 questions and are tailored per cotton-growing regions:

- **FWI** – far west irrigated
- **SWI** – southwest irrigated
- **SWNI** – southwest non-irrigated
- **MSI** – mid-south irrigated
- **MSNI** – mid-south non-irrigated
- **SE** – southeast irrigated
- **SENI** – southeast non-irrigated

The questions include 54 required questions that the producers must comply with in order to be a member of the Trust Protocol. There are 65 recommended region-based questions where the producers have the following choice for answers:

1. I do now in most of my fields
2. I am implementing this in one or more fields
3. I will consider in the next 3 years
4. I will do in 3 years
5. I will do next year
6. Is not cost effective
7. Not applicable for my growing region or irrigation practice
8. Will not work with agronomic constraints
9. Tried this practice in the past and not successful
10. Others

Stewart McGill
Grower,
Alabama

Worker Well-being

The worker well-being principle of the Trust Protocol covers 25 self-assessment farm questions with 13 questions under the umbrella of the principle of Farm Management.

Required Practices
All required practices (refer to 2020/21 annual report) were met by the 2021/22 Trust Protocol grower members. A few of the required questions that were marked as not applicable by Trust Protocol grower members include:

a. Be knowledgeable of rules in accordance with U.S. labor laws for hiring migrant workers, including their children, housing, working conditions, and compensation – 68% of Trust Protocol grower members did comply while 32% of the growers answered not applicable as they were mid-size and family-owned farms that did not hire any migrant workers.

b. Housing for temporary labor consists of shelter, water supply, toilet facilities, bathing facilities, sewage disposal facilities, lighting, refuse disposal, first aid, pest control, and reporting of communicable diseases. 53% of Trust Protocol grower members answered not applicable for housing for temporary labor due to the farms have full-time employees and not hiring migrant workers. The 2012 Census of Agriculture[4] reported that 89% of cotton farms are owned by families and partnerships within the family.

Recommended Practices
Covered under the Principle of Farm Management.

4 United States Department of Agriculture, National Agricultural Statistics Service, https://www.nass.usda.gov/Publications/Highlights/2015/Highlights_Cotton.pdf

Farm Management

Farms are becoming more advanced each day as growers are quickly adopting new technologies and updating machinery and equipment to increase their production capabilities. The Trust Protocol requires farm infrastructure to be kept safe for workers, farm animals and the environment.

Required practice
All required practices in farm safety are also covered under the principle of worker well-being. In 2021/22 Trust Protocol grower members complied with the required practices with the exception of a few responses answered as not applicable to the farming operation and will do in the next year and within three years.

a. Participate in producer, professional, or civic organizations actively promoting community wellbeing: 90% of Trust Protocol grower members participated and actively promoted community well-being and 10% will participate in community activities in three years.

b. Identify confined spaces and provide guidance on proper procedures to follow when entering these spaces: 92% of Trust Protocol grower members embraced this practice and 8% responded as not applicable due to the open barn structure and absence of confined spaces within the farm.

c. Reviewing and updating the health and safety of the program periodically and conducting periodic meetings and training sessions for the workers: 94% of Trust Protocol grower members adopted this practice while 6% have committed to conducting periodic training and reviews in the next year.

d. Lock out electrical power before performing maintenance or service. Tag out with detailed instructions on the tag to help prevent accidental injury to personnel: 94% of Trust Protocol grower members followed this recommended practice and 6% of growers reported not applicable due to not performing any maintenance or services on their own farm instead taking it to a shop.

e. Employees have access to sanitation that consists of drinking water, toilet, and handwashing facilities: 95% of Trust Protocol growers adopted this practice and 5% responded not applicable as all farms do not have employees and mostly, they are family owned where houses are next to the farms and used as offices.

f. Provide a roll-overprotective structure (ROPS) on all tractors operated by employees. ROPS are metal bars, frames, or crush-proof cabs that are designed to provide a protective zone around the tractor operator in the event of a rollover or overturn 97% of Trust Protocol grower members adopted this practice and 3% opted for not applicable.

g. Post a slow-moving vehicle emblem for any machine that travels 25 mph or less on public roads: 99% of Trust Protocol grower members posted emblems for slow-moving vehicles.

h. Providing Personal Protective Equipment (PPE) for eyes, ears, face, head, feet, and hands where necessary. PPE is worn to minimize exposure to hazards that cause serious workplace injury and illness: 99% of Trust Protocol grower members used PPE in their workplace.

Recommended Practice
Trust Protocol recommends growers keep the farm safe by adopting the following practices.

a. Enrolled or have participated in an existing program such as Conservation Reserve, EQIP, or other federal or state conservation programs. The United States Department of Agriculture (USDA) oversees many farming conservation issues including drinking water protection, reducing soil erosion, wildlife habitat preservation, preservation and restoration of forests and wetlands, and aiding farmers whose farms are damaged by natural disasters. Farmland that falls under these conservation issues could be enrolled in such programs to help improve environmental quality: 84% of the grower members are currently enrolled in conservation programs.

b. Testing drinking water used by family and farm workers periodically to assure bacteria, nitrate and other pollutants do not exceed safe levels: 61% of the grower members are following this practice and 19% responded not applicable due to the presence of a municipal water source that does not need to be tested.

c. Use anti-backflow devices or maintain an air gap of at least 6 inches between the tap or hose and liquid in the spray tank. Anti-backflow devices help prevent water from becoming contaminated by allowing it to flow in one direction: 92% of Trust Protocol grower members are currently using anti-backflow devices, 6% will start using them in the next three years, and 2% reported as not applicable to their farming practice.

d. Dispose of sprayer rinse water by spraying on crops listed on the label in accordance with label directions. Pouring the rinse water into any drain or any site not listed on the product label could contaminate the environment: 98% of the Trust Protocol growers are currently implementing the practice for at least one or more fields.

e. Recycle farm chemical containers where recycle centers are available or dispose of rinsed containers and empty bags in municipal landfill. Check local ordinances on the disposal of pesticide containers: 90% of the grower members are currently recycling farm chemical containers while 8% committed to doing this practice in the next three years.

f. Locate wastewater disposal systems more than 500 feet from potential surface water sources. A properly installed and maintained system for treating and disposing of farm wastewater will minimize the impact on groundwater and surface water: 90% of the Trust Protocol grower members are currently following this practice, and 6% of the members responded as not appropriate for their farming operation.

Regenerative Agriculture and Practices

Regenerative agriculture is a holistic philosophy that aims to positively influence bio-sequestration, biodiversity, ecotoxicity, climate resilience, water systems, micronutrients, and ecosystem services. Regenerative agriculture is not a one size fits all prescriptive practice, rather it looks at the combination of practices that support resilience as well as build and nourish the ecosystem. The principles of a regenerative agriculture system are based in Indigenous ways of land management and are adaptive to local physical conditions and culture. These principles include[5] :

- Minimizing soil disturbance
- Maintaining living roots in soil
- Continuously covering bare soil
- Maximizing diversity with emphasis on crops, soil microbes and pollinators
- Integrating livestock where it is feasible

Over time, regenerative practices can increase productivity and naturally reduce the need for external inputs required for plants. Common regenerative practices as reported in the Trust Protocol include cover cropping, no or low tilling, biodiversity, rotational farming, precision agriculture, integrated pest management, and intentional use of inputs that are landscape specific.

1. Tillage
Tillage practices heavily influence soil health in ways impacting both long-term productivity and environmental outcomes, such as carbon sequestration and nutrient run-off. Tillage is defined by the amount of crop residue left on the ground. Three different types of tillage are adopted in cotton cultivation across the U.S.:

a. Conventional tillage
incorporates most of the crop residue into the soil and has less than 15% residue cover on the ground. Around 20% of the reported acres practiced conventional tillage in 2021/22.

b. Reduced tillage
residue cover on the ground is usually between 15% to 30%. It is a hybrid approach between conventional tillage and no-tillage practice. 30% of the reported acreage in 2021/22 practiced reduced tillage.

c. No-tillage
avoids any mechanical tillage of the soil and attempts to keep soil disturbance to an absolute minimum (one of the main principles of regenerative agriculture) and the ground residue is usually more than 30%. In 2021/22 more than half of reported acres practiced no-till.

Continuous reduced/no-till production practice increases the amount of soil organic matter near the soil surface.

2. Cover crop
Cover crops heavily influence soil health in ways impacting both long-run productivity and environmental outcomes. The protective canopy minimizes the impact of raindrops on the soil surface, decreasing soil aggregate breakdown and covering the soil surface like standing vegetation. The cover crop approach dramatically reduces soil erosion and runoff, increasing infiltration. Cover crops use sunlight and carbon dioxide to make carbon-based molecules (like all plants). This process causes a buildup of carbon in the soil, and most of the carbon is rapidly cycled through the many organisms in the soil, but some eventually become humic substances that can gradually build soil organic matter (SARE)[6]. In 2021/22, more than 55% of Trust Protocol acres were planted with cover crops.

3. Crop rotation
Crop rotation refers to cultivating different crops on a particular piece of land over time. The exact crop rotation sequence depends on the local environmental and economic circumstances. It helps improve soil biodiversity by changing crop residue and rooting patterns. A range of crops will lead to a more diverse and healthy microbial community, and different crop species benefit specific microbial groups. In a conventional rotation system, cotton is rotated with peanuts, sorghum, winter wheat, soybeans, corn, and other cover crops depending on the region. In 2021/22, conventional rotation was practiced in 70% of the reported acreage.

4. Integrated pest management
Integrated pest management (IPM) is a science-based approach that strategizes tools and techniques to identify and manage pests. Cotton acts as a host to a broad range of pests and IPM can be implemented at all stages of crop production. The five steps of IPM include identifying pests, monitoring pests' numbers and activity, determining action thresholds, exploring treatment options (chemical, biological, mechanical, cultural/ sanitation, prevention), and evaluating results. Through IPM, the need for pesticides is reduced. IPM is not a one-size-fits-all practice and is not a single pest control method but rather a series of pest management evaluations, decisions and controls. It varies from region to region and is based on an individual basis. IPM practices are also based on the latest scientific and technological information available. Therefore, the practices continually improve with science. 70% of the Trust Protocol reported acreage were practicing IPM in 2021/22.

5. Precision application of nutrients
Much of the GHG emissions are attributed to nitrous oxide emissions from soil that comes from the application of fertilizers. Applying fertilizer as close to the time of crop need as possible, and planning for fertilizer nutrients to be available during crop demand, prevents nutrient runoff.
Out of the 4R principles of fertilizer application (right source, right rate, right time and right place),the right time helps in making nutrients available when needed by the crop. The right placement of fertilizers can keep nutrients where they can be of most use to crops. The 4R's serve to guide farmers to the management practices that help apply nutrients with precision. In 2021/22, 90% of the reported acreage followed one or other principles of 4R.

For more in-depth data on regenerative practices and its effect on soil health, contact the Trust Protocol to become a member.

5 Field to Market, Defining Sustainable Agriculture, https://fieldtomarket.org/defining-sustainability/

6 Sustainable Agriculture Research and Education, Cover Crops for Sustainable Crop Rotations, https://www.sare.org/resources/cover-crops/

Looking Ahead

As we look back on our second year, there is much to be proud of, and there are many opportunities that still lie ahead as we begin to scale.

To seize these opportunities the program is ready to adapt and change, while keeping the integrity of the program and that of our members in mind.

One development will be our transition to a for-profit organization. Membership fees will cover program administration and infrastructure with the aim of providing distributions back to Trust Protocol grower members.

We also have an opportunity to bring greater transparency to the supply chain. U.S. Cotton is a global commodity, with about 80 percent being exported to mills around the globe. Increasingly, entities want to know where fibers originated, and this year we have seen more governments propose policy that will affect how brands and retailers report their sustainable practices across the supply chain. As we look ahead, we will continue to streamline data collection and harness insights that can be provided to brands and retailers, helping them meet their sustainability objectives.

80%

of U.S. Cotton exported to mills around the globe–securing its position as a global commodity

As we highlighted in last year's annual report, achieving improved sustainability outcomes is a journey, and its success is dependent on many factors—from fostering collaboration and a collective sense of purpose to delivering consistency through activities such as verified reporting that drives change.

This collaborative journey continues as we work to increase grower participation in the program by providing resources to assist with enrollment and become better educated on sustainability practices. This includes helping the grower with questionnaires on their processes and a team of scientists who can examine their individual farm-level data and answer inquiries. We are also creating custom crop rotation templates and streamlining the identification of field borders through software enhancements.

Additionally, we will provide better access to the ecosystem of people that growers rely upon, including crop consultants and extension experts, who can provide further guidance and resources on sustainability practices.

We know that the environmental benefits of continuous improvement practices such as biodiversity and regenerative agriculture help U.S. cotton growers, and their partners, meet consumer demand for more sustainably grown and produced products. These practices also allow growers to be more efficient with their resources and how they manage their own farming operation.

The U.S. cotton industry is determined to deliver sustainability progress currently laid out in the 2025 National Goals for Continuous Improvement, and the Trust Protocol aims to be a vital driving force in this journey.

These efforts also include those outlined under our ISEAL community participation, reporting on our improvement plans and progress while participating in the program alongside peers.

However, we will continue to listen to all segments of the industry and value chain. This will enable the program to identify potential challenges, as well as opportunities, and make decisions in an informed, thoughtful way with program integrity at its core.

Mike Tate
Grower,
Alabama

Appendix

2021/22 Financial Overview

2021 represented a year of growth for the U.S. Cotton Trust Protocol with membership increasing across the textile supply chain. The program also advanced the functionality and rigor of the online platform through the refinement of the Protocol Consumption Management Solution (PCMS). Brands and retailers began piloting the PCMS with limited volumes in preparation for broader scale-up in 2022. With 2021 still in many ways being a start-up year for the PCMS, membership dues remained relatively small compared to overall industry support. Being a collaborative effort of the U.S. cotton industry, essentially all activities of the Trust Protocol were funded through support provided by the National Cotton Council, Cotton Council International, and Cotton Incorporated. Membership dues represented 3% of the program's total revenue in 2021, up from 1% in 2020.

3%

of membership dues make up the program's total revenue in 2021, up from 1% in 2020

Industry support was comprised of direct contributions to the Trust Protocol, funding of outside sustainability consultants, contracts with a global communication company, IT development support, and in-kind staffing resources. As many as 50 staff from the three organizations contributed a portion of their time to the development and promotion of the Trust Protocol. While the cotton industry organizations will continue to provide support for the near term, membership dues and consumption fees are expected to emerge as the primary sources of revenue for the program.

Trust Protocol expenses are allocated across six primary activities:

Grower Enrollment & Capacity Building	Supply Chain Enrollment & Engagement	Program Development	Promotion, engagement, and enrollment with textile supply chain companies – from yarn spinners to brands/ retailers constituted **39% of total expenses.**
Program Assurance	Conferences & Travel	General & Administrative	

Another 9% of expenses were devoted to outreach and enrollment of U.S. cotton producers. As a result, approximately one-half of 2021 expenses were devoted to raising awareness about the program and enrolling new members. 17% of Trust Protocol expenses were devoted to program development activities, including IT developments to the Trust Protocol's web-based platform. Activities related to program assurance comprised 22% of total expenses. Among the items captured in this category are expenses for independent third-party verification of grower members, quality control and aggregation of grower member data, and interactions/alignment with global sustainability initiatives. General overhead and administration of the Trust Protocol accounted for 12% of total expenses, while expenses related to conferences and travel accounted for 1% of the total. In future years, conference and travel expenses are expected to constitute a larger percentage of the overall budget as travel and in-person conferences resume.

Will Sanford
Grower,
Alabama

9%

of expenses were devoted to **outreach and enrollment** of U.S. cotton producers

17%

of Trust Protocol expenses were devoted to program development activities, including **IT developments** to the **Trust Protocol's web-based platform**

In 2022, membership dues will constitute a larger share of overall income of the program. In addition, brands will be actively tracking the use of Protocol Cotton fiber and U.S. cotton fiber through the PCMS, thus generating volume-based consumption revenue for the Trust Protocol.

Overall expenses are also falling in line with the 2021 breakdown.

In-person meetings and travel remain limited due to COVID restrictions.

Over a 3 to 5-year time horizon, operations of the Trust Protocol will be increasingly funded by membership dues and cotton consumption fees. For planning purposes, it is estimated that membership dues will provide 25-30% of overall revenue, with consumption fees constituting another 50-60%. Industry support and foundation grants will comprise the remaining income for the Trust Protocol.

25–30%

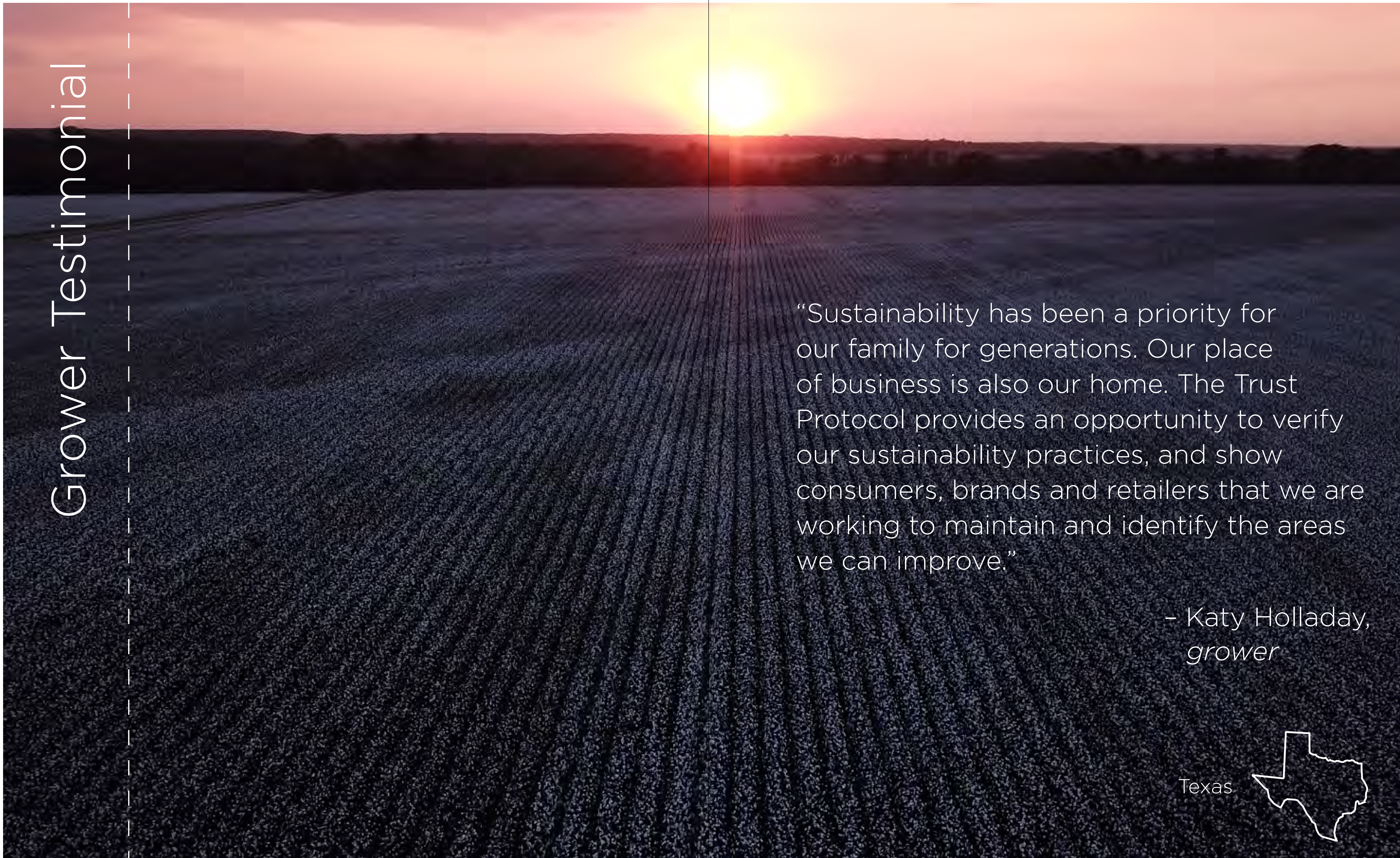
of overall **revenue** will be **funded by membership dues**

Governance

The Trust Protocol is overseen by a multi-stakeholder **Board of Directors** comprised of representatives from brands and retailers, civil society and independent sustainability experts as well as the cotton-growing industry including growers, ginners, merchants, wholesalers and cooperatives, mills and cottonseed handlers.

Member List

Please visit the Trust Protocol's **website** to review a list of all members.



Grower Testimonial

"Sustainability has been a priority for our family for generations. Our place of business is also our home. The Trust Protocol provides an opportunity to verify our sustainability practices, and show consumers, brands and retailers that we are working to maintain and identify the areas we can improve."

– Katy Holladay,
grower

Texas

Report.TrustUSCotton.org

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