2023
Annual Report

Scaling Impact. Data Driven.

A Smarter Cotton Future

In This Report

01: Introduction

Letter from Dr. Gary Adams, President

Welcome to the U.S. Cotton Trust Protocol's third annual report. This year's progress demonstrates how the value of the program, particularly its ability to provide detailed, verified environmental data throughout the supply chain.

Our Mission

U.S. cotton has a long-established heritage of providing high quality fiber for this global industry. The Trust Protocol's mission is to bring quantifiable and verifiable goals and measurement to U.S. cotton production's key sustainability metrics of land use; soil loss; water reduction; soil carbon; greenhouse gas emissions, and energy use.

The Trust Protocol has made progress across these metrics during the past year, as you will see in this report.

It is important to note the increase in the number of growers who were enrolled and have been using the program – despite a challenging growing environment. This success has been driven by our strategy of recruiting new members from across the full cotton supply chain – from growers to mills and manufacturers to brands and retailers.

The Past Year

The past year has provided us with renewed opportunities to meet our stakeholders face-to-face, an important part of building relationships and better understanding how we can grow and adapt the program to meet the changing needs of our different members.

We have been promoting our work to stakeholders at key industry events such as the Global Fashion Summit, the Drapers Sustainable Fashion Conference, Edie23 and Textile Exchange. We also actively participated in industry initiatives such as the *Textile Exchange Cotton Regenerative Measurements and Metrics* working group, and contributed to consultations shaping important legislation on environmental claims and sustainable sourcing in both the UK and EU.

Climate Smart Cotton Program

A significant milestone came in September 2022 when the Trust Protocol was named the lead recipient of the U.S. Climate Smart Cotton Program, receiving funding and recognition as part of the USDA's Partnership for Climate Smart Commodities pilot projects.

The Climate Smart Cotton Program is a five-year collaborative initiative that brings together partners from across the supply chain and provides additional benefits for growers, including technical and financial support. Among the goals of the program is to produce 4.2m bales of Climate Smart Cotton™, an ambition we expect will supercharge the growth of the Trust Protocol. I look forward to updating you on progress next year following the first year of enrollment.

This is but one example of how we are striving to enhance opportunities for our members to deploy new technologies that allow them to better understand and track environmental impact through the supply chain.

Protocol Consumption Management Solution (PCMS)

Earlier this year we also announced reaching another significant milestone – that of more than 18M finished articles tracked through the Protocol Consumption Management Solution (PCMS), our transparency tool, that allows members to track U.S. Cotton and Protocol Cotton across the supply chain.

This is exactly the type of outcome that the program was created to enable. For us to be able to share this progress makes us immensely proud, but even more motivated to increase the scale of our work to achieve even greater impact and benefit both for the environment and for our industry. Independent organizations and alignments, such as the Trust Protocol's ISEAL Community membership, also will continue to play a critical role in ensuring transparency, meaningful progress, and measurable impact. We look forward to sharing news of further success in the year ahead.

Our New Executive Director

Lastly, we welcome Daren Abney as our new Executive Director, whose appointment we announced in August 2023. Daren brings to the Trust Protocol his extensive experience from across the cotton and textile supply chain including roles with Better Cotton, Textile Exchange, and most recently Lenzing Group. He joins us at an important juncture in the growth of the program, and I look forward to his success in forging new and stronger ties across the industry for the program.

Sincerely,

Gary Adams

President, U.S. Cotton Trust Protocol

Message from Daren Abney, Executive Director

I want to thank Gary and the Trust Protocol's board for welcoming me as Executive Director. The successes that Gary describes are impressive for a program that has only been in existence for a few years. With initiatives like the Climate Smart Cotton Program, the stage is set for continued growth in scale and influence for the years to come.

My Priorities

I have joined at a crucial moment in the evolution of the Trust Protocol, and my mandate is clear. My priorities are growth and scale; growth in the number of members participating across the whole supply chain and scaling the impact which that growth enables.

A Comprehensive Process

We have put into practice a comprehensive process for reporting and verifying field-level data and have implemented further enhancements as the Protocol Consumption Management Solution moved to a live environment. Now we must help greater numbers of potential members use and help improve this process in a way that builds trust. We must also seek to further collaborate and build relationships across the industry, including academics and NGOs, to ensure that the Trust Protocol is featured in the plans of wider initiatives seeking to aggregate and compare environmental impacts of fibers.

Simple Guidance Consumers Can Trust

While sustainability requires detailed and technical assessments, consumers of cotton products need simple guidance they can trust. Increased regulatory intervention on green claims around the world illustrates the need for better systems and data to support claims. It also underscores the need for greater collaboration between industry, voluntary initiatives, and regulators to provide clear and simple guidance. We want brands and consumers to have a stronger sense of the origins of the cotton they buy – to better know the growers that produce it and the lengths to which they are going to improve their environmental impact.

Relationships and Collaboration

This is an exciting moment to join. Successful programs like the Trust Protocol are founded and maintained on relationships and collaboration. I am enjoying the opportunity to meet with my counterparts across the fashion and textiles industry and to discuss the benefits brought to them by the Trust Protocol.

Daren Abney

Executive Director, U.S. Cotton Trust Protocol

At-a-Glance

Data Trends and Results

↓ 79%

Soil Loss

↑ 14%

Water Use Efficiency

↓ 27%

Energy Use

↑ 10%

Land Use Efficiency

↓ 21%

Greenhouse Gas Emissions

83%

Positive Soil Conditioning Index

975 grower members

In the 2022/23 cotton growing season, the Trust Protocol data set encompasses farming practices and outcomes for 975 grower members

1.7 million planted cotton acres were enrolled

1.7 million planted cotton acres were enrolled, resulting in approximately 1.6 million bales of cotton production

23% enrollment

The Trust Protocol enrolled 23% of the cotton acres in the United States.

48% of growers

Of the 975 growers, 48% chose to apply for the Climate Smart Cotton Program, reflecting a commitment to sustainable practices. The reported data includes only harvested acres.

02: Community

The Trust Protocol's membership community encompasses the entire supply chain; from the producers who grow the cotton to the mills and manufacturers that spin cotton and create garments to the brands and retailers who select cotton and sell to the public.

Growers

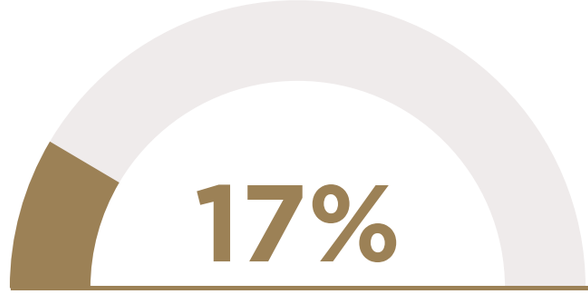
The U.S. Cotton Belt is comprised of 17 states stretching east to west from Virginia to California. The differences in climate, temperature, rainfall, topography and other areas mean that growing practices vary dramatically by region, and there can never be a one-size fits all approach to cotton production.

From persistent drought conditions to challenging agronomic and economic conditions, U.S. cotton growers faced unprecedented obstacles in the 2022-23 crop year resulting in a 17% decrease in planted acres from one of the world's largest cotton-producing countries.

Even with these hurdles, the Trust Protocol saw a 25% increase in the total area of planted cotton acres enrolled in the program compared to 2022, reaching 1.7 million, with industry collaborations from gins, merchants and co-ops.

17

states make up the U.S. Cotton Belt, stretching east to west from Virginia to California.



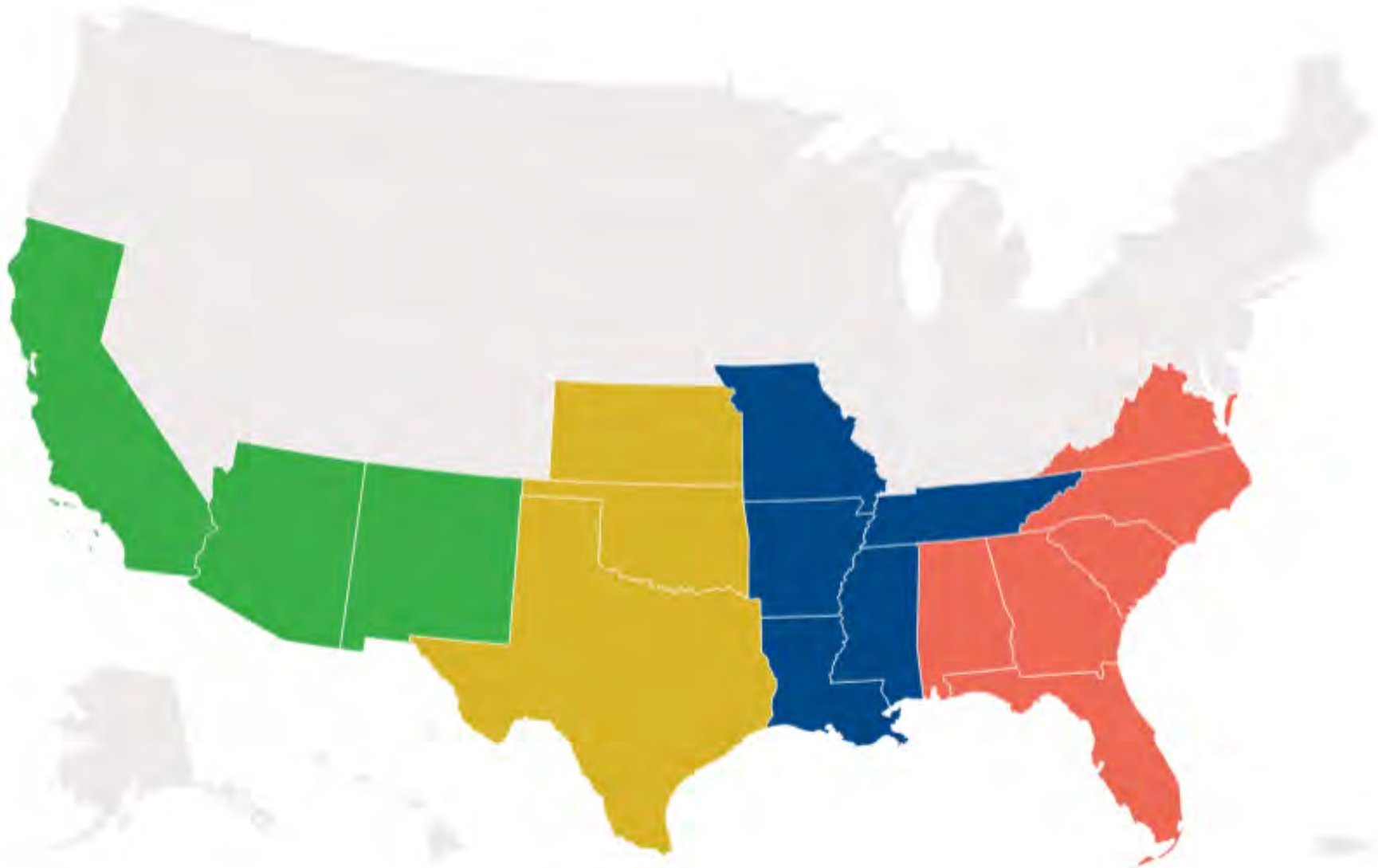
decrease in planted acres from one of the world's largest cotton-producing countries.

25%

increase in the total area of planted cotton acres enrolled in the program

The Cotton Belt is Categorized into *Four regions*

WEST SOUTHWEST MIDSOUTH SOUTHEAST

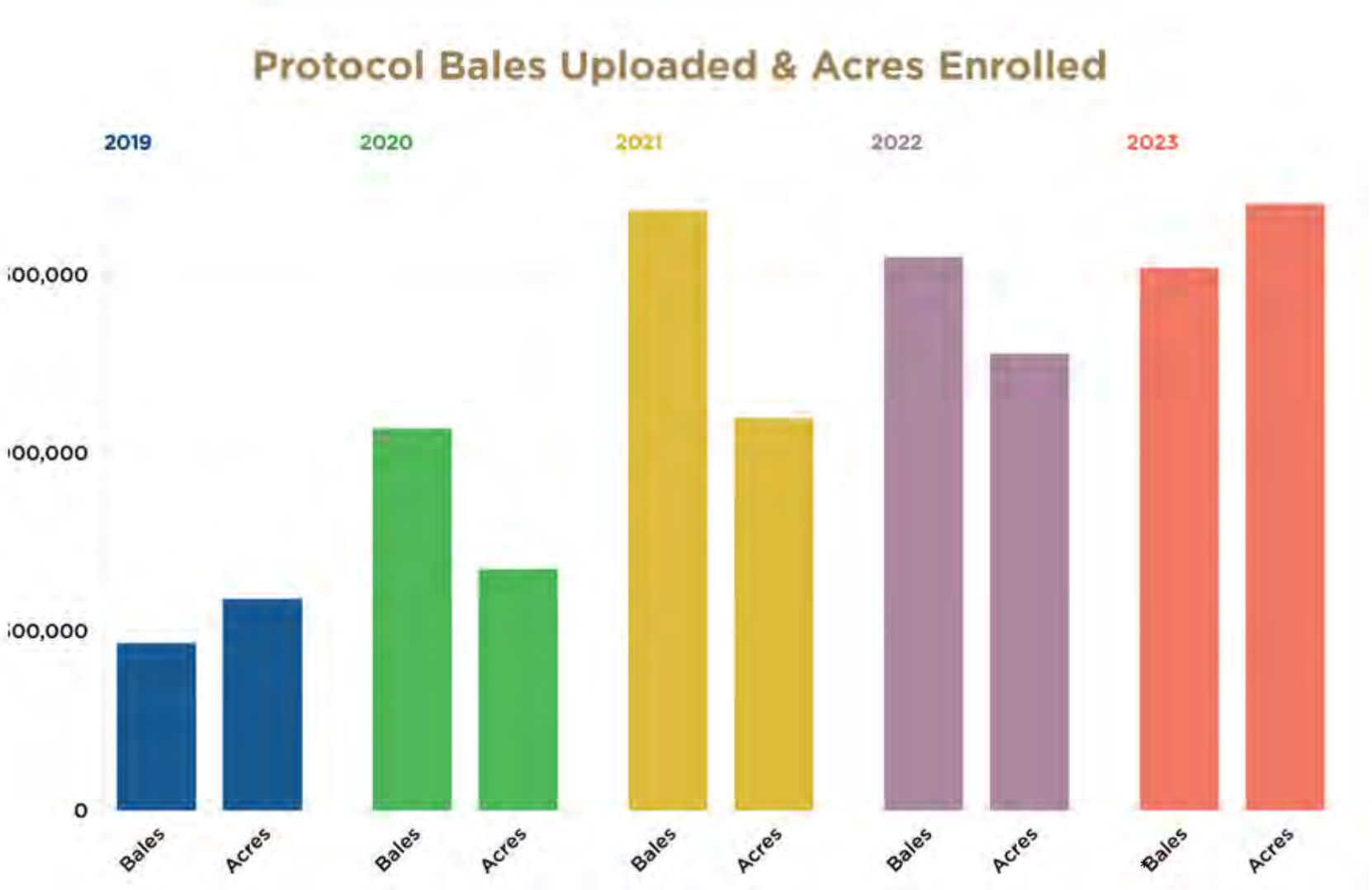


Cotton is a natural crop meaning its overall productivity ultimately relies on Mother Nature with some help from growers, who are more like caretakers during our tenure.

We are always working to be forward-thinking and considering how we can improve our growing practices. I may be known to drive around with a shovel and soil probe in my vehicle because I'm constantly monitoring. I'm in my fields every day keeping track of our plants, soil, moisture levels, insect activity, to help ensure our crops are healthy, productive, and only receiving what they need when they need it.

Growing cotton is complex with many variables and decisions on a daily basis. There's no one-size-fits-all solution no matter where in the United States you farm as each region, each state, and even each field has a unique makeup.

–Ted Sheely
Protocol grower, California



*as of January 2024

Mills and Manufacturers

Transparent raw material sourcing is more important today than ever before. Mill and manufacturer members can be identified as part of a fully transparent supply chain and be selected by brands and retailers as they look to source U.S. Cotton and Protocol Cotton.

144%

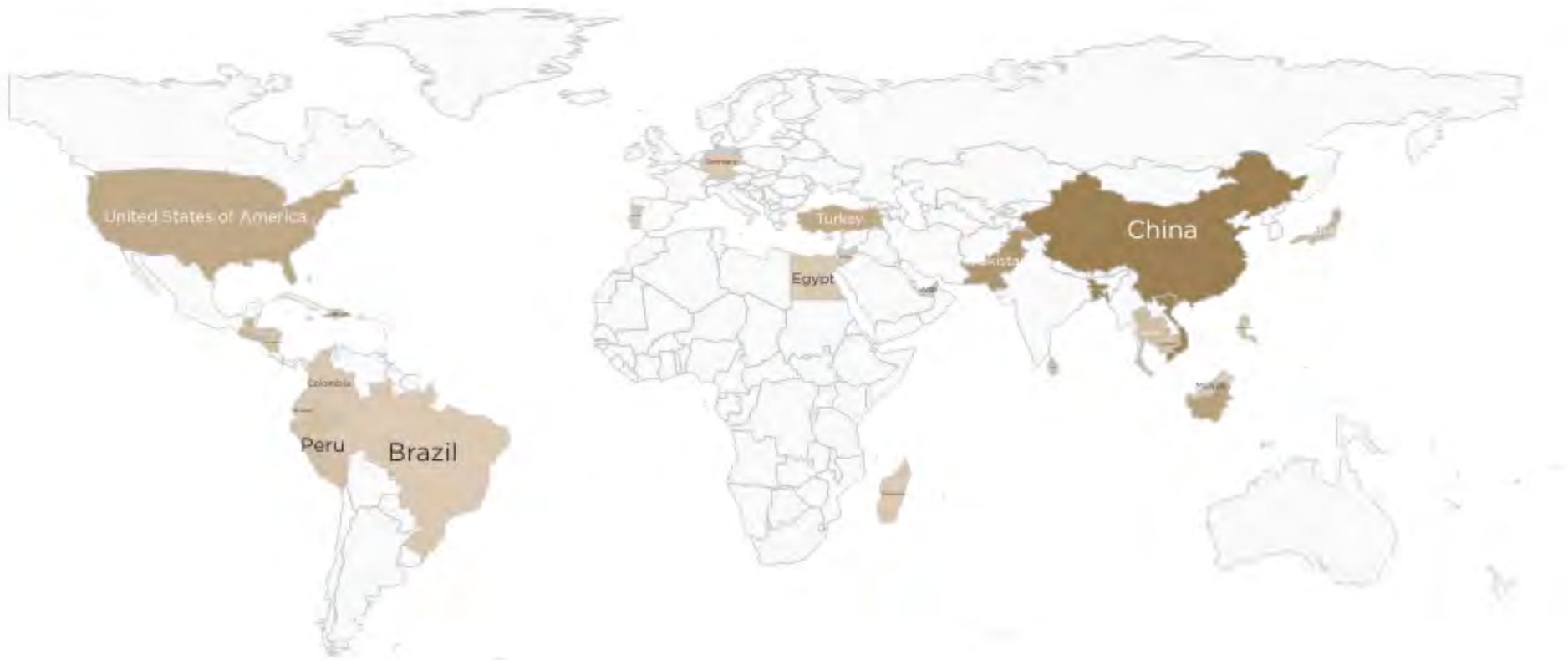
In 2022-23, the Trust Protocol increased mill and manufacturer membership by over 144% from the year prior and expanded to 12 new countries.

2k

global members

in over 40 countries

2 of 3



Building transparency into the supply chain is one of the most important challenges that we face in today's global economy.

We consider it impossible to build transparency without trust and for this, we depend on our supplier's ability to uphold the same greatest commitment to ethical and sustainable practices as we do.

The Trust Protocol allows us to produce with confidence, responsibly and proudly; from cotton to garments, which is essential for our reputation as a manufacturer.

– *Wilson Avalos*

Executive Vice President
Ropa Siete Leguas, Mexico

Brands & Retailers

Reporting requirements, claims legislation, and supply chain transparency continue to be top of mind during our conversations with global brands and retailers with discussions now including sustainability and sourcing leads as well as their broader ecosystem.

40+

The Trust Protocol has welcomed more than 40 companies and their brands, including some of the largest names in fashion such as Ralph Lauren and Gap Inc. as well welcoming new members such as Macy’s and Kiabi.

Back in 2017, Target pledged that 100% of the company's branded products would use sustainably sourced cotton. The fact that we can demonstrate this with our membership in the U.S. Cotton Trust Protocol is a great thing, and we applaud the program. It's head and shoulders above everything else being produced in the world.

–Kirk Smithwick

Principal, responsible materials
Target Corporation

target

AEO INC.

aerie

amazon

American Apparel

AMERICAN EAGLE

ATHLETA

BANANA REPUBLIC

bloomingdale's

bluemercury

Calvin Klein

CHAPS
EST. 1978

COMFORT COLORS

DOCKERS

GAP

Gap Inc.

GYMSHARK

J.CREW

J.Crew

KIABI
la mode à petits prix

LAUREN
RALPH LAUREN

LEVI STRAUSS & CO.

Levi's

DENIZEN
FROM
LEVI'S

macys inc

macy's

Madewell

next

OLD NAVY

POLO
RALPH LAUREN

PVH

RALPH LAUREN CORPORATION

RALPH LAUREN

Liverpool

SIGNATURE
LEVI STRAUSS

Suburbia

TARGET

TESCO

TOMMY HILFIGER

“

In 2022 Macy’s released our private brand cotton policy and we’re already making great progress. We expect that more than half of cotton products within our private brand products managed by the Macy’s sourcing team will be sustainably sourced by the end of 2023. Our Trust Protocol membership will support and accelerate these efforts to meet our 2030 ambitions by helping us to better trace our supply chain and demonstrate the progress we’re making toward meeting our environmental targets.

– Keelin Evans

VP Sustainability
Macy’s Inc.

macys inc

”

Connecting People and Practices

While photos and articles can convey information, nothing compares to stepping off a tour bus and being surrounded by cotton fields. The sight of the natural crop is truly captivating and hearing directly from growers helps take the experience to the next level.

The Trust Protocol's annual Farm Tour provides an immersive experience for global brands and retailers. From regenerative practices like no-till and cover crops to precision agriculture technologies, attendees witnessed firsthand how growers are committed to sustainability.

Sledge Taylor

Protocol grower, Mississippi

Protocol grower Sledge Taylor of Mississippi sees his farm as his canvas. He shared with attendees how feedback from the Trust Protocol allows him to constantly improve his sustainability practices and explained how the practices he uses not only protect but also further build his soils. For example, by implementing no-till practices, the residue from the previous year's crop stay on his land and act like a shield. For Sledge, over the last five years, 95% of the acres he's planted have been without tillage. And virtually 12 months out of the year he has something green and growing on his soils—which includes cover crops in addition to a seasonal row crop like cotton.

Bob Walker

Protocol grower, Tennessee

Attendees also visited Bob Walker's farm in Tennessee to learn more about precision agriculture technologies, which aid his on-farm efforts to be more sustainable. He shared how they use a variety of technologies to monitor their soils and perform tissue testing, which is a diagnostic tool that further helps with monitoring and managing soil fertility. Bob also shared how they receive weekly satellite imagery allowing them to see specific areas in their fields that may need attention. He explained how satellite imagery provides color-coded maps that allow them to detect potential soil nutrient deficiencies, pest issues, or diseases that may be impacting their crop. This also allows them to address issues on a timely basis—instead of being surprised during harvest when it is potentially too late to adjust. Participants also saw a cotton picker in action, which demonstrated the important role that advanced technology plays in sustainable cotton for efficiency and productivity.

But it's not just about the fields and the growers. Attendees also heard from sustainability experts to gain insights into best practices adopted across the Cotton Belt. They further witnessed the journey of cotton from harvest to warehouse and saw the renowned work conducted at the USDA cotton classing office.

The impact of the Farm Tour is clear:

"Seeing cotton growers proudly embrace data and modern tools to drive verifiable regenerative practices to ensure their farm is better for the next generation is a lesson everyone should learn from."

Guests attending the tour ranged from director of sustainability to materials director, lead materials developer for global apparel, and senior manager of fabric and sustainability.

2023 Farm Tour

03: Cultivation

Beginning with **Self-Assessment**

The Trust Protocol's self-assessment questionnaire serves as a cornerstone of the program, enabling measurement and verification, which are vital for sustainable cotton production. It also offers brands and retailers the necessary transparency, data, and assurances they seek.

For growers, the questionnaire plays a crucial role, equipping them with tangible insights to enhance their sustainability and efficiency each season in all regions of U.S. Cotton Belt which has diverse climates, temperature patterns, and soils. As part of membership, growers input their production practices and resource usage annually and this data is aggregated with that of other growers in the program allowing for anonymous peer learning, both within a specific region and even nationwide. This also provides the opportunity for growers who participate each year to benchmark their progress and identify areas for improvement based on accumulated data.

As part of ongoing efforts to evolve the program, the Trust Protocol announced Version 2.0 Principles and Criteria and the Grower Enrollment Questionnaire to bring more clarity on the overall structure and address on-going areas of interest. It specifically focuses on field practices for optimization of farm inputs, chemical management, and the program believe it will have a positive impact on achieving the sustainability goals for all the key environmental metrics from Soil health to GHG emissions.

The revised versions were also open to public stakeholder consultation which is important to ensuring the quality and effectiveness of the program.

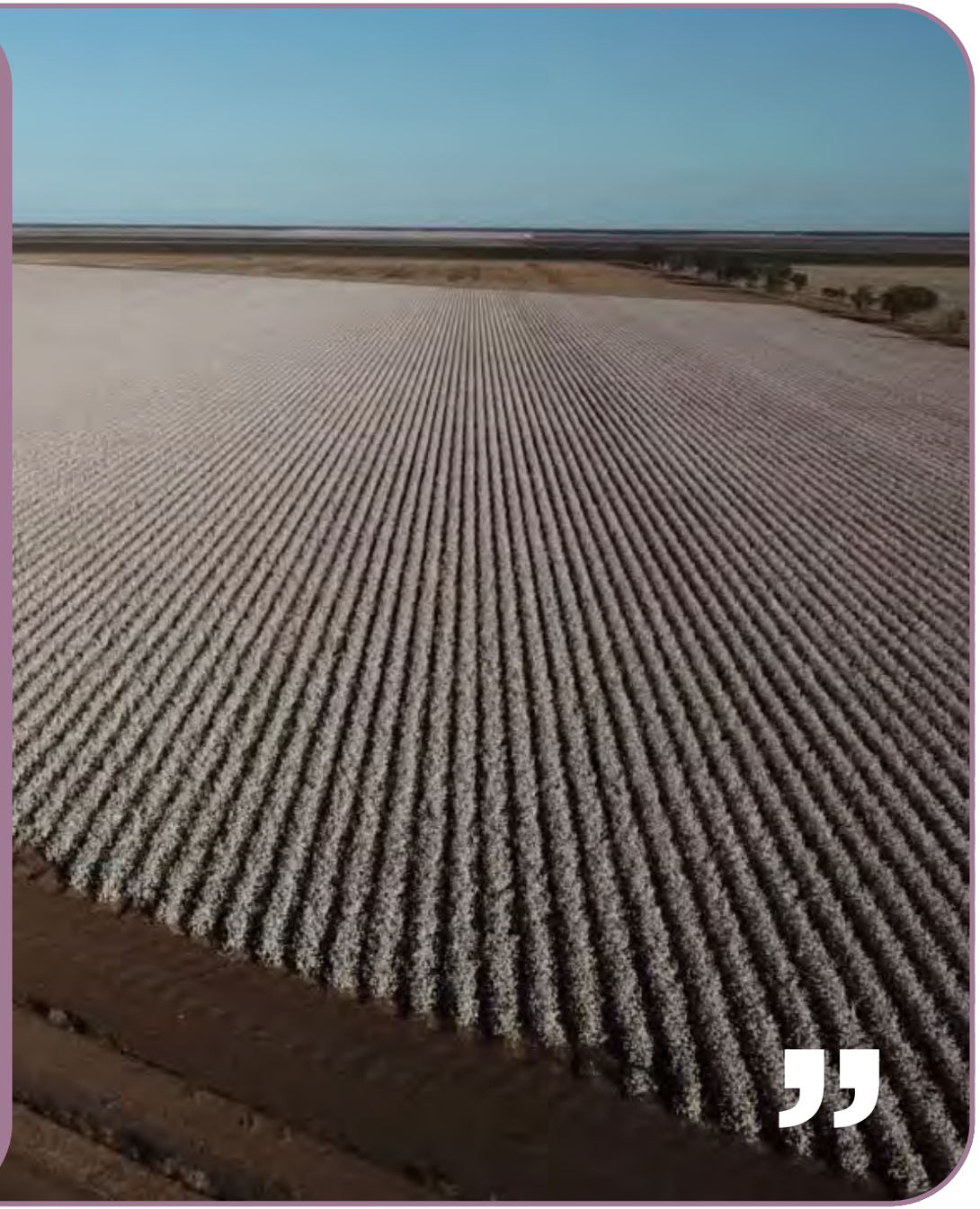
This process helps ensure the questionnaire's usability, accuracy, transparency, insights, and year-on-year comparability.

Farming is becoming increasingly data-driven as the industry has shifted to using verified information to drive sustainable decision making. We use the data we receive from the Trust Protocol to track measurable sustainability outcomes and constantly improve. We take the feedback from the Trust Protocol, along with historical analytics we compile with meteorological data, that allows us to make more informed crop management decisions.

For example, we combine this data with our drip irrigation plan to prevent overwatering—so we make the most of every drop. From this, we've seen an 80% reduction in our water usage compared to conventional irrigation.

We take pride in our innovative approach to adopting the latest technology, such as precision agriculture systems, irrigation monitoring and GPS mapping to maximize the efficiency and sustainability of our operations.

– *Lamont Bridgeforth*
Protocol Grower, Alabama



Understanding the Regulatory Environment of Our Value Chain

Public Consultations

The regulatory environment is evolving, and the Trust Protocol is following these developments closely to be able to deliver the right data for the right purpose. To this end, we have actively contributed to several public consultations this year, including on the EU's Green Claims Directive as well as the Federal Trade Commission (FTC)'s Green Guides. As the Green Claims Directive will set minimum standards for substantiation and communication of environmental claims to consumers, companies will need to provide transparent and easily accessible data as well as evidence to support.

Trust Protocol data fulfills the requirements outlined in the current draft of the legislative text. While not mandated within the Green Claims Directive, we are also following closely the development of the final Product Environmental Footprint Category Rules (PEFCR) for Apparel and Footwear and associated datasets.

Corporate Sustainability Due Diligence Directive (CSDDD)

The EU's Corporate Sustainability Due Diligence Directive (CSDDD) is another example of legislation to be aware of, as it will ask many companies worldwide to actively monitor and evaluate the environmental and human rights impact of their value chains. In conjunction, the previously adopted Corporate Sustainability Reporting Directive (CSRD) asks for an extensive set of non-financial data to be made public through annual reports. We are analyzing how the Trust Protocol fits into this new landscape and working to ensure our data will fit the needs of our members.

PCMS System

Protocol Cotton supplies data to show progress towards these and other regulatory requirements, enabling brand members to use the traceability provided by the PCMS system to effectively showcase and demonstrate their efforts towards adopting more sustainable practices, helping to ensure compliance with legislation, and meeting the expectations of environmentally conscious consumers.

Taking a Leadership Role in Regenerative Agriculture

While regenerative agriculture is still being widely defined across the industry, the process aims to build upon the positive environmental impacts of sustainable practices, aiming for a whole systems approach.

As we work to provide further value to our members, the Trust Protocol is convening a working group to create objectives for regenerative agriculture that go beyond the four principles currently being reported by the Trust Protocol.

Textile Exchange

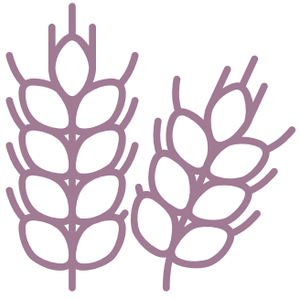
Dr. Deepika Mishra, Standards and Data lead (consultant) for the Trust Protocol, was also selected as a participant of the Textile Exchange *Cotton Regenerative Measurements and Metrics* working group where she will help drive industry-wide change and deliver on their Climate+ Strategy.

For growers this additional insight will provide a more in-depth perspective of the outcomes gained from regenerative practices implemented throughout the diverse geographical areas of U.S. Cotton Belt such as conservation tillage and cover crops. Additionally, the Trust Protocol is looking to define a soil organic carbon absolute value, which measures soil's organic matter contributing to nutrient retention, soil structure, and carbon sequestration. The aim is for this new value to be reported to brands, which weaves together work with the Climate Smart Cotton Program.

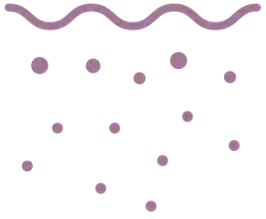
As we know collaboration is key, the Trust Protocol will also be working in conjunction with industry leaders to define and implement these additional strategies.

Regenerative Agriculture
Practices

currently reported by the Trust Protocol:

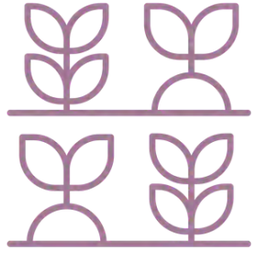


Minimizing soil disturbance



Continuously covering bare soil

Maintaining living roots in soil



Maximizing diversity with emphasis on crops

Climate Smart Cotton Program

a Transformative Opportunity

In September of 2022, the Trust Protocol was named the lead and recipient of the U.S. Climate Smart Cotton Program, receiving funding as part of the USDA Partnership for Climate-Smart Commodities pilot projects.

The Climate Smart Cotton Program is a collaborative initiative bringing together leaders and partners from all segments of the supply chain, utilizing the Trust Protocol's foundational reputation, and incorporating our program partner's unique knowledge and expertise. Including farmer education and applied research orgs, supply chain outreach experts, experienced cotton growers who've already adopted sustainable practices, as well as promotion & monitoring, measuring, reporting, and verification platforms.

By integrating expertise from various stakeholders, the Trust Protocol and all program partners have collectively developed and are now implementing this farmer-centric initiative. Our shared goal is to support farmers in adopting and implementing sustainable practices that benefit both their operations and the environment.

The Climate Smart Cotton Program presents a transformative opportunity for cotton growers by offering a range of benefits including technical and financial assistance to promote the long-term adoption of Climate Smart Agriculture practices.

Education, research, and outreach initiatives by the program's partner organizations will also raise awareness about the advantages of regenerative farming practices. In addition, the program will equip growers will the knowledge and tools to adopt new farming practices that meet the global fashion and textile industry's demand for cotton with a lower carbon footprint.

Applications opened in July 2023 and 778 farming entities have been accepted for the program's first year. To provide additional grower support, the program has also begun to add regional enrollment specialists to assist at the field-level.

1,200,000

Advance Climate Smart Agriculture practices on 1.2m U.S. cotton acres

4,200,000

Trace 4.2m bales of Climate Smart Cotton™ through the supply chain

1,140,000

Reduce 1.14m metric tons of CO_2e emissions

1,650

Enroll 1,650 U.S. cotton farmers, including 330 from historically underserved communities

04: Transparency

The Trust Protocol provides verified cotton growing data with value chain transparency. This is an important aspect of the program, as it delivers the assurances brands and retailers need to evidence their responsible sourcing practices and demonstrate progress towards environmental goals. As consumer scrutiny towards brands and retailers continues to grow, policymakers and international organizations around the world are responding by setting stricter rules and conditions for companies.

The European Union is at the forefront of these efforts, having introduced a series of legislative initiatives that will have global implications through its landmark 2019 Green Deal. Data, transparency and traceability play a vital role in ensuring compliance with these new regulations.

As part of the Trust Protocol's ISEAL Community Membership, the program is also undergoing a Standard Revision Process that includes:

Documenting program process | **Principles and criteria** | **Conducting stakeholder engagement** | **Opening results for public consultation**

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CONTROLUNION

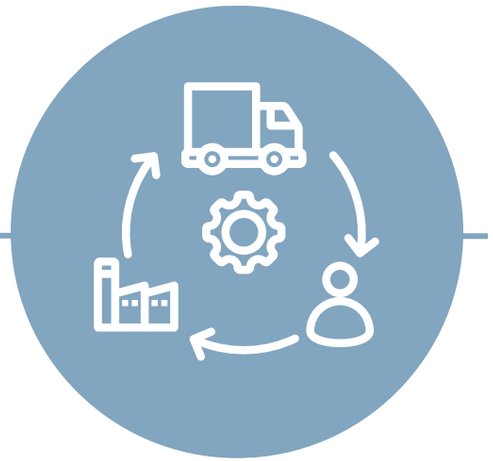
Verified Data

In 2023, the Trust Protocol appointed Averum to provide additional third-party verification support. After seeing the highest number of grower enrollment to date, the program now requires a significantly higher number of independent verifications. Averum will work in conjunction with Control Union Certifications who have been assisting with the Trust Protocol's verifications since 2020.

Second and third-party verifications play a critical role for the Trust Protocol as they bridge the gap between growers' self-reporting and actual data as well as providing assurances to brands and retailers on the sustainability of their raw cotton sourcing. All growers must agree to having their data verified in order to become a member.

The program utilizes the square root model for proportional sampling to better represent grower members throughout the Cotton Belt. As participation increases, the methodology remains valid and statistically significant.

While participation in the program by U.S. cotton growers is voluntary, there are requirements to become a member. These include completing a farm-level self-assessment questionnaire, inputting field-level data into the Fieldprint Calculator, and signing the Farmer Commitment Statement for continuous improvement that covers both environmental, as well as health and safety areas.

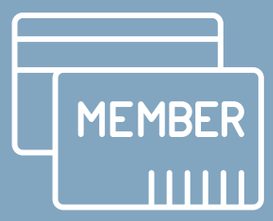


Traceable

and Transparent

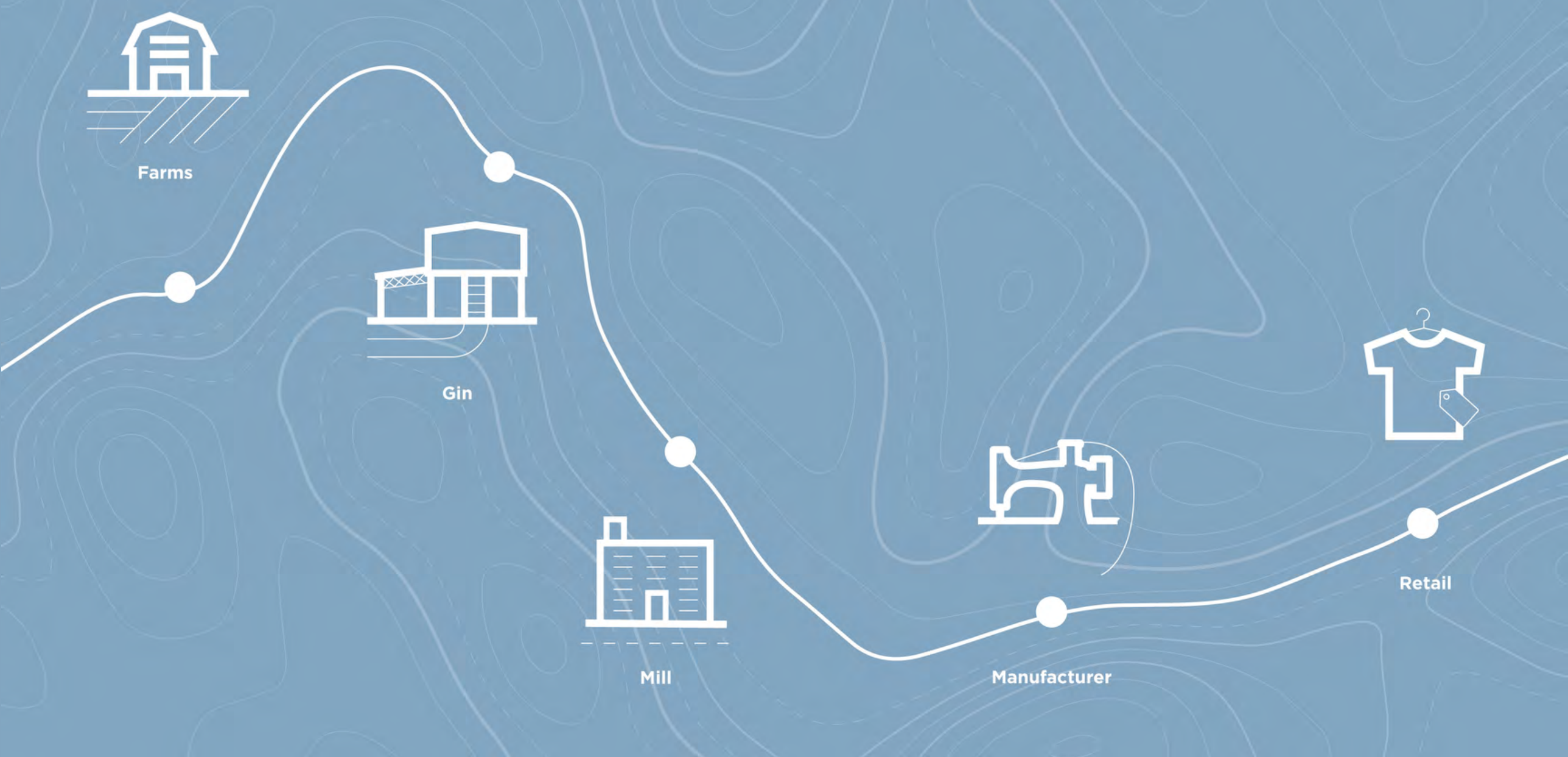
Traceability plays a pivotal role in the fashion supply chain as it brings transparency and accountability to the production process. Traceability ensures compliance with sustainability standards, ethical labor practices, and responsible sourcing, helping to combat a wide range of issues. It empowers consumers to make informed choices, enabling them to support brands that align with their values. Ultimately, traceability enhances trust, fosters sustainability, and drives positive change.

The Trust Protocol was the world's first sustainable cotton fiber initiative to provide brands and retailers a traceability solution to track the progress of raw materials in the supply chain. When cotton is tracked through the PCMS brands and retailers should receive a transparency map that verifies the origin of the cotton starting from the initial fiber shipment to a textile mill, providing the names and locations of the Trust Protocol mill and manufacturer members involved at every stage of the production process, until the delivery of finished products.



Members who are tracking Protocol Cotton, which is grown and harvested on Protocol farms, will also be provided enhanced claims opportunities, including the ability to incorporate proportionate environmental data into marketing claims and on-product labels.

The evolution of legislation, standards, regulations, and consumer habits points towards a clear trajectory: the scrutiny placed on brands and retailers' sustainability efforts will continue to intensify. By collectively working towards a common goal and prioritizing the scalability of sustainability practices, the fashion industry can confidently navigate the evolving landscape, paving the way for a more sustainable and ethical future.



05: Scale

Over the last year, the Trust Protocol has made significant changes to the enrollment and verification timeline in order to meet brand and retailer’s growing demand.

To support the scaling of Protocol Cotton, in 2023 the Trust Protocol announced updated grower enrollment timing which will allow for their cotton to be verified and visible as Protocol Cotton bales right after ginning.

This not only provides additional benefits to growers as they will receive more timely insights that can be implemented into management plans from pre-planting to post-harvest activities but also to brands and retailers who can work with their marketers further in advance as they plan for the sourcing and use of more sustainably grown cotton.

The PCMS is also running in a live environment with several brands tracking production against current purchase orders, with some already having added more collections and their second season. In the coming months we anticipate 13 new brands to initiate pilots and move into scaling across their supply chain. As international brands and retailers seek to credibly and transparently demonstrate their own efforts and achievements in driving sustainability in the industry, milestones seen in 2023 mark significant achievements in the credibility as well as the usability of the PCMS providing our members data, traceability and transparency.

PCMS
Live & Tracking

19 brands and retailers

have tracked more than 39M finished products against 24k purchase orders

7.3m kg's

of U.S. Cotton and Protocol Cotton consumed by brand and retailer members

8.1m PCCUs

equivalent to 1 kg each, claimed with environmental metrics assigned to brand and retailer members' accounts

1.

(5.
Co
en
has
Pro

On - Product
Partnerships

We are proud to partner with brand and retailer members as an integral part of their sustainability efforts through our **Claims Framework** knowing that equally important is showing progress and commitments.

The Trust Protocol began working with our members for on-product messaging which we anticipate seeing in 2024. We were also proud to be included in several brand and retailer ESG reports:

Trust Protocol Inclusion in ESG Reporting

RALPH LAUREN CORPORATION

2023 Global Citizenship & Sustainability Report and ESG Supplement

GAP

2022 ESG Report

J.CREW

Impact Report

GILDAN®

2022 ESG Report

Madewell

Impact Report 2022

accenture

2023 Sustainability Playbook

06: Measurement

An overview of key data and enrollment changes within the Trust Protocol for the growing season.

975 grower members

In the 2022/23 cotton growing season, the Trust Protocol data set encompasses farming practices and outcomes for 975 grower members

1.7 million planted cotton acres were enrolled

1.7 million planted cotton acres were enrolled, resulting in approximately 1.6 million bales of cotton production

23% enrollment

The Trust Protocol enrolled 23% of the cotton acres in the United States.

48% of growers

Of the 975 growers, 48% chose to apply for the Climate Smart Cotton Program, reflecting a commitment to sustainable practices. The reported data includes only harvested acres.

Map of Trust Protocol Grower Participation

The data reported under the Trust Protocol was received from 17 states and 311 counties across the United States. Climate Smart Cotton Program applications for Level-1 were received from all 17 cotton-growing states and 175 counties (see maps below).

Regions across various states and counties in the United States are categorized into four primary cotton-producing regions, with further subdivisions based on irrigation status.

These regions include:

Far West
Irrigated

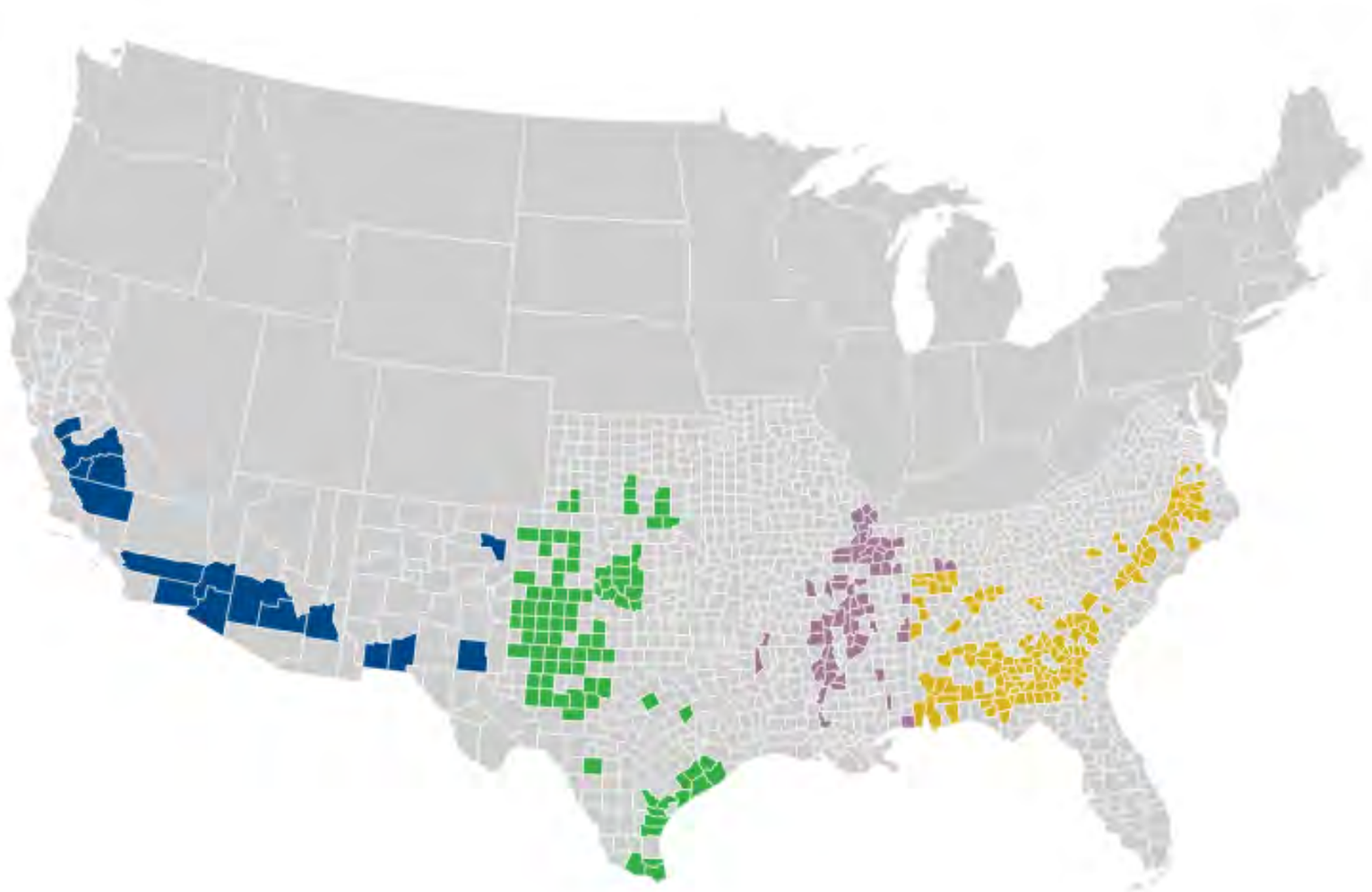
Mid-South
Also with irrigated and non-irrigated segments

Southwest
Comprising irrigated and non-irrigated areas

Southeast
Divided into irrigated and non-irrigated sections

2022/23 U.S. Cotton Trust Protocol map representing 17 states and 311 counties across the U.S.

1 of 2



Source: U.S. Census Bureau 2021 boundaries , summitpost.org

Trust Protocol

Sustainability Measurement Methodology

Sustainability measurement charts for the environmental metrics involve five sets of data:

- 2015 U.S. Representative Group (as baseline)
- 2025 National Goals for Continuous Improvement
- 2020/21 Trust Protocol Reported Data
- 2021/22 Trust Protocol Aggregate
- 2022/23 Trust Protocol Aggregate Data

2015 Trust Protocol Baseline

Using 2015 Ag district reports from cotton-growing states, 1,500 archetypes were generated establishing a baseline through five-year weighted averages, and deriving sustainability metrics from University Extension enterprise budget publications enabling valid comparisons.

2025 National Goals for Continuous Improvement

Aligned with the United Nations' Sustainable Development Goals, and grounded in science-based evaluation, the U.S. cotton industry established a set of goals to achieve within the 10 years between 2015 and 2025, to further improve cotton sustainability and lead the world in responsible cotton production. For sustainability measurement in accordance with the goals the values depicted in the charts and figures are based on the 2015 Trust Protocol baseline.

2020/21 Trust Protocol Reported Data

This data involves the weighted average by harvested acres for all the six individual environmental metrics for 300 growers as published in the Trust Protocol's 2020/21 annual report.

2021/22 Trust Protocol Aggregate

In the Trust Protocol's 2021/22 published annual report, the data involved weighted the rolling average for two years as the program was established in 2020. However, due to changes in grower enrollment timing, the reported numbers only factored in enrollment data until June 2022. As the Trust Protocol transitioned to a three-year grower enrollment process to streamline data collection, there were 202 additional growers whose dataset were not included in the 2021/22 annual report. In this report, the 2021/22 aggregate will include all 826 growers' data (624 growers from 2021 enrollment and 202 growers from 2022 enrollment). The reported data will therefore reflect two years' worth of weighted moving average.

2022/23 Trust Protocol Aggregate Data

Grower enrollment was opened again from May 2023 to September 2023 to collect 2022 field-level data which comprised of 975 growers. All reported data from hereon will reflect a three - year weighted moving average. Rationale for adopting three-year weighted moving average over a year-on-year aggregate is as follows:

Accounting for Fluctuations: A three/five-year average accounts for short-term fluctuations and seasonal variations that might be present in one-year's data. This provides a more consistent and stable view of the data trend.

Reduced Impact of Anomalies: If there's an unusually high or low value in a single year due to seasonal production variations, its effect will be diluted when averaged over three years, giving a more representative value.

Predictive Insights: Moving averages, by their nature, can provide predictive insights as they can show the direction of a trend more clearly than individual data points.

Provides a Middle Ground: While longer moving averages might smooth out data too much, and shorter averages (like one-year) might be too reactive, a three-year average strikes a balance.

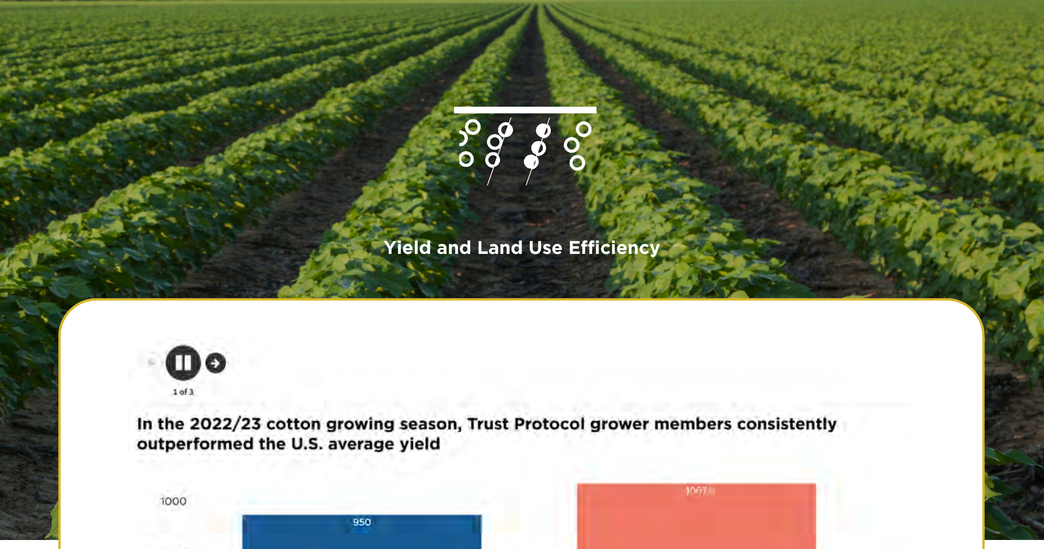
Increased Confidence in Data: When looking at biological databases, having a larger data set (three years or more) can give more confidence in the observed trends or patterns versus only a single year's dataset.

USDA-NASS reports can be found here.

U.S. Cotton Trust Protocol
Aggregate

The Trust Protocol plays a pivotal role in advancing sustainable cotton production by establishing quantifiable and verifiable goals and measurements and driving continuous improvement in **six key sustainability metrics: land use efficiency, water use efficiency, energy use, greenhouse gas emissions, soil conservation and soil carbon.** With the aggregate data, all the key environmental metric results are validated with statistical evidence in the report for reliability and transparency. Each aggregate also will have both inferential and descriptive statistics attached. Descriptive statistics encompass characteristics of a given dataset, including measures such as the average, mean, range, and standard deviation. On the other hand, inferential statistics involve drawing conclusions about a larger population based on data collected from a sample or samples, employing tools like standard error (uncertainty) and confidence intervals. It's important to note that for inferential statistics to be valid, often the dataset should meet criteria such as random sampling and a normal distribution.

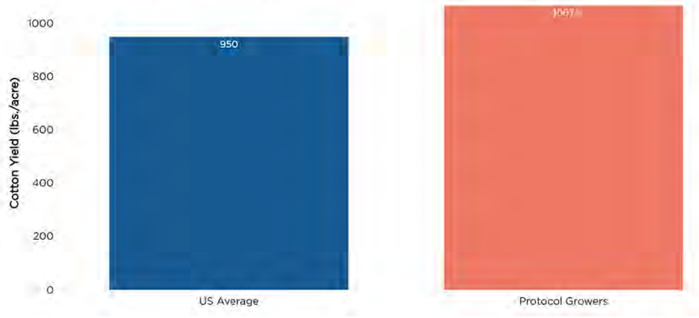
To draw meaningful conclusions from statistical analysis, it's necessary for the data to meet certain requirements like being collected randomly and having a normal distribution pattern. In the Trust Protocol dataset, we found that the six main environmental measurements showed patterns similar to bell curves, but they were sometimes skewed in all three years from 2020 to 2023. Depending on the pattern of bell-curve the Trust Protocol will change its methodology of reporting to median than weighted average.



Yield and Land Use Efficiency

1 of 3

In the 2022/23 cotton growing season, Trust Protocol grower members consistently outperformed the U.S. average yield

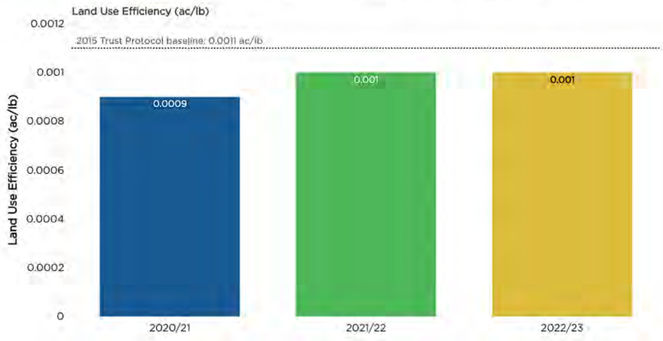


Cotton Yield

Cotton yield, measured as the amount of raw cotton fiber harvested per acre, is influenced by various factors, including plant genetics, management practices, and environmental conditions such as temperature, radiation, humidity, and water availability. Trust Protocol growers prioritize best management practices to achieve high yields. Crop yield is an important component for calculating all the six key environmental metrics. In the 2022/23 cotton growing season, the United States witnessed an average cotton yield of 950 lbs./acre, while Trust Protocol growers achieved an aggregate yield of 1,067 lbs./acre, as illustrated above. Over the past three years, a noteworthy trend has emerged: Trust Protocol grower members consistently outperformed the U.S. average yield reported by the United States Department of Agriculture's National Agricultural Statistics Service (**USDA-NASS**). In the 2020/21 cotton growing season, Trust Protocol growers achieved yields that were 36% higher than the U.S. average, followed by a 33% higher yield in the 2021/22 cotton growing season. Remarkably, even in the face of challenges, such as abandonments in the Southwest region's High Plains area of the United States, Trust Protocol growers managed to achieve a 12% higher yield than the national average in the 2022/23 cotton growing season.

2 of 4

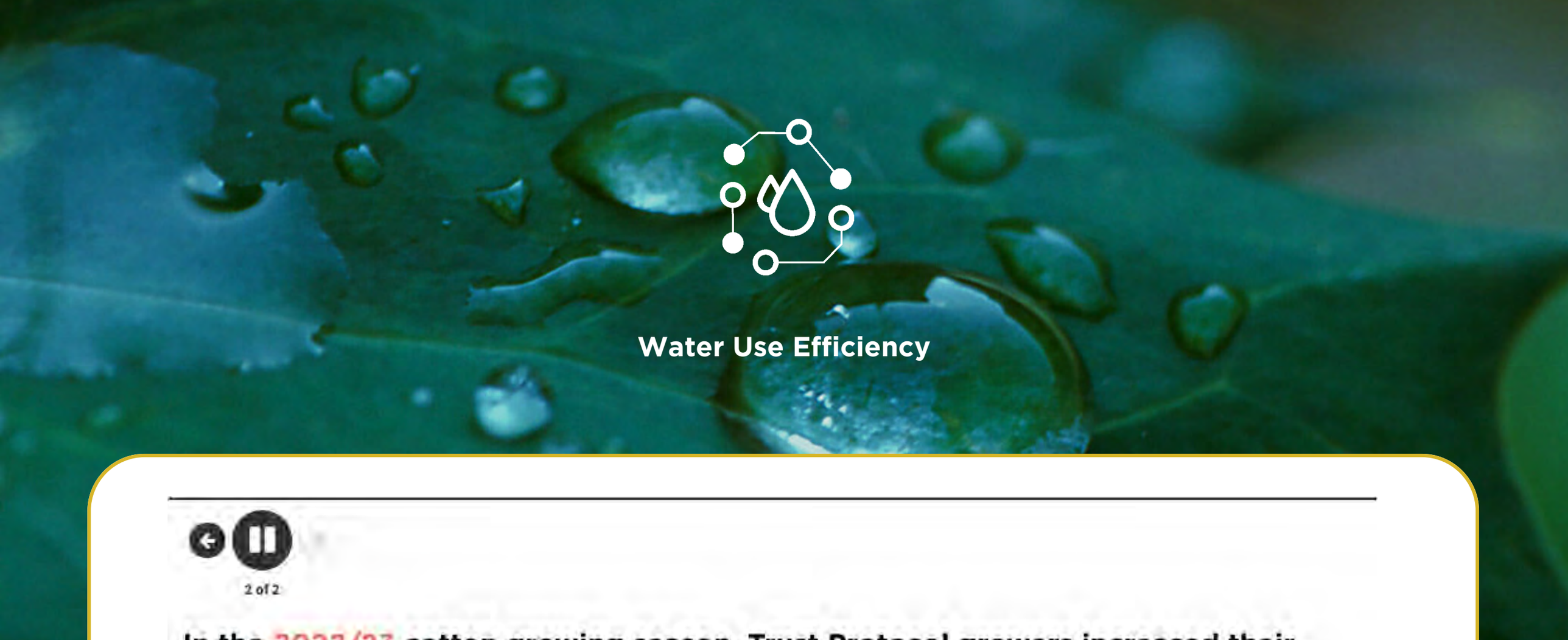
In 2021/22 and 2022/23 Land Use Efficiency had risen to 0.001 ac/lb



Land Use Efficiency

The land use metric is closely intertwined with yield, often representing the inverse. The 2025 National Goal for land use efficiency seeks to achieve a 13% increase, emphasizing the target of maximizing output while minimizing land use. In 2015, the Trust Protocol established a baseline with an average land use of 48 square feet required to produce a pound of cotton. During the 2022/23 cotton growing season, Trust Protocol growers maintained a consistent trend, utilizing 43 square feet to yield a pound of cotton fiber, mirroring the 2021/22 figures. Notably, a significant 61% of Trust Protocol growers surpassed the 2022/23 Trust Protocol aggregate value of 0.0095 ac/lb, thus accomplishing the 2025 National Goal of utilizing less than 41 square feet of land to produce 1 pound of cotton fiber.

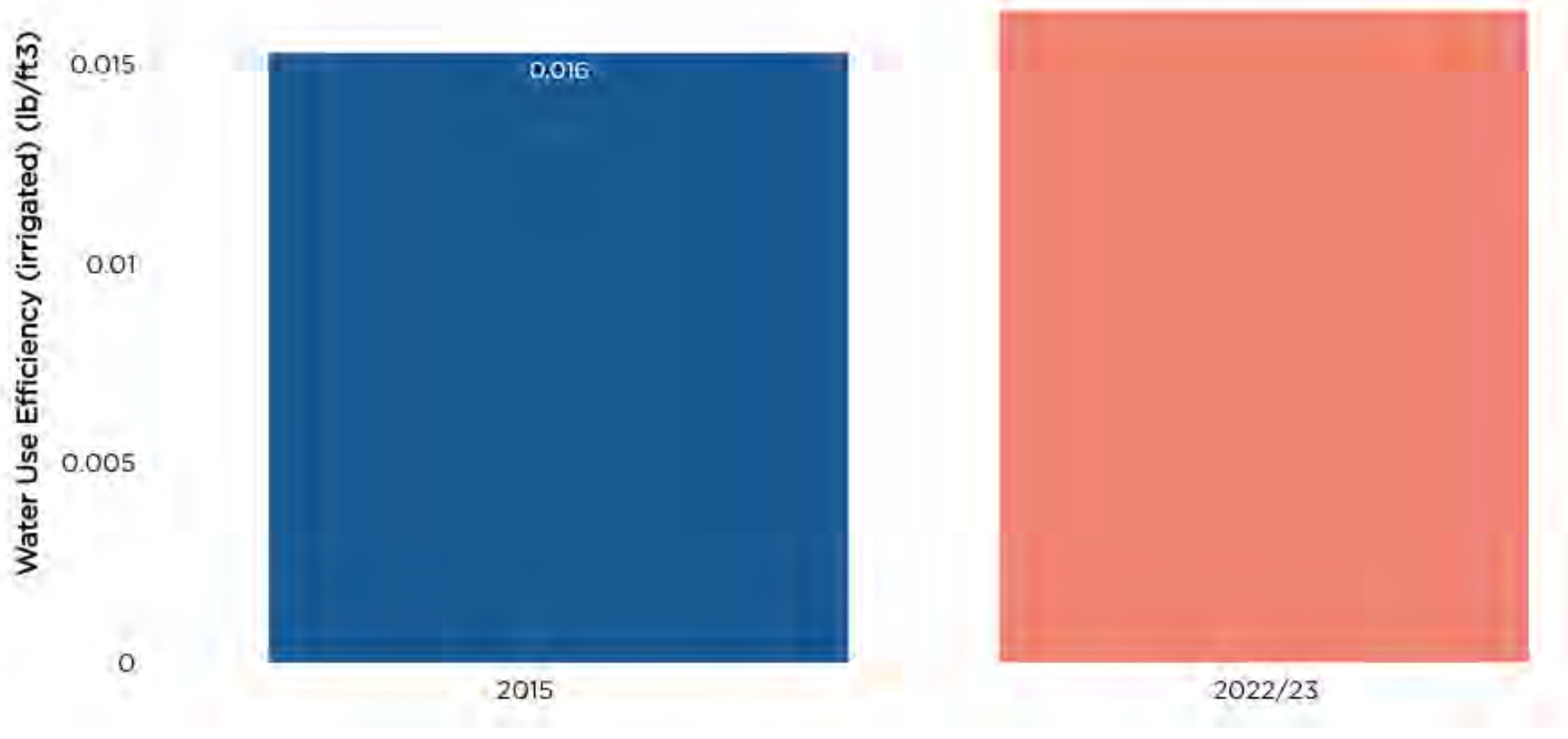
Trust Protocol growers also are trending toward achieving the 2025 National Goal. In 2022/23 Trust Protocol growers increased land use efficiency by 10% irrespective of the severe drought particularly in Texas and Oklahoma. The drought caused water stress and stunted plant growth, leading to lower yields.



Water Use Efficiency

2 of 2

In the 2022/23 cotton growing season, Trust Protocol growers increased their Water Use Efficiency by 14%



Note: 2015 Trust Protocol baseline, 2025 sustainability goal, 2020/21, 2021/22, 2022/23 Trust Protocol aggregate for irrigated water use in lb/ft3.

Water Use Efficiency

The irrigation water use efficiency metric (acre-inches of water applied/ additional units of production over dryland production) is calculated as the irrigation water applied in acre-inches divided by the difference in irrigated yield and the expected non-irrigated yield. Trust Protocol growers report the value for non-irrigated yield, usually based on either an estimate or the yield from an unirrigated portion of an otherwise irrigated field. This metric quantifies the amount of irrigation needed to produce additional units of cotton fiber production and is applicable only to irrigated acres.

In the 2022/23 cotton growing season, irrigated Fieldprint acres accounted for 62% of the total harvested acres (458,176 non-abandoned acres), while non-irrigated acres made up the remaining 38%. It's important to note that the water use efficiency data is based solely on the 62% of irrigated harvested acres, equivalent to 279,549 Fieldprint acres.

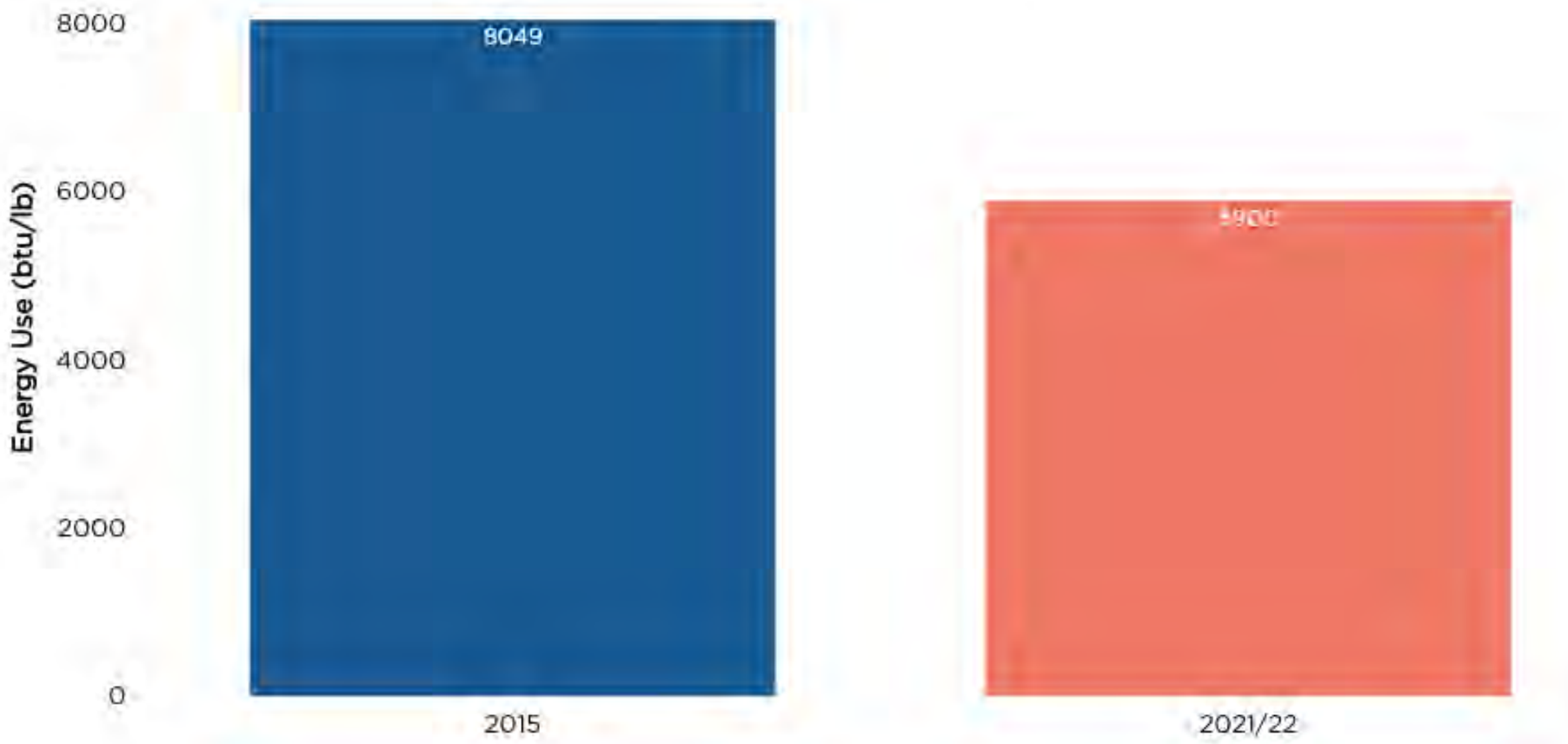
In 2015, the Trust Protocol's baseline data showed that for every cubic foot of water used, it yielded an additional 0.016 pounds of fiber, which translated to 63 cubic feet of water required for each additional pound of cotton produced (see graph above). Fast forward to 2022/23 Trust Protocol growers achieved an aggregate of 0.018 pounds of cotton fiber per cubic foot of water, thereby reducing water use to 56 cubic feet for each additional pound of cotton produced.

The 2025 National Goal aims to increase water use efficiency by 18%, which would mean reducing water use to 53 cubic feet for each additional pound of cotton or achieving a production gain of 0.019 pounds of fiber for every cubic foot of water. In the 2022/23 cotton growing season, Trust Protocol growers increased their water use efficiency by 14%, similar to the progress made by grower members in 2020/21. For Trust Protocol growers, the water use per acre for cotton decreased from 0.03 acre-inches per pound in 2021/22 to 0.02 acre-inches per pound in 2022/23. This improvement was attributed to the adoption of precision agriculture and the implementation of integrated water management plans.

Energy Use

2 of 4

In 2021/22 Energy Use had decreased to 5990 btu/lb



Note: 2015 Trust Protocol baseline, 2025 National Goal, and 2020/21, 2021/22, 2022/23 U.S. Cotton Trust Protocol aggregate for energy use in btu/lb

Energy Use

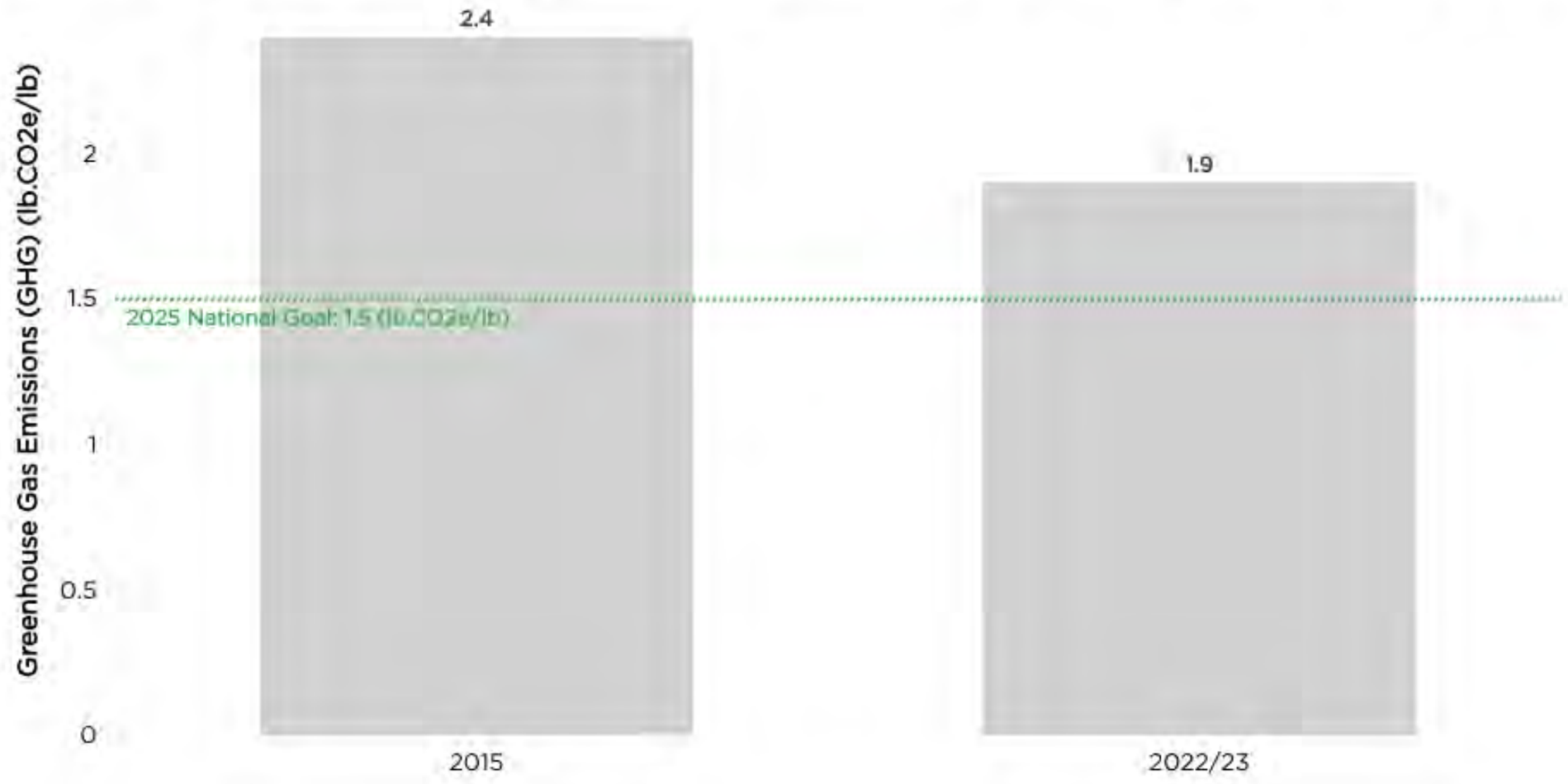
The **Energy Use metric** evaluates all energy expended throughout the entire production cycle of a single crop within a given year, encompassing activities from pre-planting to post-harvest. This metric is essentially an efficiency measurement that relies on a set of algorithms to gauge the energy expended per unit of crop production. It comprises seven specific subcomponents, which may vary depending on the specific crop and activities involved. It also considers significant energy-intensive aspects of on-farm crop production, including the direct consumption of diesel fuel for operating farm machinery, electricity used for irrigating crops, and electricity and natural gas consumed during ginning. Moreover, it factors in the indirect or embedded energy expenditure stemming from various sources, such as mining and transporting fertilizers, as well as manufacturing crop-protectant products.

In the 2022/23 cotton growing season, the collective energy use of Trust Protocol growers, as illustrated above, stood at 5,836 Btu per pound. This figure represents a notable improvement compared to the 2015 Trust Protocol baseline of 8,049 Btu per pound. It's also worth highlighting that Trust Protocol growers achieved a 27% reduction in energy consumption during the 2022/23 cotton growing season, surpassing the 2025 National Goal which aimed for a 15% reduction.

Greenhouse Gas Emissions (GHG)

3 of 3

Protocol growers making significant steps towards reaching 2025 National Goal



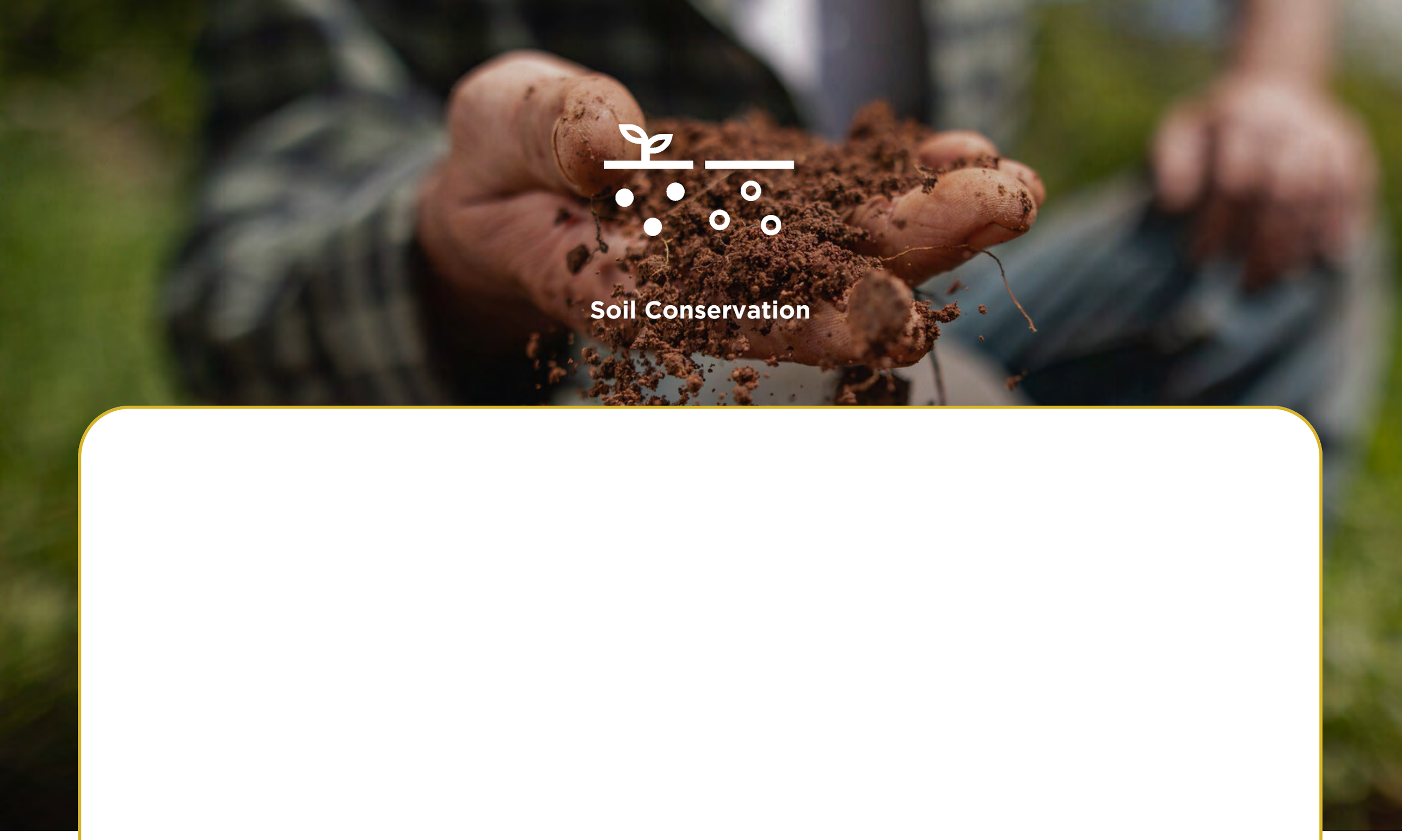
Note: 2015 Trust Protocol baseline, 2025 National Goal, and 2020/21, 2021/22, 2022/23 U.S. Cotton Trust Protocol aggregate for greenhouse gas in lb.Co2e/lb.

Greenhouse Gas Emissions (GHG)

The Greenhouse Gas (GHG) Emissions metric provides a comprehensive assessment of total emissions from four primary sources within crop production. These sources encompass energy use, nitrous oxide emissions from soils, methane emissions (specifically from flooded rice fields), and emissions arising from residue burning. This metric is designed as an efficiency measure, employing a complex set of algorithms to calculate the cumulative GHG Emissions per unit of crop production.

For all users, emissions originating from energy and soil are calculated as standard components. However, methane emissions from flooded fields are considered exclusively for rice production, and emissions resulting from residue burning are factored in only when users indicate that prior crop residues were burned. The metric quantifies emissions in units of pounds of carbon dioxide equivalent (lbs CO2e) per unit of crop production. CO2e units provide a standardized way to express emissions of all greenhouse gases, taking into account their respective global warming potential. Therefore, to align emissions, methane and nitrous oxide emissions are multiplied by standard conversion factors (1 lb N2O = 296 lbs CO2e; 1 lb CH4 = 23 lbs CO2e). While the ultimate metric unit represents pounds of CO2e per unit of production, the results are presented to users in two ways: per unit of crop production and per acre. This dual presentation format allows users to assess and compare emissions across different components and farming practices, **facilitating informed decisions for improved sustainability.**

The 2025 National Goal aims to achieve a substantial 39% reduction in GHG Emissions compared to the 2015 Trust Protocol baseline. In the context of the 2022/23 Trust Protocol aggregate data (as depicted above), GHG Emissions per pound of fiber for Trust Protocol growers stood at 1.9 CO2e. Relative to the representative group from 2015, Trust Protocol growers in the 2022/23 cotton growing season reduced GHG Emissions by 21%, marking a significant step towards the overarching 2025 National Goal.



Note: 2015 Trust Protocol baseline, 2025 National Goal, 2020/21 aggregate, 2021/22 aggregate, and 2022/23 U.S. Cotton Trust Protocol aggregate for soil conservation in tons/ac/year.

Soil Conservation

The Soil Conservation metric quantifies soil erosion caused by water and wind and is reported as tons of soil lost per acre. It employs complex biophysical models developed by the United States Department of Agriculture's Natural Resources Conservation Service (**USDA NRCS)**, specifically the Integrated Erosion Tool (IET), which consists of the Water Erosion Prediction Program (WEPP) and the Wind Erosion Prediction Service (WEPS) models. The IET model, a result of extensive USDA research, simulates crop growth, water flow, and sediment runoff. It's connected to the Fieldprint Platform via API services. The Soil Conservation metric was initially adopted in 2010 and updated in 2012 to include the WEPS model for wind erosion. It was updated again in 2018 to incorporate the WEPP model for water erosion in place of the Revised Universal Soil Loss Equation (**RUSLE2**) model. To compute soil loss, the models require field characteristics, soil properties, crop management data (e.g., tillage, rotation), and climate information. Much of this data is sourced from USDA databases and climate datasets. Users input field details, drainage systems, and management practices through the crop rotation builder tool. In the latest Fieldprint Platform 4.0 release (as of 2021), WEPS operates in calibration mode, aligning crop growth with actual data for more precise wind erosion estimates.

In the 2015 Trust Protocol baseline, the average soil loss was recorded at 12.6 tons/acre/year. The ambitious objective was set to reduce soil loss by 50% by the year 2025. In 2022/23 (as illustrated above), we observe a significant achievement by Trust Protocol growers with the aggregate soil loss at just 2.6 tons per acre per year. This represents a remarkable 79% reduction in soil loss compared to the 2015 Trust Protocol baseline group. This achievement underscores Trust Protocol growers' commitment to adopting innovative techniques to enhance soil health.

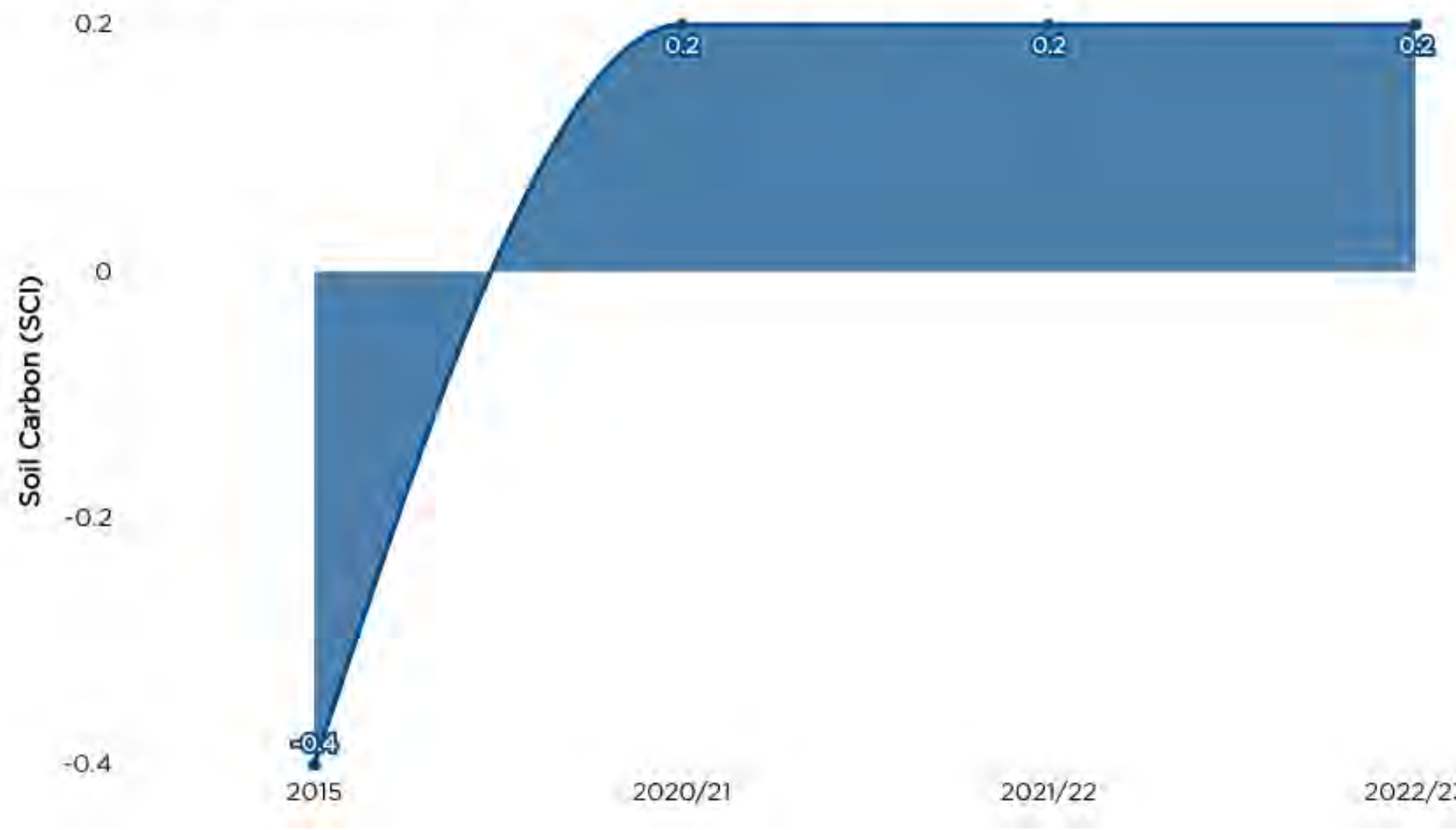
Recognizing the significance of soil conservation, the Trust Protocol has imposed a cap on soil loss at 30 tons per acre per year in the aggregate reporting. This decision is based on statistical analysis, which has revealed that in a few fields with unexplained or unforeseen input parameters, the WEPS model can become unstable, leading to inaccurate soil loss predictions. Furthermore, ongoing analytical investigations are currently underway for 2% of Fieldprint acres exhibiting extremely high soil loss values. This proactive approach aims to uncover the underlying factors contributing to these outliers and ensure the accuracy and reliability of soil loss assessments.

Soil Carbon

In the 2022/23 cotton growing period, Trust Protocol growers achieved an SCI of 0.2, similar to the past two years, indicating an improvement in soil health.

2 of 3

In 2020/21, 2021/22 and 2022/23 Soil carbon was 0.2 SCI



Note: 2015 Trust Protocol baseline, and 2020/21, 2021/22 and 2022/23 U.S. Cotton Trust Protocol aggregate for soil conditioning index.

Soil Carbon

Soil Carbon is a crucial piece in supporting various components of agriculture, including water infiltration, nutrient retention, crop productivity, and carbon storage. Quantifying annual changes in soil carbon can be a complex task. To address this challenge, the Fieldprint Platform employs a qualitative measure known as the Soil Carbon metric, which is based on the USDA NRCS **Soil Conditioning Index** (SCI). This SCI tool has been integrated into the Fieldprint Platform since 2012, providing an annual snapshot of soil carbon that is particularly useful for farmer education and conservation planning. The metric considers three significant factors influencing soil carbon: organic matter and crop residue returned to the soil, soil erosion caused by water and wind, and the impact of field operations, including tillage intensity. It leverages regional variations in organic matter decomposition rates and soil texture, based on field location and data from the **USDA SSURGO soils database**. The SCI provides a value between -1 and 1 for each field, where positive values indicate increasing soil carbon, values near zero suggest maintenance, and negative values signify soil carbon loss. It's important to note that the magnitude of the index reflects the confidence in the direction of change and does not quantify the absolute amount of carbon.

When SCI has a negative value, it signifies an anticipated decline in soil organic matter levels, while a positive SCI value indicates a predicted increase. The Trust Protocol has set a target to have 30% of its growers showing positive SCI improvement by the year 2025. Comparing baseline data from 2015, where the SCI stood at -0.4 (as shown in the graph above), to the 2022/23 Trust Protocol aggregate data, a noteworthy positive shift is evident. In the 2022/23 cotton growing period, Trust Protocol growers achieved an SCI of 0.2, similar to the past two years of Trust Protocol aggregate data in 2020/21 and 2021/22 indicating an improvement in soil health. Particularly noteworthy is that in 2022/23, a substantial 83% of Trust Protocol growers' acreage demonstrated a positive SCI, signifying that soil health is effectively maintained.

Regenerative Agriculture and Practices

Regenerative agriculture represents a comprehensive philosophy aimed at positively impacting various aspects of our ecosystem. This holistic approach seeks to enhance bio sequestration, biodiversity, ecotoxicity, climate resilience, water systems, micronutrient levels, and ecosystem services. It's important to note that regenerative agriculture isn't a one-size-fits-all, rigid set of practices. Instead, it involves a dynamic combination of techniques that promote resilience and nurture the ecosystem. Rooted in Indigenous land management traditions, regenerative agriculture principles are adaptable to local environmental conditions and cultural contexts.

These principles encompass the following key elements:

Minimizing Soil Disturbance: Limiting unnecessary disturbance of the soil.

Maintaining Living Roots in Soil: Ensuring that soil remains covered and alive with plant roots.

Continuously Covering Bare Soil: Preventing soil erosion by maintaining continuous ground cover.

Maximizing Diversity: Fostering diversity, particularly among crops, soil microbes, and pollinators.

Integrating Livestock Where Feasible: Incorporating livestock into the farming system when suitable.

Common regenerative practices, as reported in the Trust Protocol, include cover cropping, minimal or no-tillage methods, promoting biodiversity, implementing rotational farming, employing precision agriculture techniques, practicing Integrated Pest Management, and using inputs that are tailored to the specific landscape conditions.

Tillage

Tillage practices wield significant influence over soil health, with far-reaching implications for both long-term agricultural productivity and environmental outcomes, including carbon sequestration and nutrient runoff. The degree of tillage is primarily defined by the amount of crop residue retained on the ground. In cotton cultivation across the U.S., three distinct tillage methods are employed:

a. Conventional Tillage: This approach involves removing the majority of crop residue into the soil, resulting in less than 15% residue cover on the ground. In the 2022/23 cotton growing season, approximately 15% of Trust Protocol Fieldprint acres practiced conventional tillage.

b. Reduced Tillage: Reduced tillage strikes a balance by maintaining residue cover on the ground, typically falling within the range of 15% to 30%. It represents a hybrid approach, combining elements of both conventional tillage and no-till practices. In 2022/23, around 22% of reported Fieldprint acres adopted reduced tillage.

c. No-Tillage: No-tillage practices go a step further by avoiding any mechanical disturbance of the soil, aligning with one of the core principles of regenerative agriculture. This method aims to minimize soil disturbance to the utmost extent and often results in ground residue cover exceeding 30%. In the 2022/23 period, a substantial 63% of Fieldprint acres implemented no-till practices.

63%

of Fieldprint acres implemented no-till practices

Cover Crops

The presence of cover crops plays a pivotal role in shaping soil health, with far-reaching implications for both long-term agricultural productivity and environmental outcomes. These crops provide a protective canopy that effectively mitigates the impact of raindrops on the soil surface, reducing soil aggregate breakdown. It's worth noting that many cover crops are region-specific, which underscores the importance of selecting the appropriate type of cover crop tailored to individual farms. There is no one-size-fits-all solution in farming due to the diverse ecological conditions across regions. In the 2022/23 cotton growing season, a noteworthy 70% of Trust Protocol Fieldprint acres embraced cover crops, while 30% did not incorporate any cover crops into their farming practices. Cover crop adoption in the 2022/23 Fieldprint reported acreages has gone up by 19% in comparison to 2021/22 and by 15% in comparison to 2020/21. This highlights the variable approaches taken by different growers when it comes to utilizing cover crops within their agricultural systems.

70%

of Fieldprint acres incorporated cover crops

Crop Rotation

Crop rotation is a farming practice that involves cultivating various crops on the same piece of land over time. The specific sequence of crop rotation is influenced by local environmental and economic factors. This approach offers several advantages, including the improvement of soil biodiversity by altering crop residue and rooting patterns. The introduction of a variety of crops fosters a more diverse and healthy microbial community in the soil, as different crop species provide benefits to specific groups of microbes. In the case of cotton cultivation, rotation commonly includes crops such as peanuts, sorghum, winter wheat, soybeans, corn, and other cover crops, with the selection depending on the region. During the 2022/23 cotton growing season, conventional crop rotation practices were employed in approximately 86% of the reported Fieldprint acres.

86%

of acres practiced crop rotation

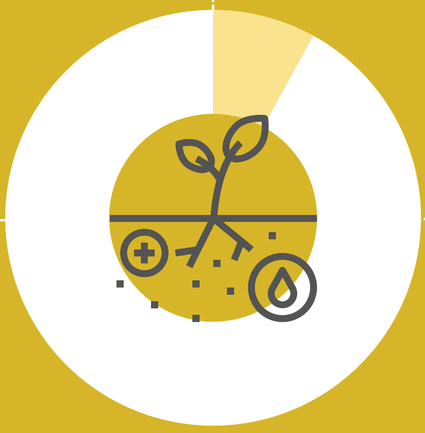
Integrated Pest Management

Integrated Pest Management (IPM) is a scientifically grounded approach that formulates strategies and techniques for the identification and management of pests. Cotton crops are susceptible to a wide range of pests, making IPM applicable at all stages of crop production. The five essential steps in IPM encompass pest identification, monitoring of pest populations and activity, establishing action thresholds, exploring treatment options (which may include chemical, biological, mechanical, cultural/sanitation, and preventive methods), and assessing the outcomes. IPM ultimately leads to reduced pesticide requirements and decreased intervals for pest re-entry. It's important to emphasize that IPM is not a one-size-fits-all practice and does not rely on a single pest control method; instead, it involves a series of pest management assessments, decisions, and controls that can vary from region to region and are customized on an individual basis. IPM practices are informed by the latest scientific and technological advancements, ensuring continuous improvement based on the latest research.

In the 2022/23 cotton growing season, IPM strategies were employed to manage pests in 45% of the reported Fieldprint acreage, which included chemical control as one approach. Additionally, 4% of the acreage utilized IPM strategies without chemical control, 33% relied primarily on chemical control but also incorporated site-specific techniques to mitigate environmental risks associated with pesticides, and 18% were primarily managed through chemical control alone.

Precision Application of Nutrients

A significant portion of Greenhouse Gas (GHG) emissions can be attributed to the release of nitrous oxide from the soil, primarily resulting from fertilizer application. In the 2022/23 cotton growing season (Figure 19), 40% of the GHG emissions were due to nitrous oxide emissions from the soil. To mitigate this environmental impact, it is crucial to apply fertilizer as closely as possible to the time when required by the crop, ensuring that nutrients are available during periods of crop demand. Among the four fundamental principles of fertilizer application, the "right time" plays a pivotal role in making nutrients accessible precisely when the crop needs them. These principles, collectively known as the 4R's (right source, right rate, right time, and right place), serve as essential guidelines for farmers, directing them towards management practices that allow for precise nutrient application. In the context of the 2022/23 cotton growing season, it's noteworthy that 92% of Trust Protocol growers responded with a nutrient management plan and 97% of the reported Fieldprint acres adhered to one or more of the 4R principles, indicating a commitment to responsible and precision-based nutrient management.



92%

of Protocol growers incorporated a nutrient management plan

Biodiversity

The quantification of biodiversity stands as a vital component of regenerative practices. Within the context of the Habitat Potential Index (HPI), biodiversity encompasses a diverse array of native species and ecosystems that may be present on or near the farm, spanning plants, invertebrates, birds, mammals, reptiles, amphibians, and fish. The HPI takes into account the existing land cover types across the entire farm, including both production and non-production areas, as well as the management practices employed by the producer for each land cover type. The HPI index is assigned a value within the range of 0 to 1. In the context of the 2022/23 cotton growing season, Trust Protocol growers reported an average HPI of 0.66.

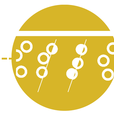
Conservation Practice and Water Quality

Water quality assessment serves as a crucial measure for evaluating the loss of nitrogen, phosphorus, sediment, and chemicals through water runoff across a given field. Utilizing the **NRCS Stewardship Tool for Environmental Performance** (STEP) enables us to comprehensively characterize the site-specific potential for nutrient loss and the effectiveness of conservation practices, accounting for specific soil attributes, topography, and climatic conditions. For each loss pathway, there are three key metrics: the Water Quality Sensitivity Rating, Field Sensitivity Score, and Risk Mitigation Score. These metrics are used to calculate a ratio by dividing the Field Sensitivity Score by the Risk Mitigation Score. If the resulting ratio is equal to or greater than 1, it signifies successful mitigation of the potential for nutrient loss. Conversely, if the ratio is less than one, it indicates the need for additional conservation practices and management techniques to reduce the risk of nutrient loss. In the 2022/23 cotton growing season, 7% of Trust Protocol growers' reported Fieldprint acreage achieved a perfect score of four, signifying successful mitigation of all four soil loss pathways. Another 25% received a score of three out of four, indicating the successful mitigation of three out of four loss pathways (surface Phosphorus, sub/surface Phosphorus, surface Nitrogen, and subsurface Nitrogen).

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

U.S. Cotton Trust Protocol
Program Trends

Analyzing program trends is of paramount scientific significance as it forms the foundation for evidence-based decision-making and the evaluation of program efficacy. By systematically tracking and interpreting trends over time, Trust Protocol growers can gain insights into the program's impact on variables of interest. Scientifically sound trend analysis also contributes to the generation of robust empirical evidence, fostering a deeper understanding of program dynamics and facilitating evidence-driven policy and practice. The statistical evidence under the six key environmental metrics shows overall the dataset is not normally distributed, strongly indicating that median is the reliable approach for predicting the program's trend.



Land Use Efficiency and Yield

The trend analysis of cotton yield from 2020 to 2022 demonstrates a dynamic pattern in cotton production per acre. A significant reduction in yield was witnessed in 2021/22, while 2022/23 showed a slight recovery. In 2021, cotton yield dropped to 1100 lb/acre. This decline indicated an 8% reduction compared to the previous year. In 2022, cotton yield exhibited a marginal improvement, increasing to 1103 lb/acre. While this uptick was relatively modest, it marks a 0.27% increase compared to the previous year.

In the context of land use efficiency, our analysis reveals significant trends and achievements. From 2020 to 2022, there was an 8% reduction in land use efficiency, declining from 0.00083 ac/lb to 0.00091 ac/lb. Meanwhile, there was no change from 2021/22 to 2022/23, with data remaining constant at 0.00091 ac/lb. This stability suggests a need for strategic improvements and could be attributed to severe drought in 2022/23. Comparing the 2022/23 data to the 2015 established baseline of 0.0011 ac/lb, a notable 17% reduction is evident. Trust Protocol growers have already surpassed the 2025 National Goal of a 13% increase in land use efficiency. This achievement also marks a 4.4% improvement over the 2025 National Goal of 0.00095 ac/lb.

Irrigated Water Use

The trend analysis of irrigated water use in lb/ft3 from 2020 to 2022 highlights various aspects. There was a 6% improvement from the 2015 baseline to 2022, indicating continuous improvement. Additionally, there has been improvements in the water use efficiency of 8% from 2020/21 to 2021/22, 21% from 2021/22 to 2022/23, and a significant 31% from 2020 to 2022. The 2025 National Goal is 0.019 lb/ft^3, and in 2022/23, the water use was 0.017 lb/ft^3 indicating a target to be met with 11% deviation from the 2025 National Goal which suggests that water management and conservation strategy efforts need to be intensified to meet the long-term water usage targets in the coming years.

Energy Use

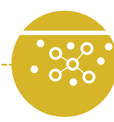
There was a 27% improvement from the 2015 Trust Protocol baseline to the 2022/23 Trust Protocol aggregate data reporting, indicating continuous improvement. However, due to regional weather challenges like drought in Southwest, rain in Mid-south, and pest infestations, while Trust Protocol growers had to ramp up farm operations and therefore saw increased energy use, it is important to note that the 2025 National Goal of reducing energy use by 15% was still realized.

Greenhouse Gas Emissions

Notably, there was a substantial 29% improvement from the 2015 Trust Protocol baseline to the 2022/23 program aggregate, indicating significant progress in reducing GHG emissions. While there were minor fluctuations in emissions between 2020 and 2022, there was an overall 6% reduction in GHG emissions during this period. To provide further break down, there has been increase in the GHG emissions by 6% from 2020 to 2021, decrease in emissions by 11% from 2021 to 2022, and a significant reduction in emissions by 6% from 2020 to 2022. While, the 2025 National Goal of 1.5 lb.CO2e/lb has not yet been achieved, Trust Protocol growers are showing continuous improvement year-over-year to further reduce GHG by 13% to reach the 29% target.

Soil Conservation

There was a remarkable 91% reduction in soil loss seen from the 2015 Trust Protocol baseline to the 2022/23 program aggregate, reflecting substantial progress in soil conservation efforts. While there were fluctuations in soil loss between 2020 and 2022, there was an overall decrease in soil loss of 16% during this period. There was no change in soil loss from 2020 to 2021 staying constant at 1.2 tons/ac/year, however, there has been a decrease in soil loss by 16% from 2021 to 2022. Over the past three years, the Trust Protocol growers have been continuously achieving the soil health targets by meeting the 2025 National Goal.



Soil Carbon

There was a remarkable 210% improvement from the 2015 Trust Protocol baseline to 2022/23 reported program aggregate, indicating significant progress in soil conditioning efforts. Additionally, there were improvements of 12% from 2020/21 to 2021/22, 19% from 2021/22 to 2022/23, and a substantial 33% improvement from 2020 to 2022. The Trust Protocol has set a target to have 30% of its growers showing positive SCI improvement by the year 2025.

U.S. Cotton Trust Protocol
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 the program's growers' contribution involves adopting continuous improvement measures to improve the environmental footprint in the field.

To systematically monitor and assess the progress in our ongoing journey of continuous improvement, the Trust Protocol has taken significant steps in the 2022/23 cycle. Specifically, we have identified two distinct cohorts of growers who have actively renewed their participation in the program. Cohort A consists of growers who have consistently contributed Trust Protocol data since the 2020/21 cycle, forming a robust dataset that allows us to meticulously track year-on-year trends across the six environmental metrics. Cohort B includes growers who reenrolled in 2022/23, building upon their commitment from the previous year, 2021/22, thereby accumulating two years of field data.

In the 2022/23 cycle, Cohort A was comprised of 178 growers who have diligently reported their data for three consecutive years. Their recorded Fieldprint acreage was 104,313 acres in 2020/22, 86,342 acres in 2021/22, and 144,599 acres in 2022/23. Meanwhile, Cohort B encompassed a total of 424 growers who have been actively engaged in providing data for two consecutive years. Their recorded Fieldprint acreage amounted to 152,062 acres in 2021/22 and notably increased to 297,221 acres in 2022/23. Both Cohort groups indicated skewed distribution, with median being the precise way to compare withing the groups.

Land Use Efficiency and Yield

For land use efficiency and yield, Cohort A growers had no change in yield in 2020/21 and 2021/22 with 1,200 lb/acre and a 8% reduction in yield at 1,110 lb/acre. The 2022 cotton yield in the United States was lower than both 2020/21 and 2021/22 due to various factors, including drought, excessive heat, high input costs, competition from other crops, and increased abandonment. These factors varied in impact across different regions, with some experiencing better yields than others. However, in Cohort B, the yield in 2022/23 was just a pound/acre higher than 2021/22. This slight improvement led to a decrease in land usage efficiency required to generate a pound of cotton compared to the results from the 2020/21 season.

In terms of land use efficiency, Cohort A's median land use for 2020/21 and 2021/22 was 0.00083 acres per pound of cotton, while in 2021/22, the median increased to 0.00090 acres per pound, representing an 8% increase in land use efficiency. However, for Cohort B in 2022/23 there was a decrease in land use efficiency by 1% compared to 2021/22.

Water Use Efficiency

In the 2022/23 season, the Cohort group of growers achieved a noteworthy increase in fiber production while effectively reducing their water usage compared to the 2020/21 and 2021/22 seasons. The measurement of irrigation water usage is expressed in acre-inches, where an acre-inch represents the total amount of water required to cover one acre (209 feet by 209 feet) with water to a depth of one inch. Cohort A managed to reduce their water usage by 35% in 2022/23 compared to 2020/21 and by 24% compared to 2021/22. Similarly, Cohort B observed a 35% reduction in water usage in 2022/23 compared to the previous season. In addition to reduced water consumption, these growers reported an increase in the implementation of integrated water management practices during the 2022/23 season.

Energy Use and Greenhouse Gas Emissions

In the 2022/23 cotton growing season, the Cohort group of growers reported notable changes in GHG emissions and energy use, driven by various factors, including yield, irrigation practices (e.g., operating pressure, pumping depth, water application), operational inputs (such as the number of trips, fuel types for fertilizer application, and tillage activities), and application inputs (including the embedded energy in fertilizers). Growers also implemented soil health and building practices, contributing directly to reduced emissions.

In terms of energy use, Cohort A's median energy use was 5,273 Btu/lb in the 2020/21 season, which increased to 5,481 Btu/lb in 2021/22 and further rose to 5,623 Btu/lb in 2022/23, marking a 7% increase in energy consumption. Cohort B in 2022/23 showed a median that was 3% higher compared to 2021/22. Shifting the focus to GHG emissions, Cohort A maintained a consistent median of 1.8 lb. CO_2e/lb. of cotton fiber produced over the past three years, with no statistical changes observed. As energy use and GHG emissions share the same calculation algorithm, the data patterns remain consistent. However, Cohort B achieved significant improvements in GHG emissions, reducing them by 11%.

Soil Health

The Trust Protocol's dataset reveals a consistent pattern in the soil health indicators, encompassing soil conservation and the soil conditioning index. Notably, there has been a substantial enhancement in soil health observed from 2020/21 to 2021/22 and further to 2022/23 within the Cohort group of growers. This improvement can be attributed to various factors, including the widespread adoption of precision farm machinery and equipment, the influence of rising input costs, and adherence to the U.S. government mandate necessitating reduced input rates as part of the Climate Smart program.

Examining soil conservation, we find that the median for Cohort A in 2020/21 was 1.2 tons/ac/year, which decreased to 1.1 tons/ac/year in 2021/22, indicating an 11% reduction in soil loss. In 2022/23, soil loss returned to a level similar to that of 2020/21 at 1.2 tons/ac/year. For Cohort B, a similar decrease in soil loss by 9% was observed in 2022/23 compared to 2021/22, with less variability in the dataset. The soil conservation and soil conditioning index are closely linked and exhibit an inverse relationship, meaning that when soil loss is high, the soil conditioning index tends to be low and vice versa. In 2022/23 and 2021/22, the median soil conditioning index for Cohort A was 0.42, while in 2020/21, it stood at 0.35, representing a substantial 20% increase in soil organic matter. Cohort B exhibited higher statistical significance, showing a 12% increase in soil organic matter when comparing 2022/23 to 2021/22.

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 Practices

All required practices in farm safety are also covered under the Principles of Worker Well-being. In 2022/23 Trust Protocol growers complied with all the following required practices:

1. Participate in producer, professional, or civic organizations actively promoting community well-being.

2. Identify confined spaces and provide guidance on proper procedures to follow when entering these spaces.

3. Reviewing and updating the health and safety of the program periodically and conducting periodic meetings and training sessions for the workers.

4. Lock out electrical power before performing maintenance or service. Tag out with detailed instructions on the tag to help prevent accidental injury to personnel.

5. Employees have access to sanitation that consists of drinking water, toilet, and handwashing facilities.

6. Provide a rollover protective 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.

7. Post a slow/moving vehicle emblem for any machine that travels 25 mph or less on public roads.

8. 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.

9. Ensure that accident and emergency procedures, including first aid kits and access to appropriate transportation to medical facilities, are in place.

10. Follow local regulations for unused and/or abandoned water wells.

11. If applicable based on storage volume, provide dikes for petroleum tanks to hold 110% of tank volume.

12. Locate above-ground petroleum storage tanks at a minimum of 25 feet from any source of ignition or propane source.

13. Maintain safety guards and/or shields on farm equipment.

14. Maintain well casing height in compliance with local regulations.

15. Secure all pesticides during transportation and ensure they do not come in contact with human or animal food, clothing, bedding, toiletries or similar items.

16. Work to assure on-farm disposal sites are in compliance with state and local regulations. Properly dispose of used motor oils, adhesives, paints, cleaners or lubricants.

Recommended Practices

1. **Testing drinking water** used by family and farm workers periodically to assure bacteria, nitrate and other pollutants do not exceed safe levels: This practice is actively followed by 63% of the Trust Protocol growers. However, 17% have reported this practice as not applicable, likely because they have access to a municipal water source that doesn't require testing.

2. **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: In 2022/23, this practice was adopted by 95% of Trust Protocol growers. Additionally, 3% have plans to start using these devices in the next three years, while 2% have reported this practice as not applicable to their farming operations.

Farm Management

Use anti-backflow devices or maintain air-gap of at least 6 inches between tap or hose and liquid in spray tank. Do not make cross-connections between water supplies.

Test drinking water used by family and farm workers periodically to assure bacteria, nitrate, and other pollutants do not exceed safe levels.

Note: Trust Protocol grower member responses on Farm Management

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 were complied with by the 2022/23 Trust Protocol growers.

1. There are no workers employed below the minimum age for employment defined by law.

2. Post, record and report occupational illness and injuries in a timely manner.

3. The farm abides by the state laws regarding nighttime work and prohibited hazardous occupations allowed for underage minors.

4. There are no forms of forced labor or forced prison labor on the farm.

5. Taking measures such as posting Equal Employment Opportunity Commission (EEOC) placards and posters in common areas in order to advise of the policy to prevent all forms of discrimination in the workplace and also advise of grievance procedures.

6. Equal wages are paid to workers who perform the same job, irrespective of gender.

7. Workers have the right to establish or join organizations of their own choosing and there is no management interference with the right of workers to bargain collectively.

8. Use of corporal punishment, mental or physical coercion, sexual harassment or physical or verbal abuse or harassment of any kind is prohibited.

9. A few of the required questions that were marked as not applicable by Trust Protocol growers include:

10. Be knowledgeable of rules in accordance with U.S. labor laws for hiring migrant workers, including their children, housing, working conditions, and compensation.

11. 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.

Recommended Practices

All the recommended practices under Worker Well-being are under the Principle of Farm Management and Crop Protection.

Appendix
About the Methodology

Enrollment Changes in 2021/22 and 2022/23

In 2020/2021 the Trust Protocol's first year, we required grower members to complete all enrollment steps before uploading bales into the system, which often necessitated multiple sittings. However, in 2021/22, the Trust Protocol transitioned to a three-year enrollment process to streamline data collection. These changes enabled growers to fulfill all requirements in a single sitting and allowed them to upload bales into the Protocol Platform using the previous year's field data. Consequently, this shift resulted in two enrollments occurring in the 2022/23 year.

Impact of Enrollment Changes on Data Reporting

The changes in the enrollment process had significant implications for data reporting. Over the course of 2022/23, three changes were made to the enrollment timeline. Initially, the enrollment period spanned from August to April (9 months). This period was later adjusted to May to September (4 months), and further changes are planned for 2023/2024, with enrollment scheduled for January to April (4 months).

These adjustments were made to better align with cotton marketing dates and to facilitate growers' completion of data entry before harvest. The revised timing also ensures that a member's cotton can be verified and recognized as Protocol Cotton bales right after ginning. Additionally, this timeline provides program members with timely insights that can be integrated into their management plans, covering activities from pre-planting to post-harvest.

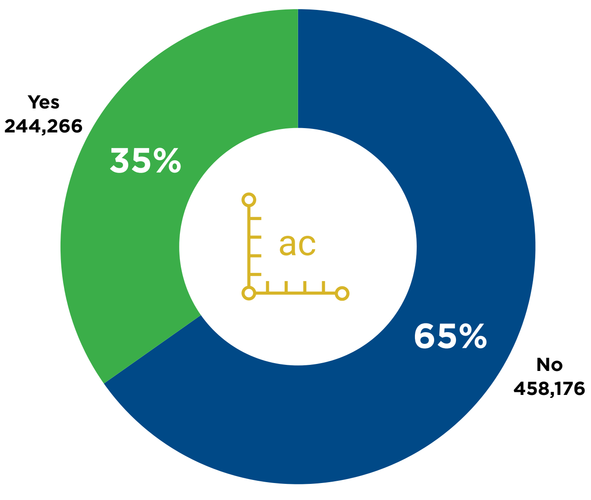
Data Evolution

Comparing data from the 2021/22 season with that of 2022/23, there is a notable increase in participation. In 2021/22, the Trust Protocol collected farming practices data from 624 grower members on 1.1 million cotton acres, resulting in the production of 1.6 million bales. In 2022/23, the 12-month enrollment period witnessed the inclusion of data from an additional 202 growers, covering 1.25 million acres and contributing to a total of 1.7 million bales. To align with the U.S cotton marketing dates, the enrollment was opened again from May 2023 to September 2023 to collect 2022 field data which comprised of 975 growers with 1.7 million acres, and an estimated production of 1.6 million bales. A total of 41% of the 1.7 million acres were entered into the field print system at 702,441 acres. All data reported below demonstrates the 702,441 acres and represents the 1.7 million acres.

It is important to note that annual updates are a feature of this report, covering changes in practices, yields, and inputs, if any. The Trust Protocol also commits to revising data inputs and questionnaires every three years, ensuring the quality and timeliness of the data collected. All data within this report encompasses metrics from production through ginning, offering a comprehensive view of the cotton growing process.

Abandoned Acres

In the 2022/23 U.S. cotton harvest reported by **USDA-NASS**, the total area harvested was only 53% of the total planting acres meaning an abandonment of 47% acres. Within the Trust Protocol's 2022/23 dataset, 35% of the reported acres were abandoned due to weather-related challenges, including factors such as drought, flood, hail, and rain. The blue portion of the pie chart below represents 458,176 acres with no abandonment, the green portion indicates 244,266 acres as abandoned.



Note: 2022/23 Trust Protocol sum of planting acres and percentage of abandoned and non-abandoned acres as reported by Trust Protocol growers.

07: Appendix

Financial Overview

2022-23 represented a year of significant growth for the U.S. Cotton Trust Protocol. This year ushered in continuous use of the online Protocol Consumption Management Solution (PCMS) and increased membership of brands and retailers across the textile supply chain.

Despite steady increases in membership dues, they remained proportionally smaller in comparison to overall industry sponsorship. Membership dues represented 38% of total revenue for 2022-23, a 3% increase as compared to the prior year.

As 2022 progressed, the Trust Protocol continued as a collaborative effort of the U.S. cotton industry. All activities were underwritten through support from the National Cotton Council, Cotton Council International and Cotton Incorporated. Effective April 2023, the Trust Protocol entered into a strategic partnership through the USDA as lead of the Climate Smart Cotton Program. The signing of this 5-year grant allowed the Trust Protocol to access $90M in funding from the USDA. The Trust Protocol's existing partners also agreed to contribute an additional $8.75M over five years in continued support of the Trust Protocol and Climate Smart initiatives.

The primary activities are:

- Grower Enrollment & Outreach
- Supply Chain Enrollment & Engagement
- Program Development
- Conference & Travel
- General & Administrative

IT Support and Development

During 2023, IT support and development constituted 31% (component of General & Admin) of total expenses and were not reimbursed by Climate Smart funds. While this expenditure percentage is lofty, it signifies Trust Protocol's long-term commitment to the PCMS, and other technology needed to support growers and partners.

Grower enrollment and outreach

Grower enrollment and outreach are currently being funded through the Climate Smart Grant. In year one, the Trust Protocol was able to disburse $1.5M in payments for Level 1 enrollment to approximately 600 grower entities. As a result of this payment and the related outreach to growers, the Trust Protocol has been able to raise awareness about its sustainability initiatives. This first round of payments has not only bolstered enrollment in Level 1 but has piqued interest in Level 2 enrollment and practice changes.

As the Trust Protocol continues to grow, we are anticipating that membership dues will constitute a larger share of program income in 2024 and beyond. In addition, we are actively engaging with brands and retailers to inform them of how to track Protocol Cotton fiber and U.S. cotton fiber through the PCMS. This will in turn generate volume-based consumption revenue for the Trust Protocol.

Funding and Industry Support

Through the utilization of the Climate Smart Grant funding and industry support over the next three to five years, the Trust Protocol will continue to build its operations and revenue models. Overall, the Trust Protocol plans to be funded at an estimated rate of 25-30% of overall revenue through membership fees, consumption fees constituting up to 60%, and continued support from industry partners will bridge any gaps.

Become a member

2021/22 Annual Report

2020/21 Annual Report