Regenerative Agriculture in the Textile Supply Chain

Textile Exchange, Wrangler, The North Face & Pure Strategies







May 1, 2018

Today's Speakers

LaRhea Pepper
Managing Director
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Tim Greiner
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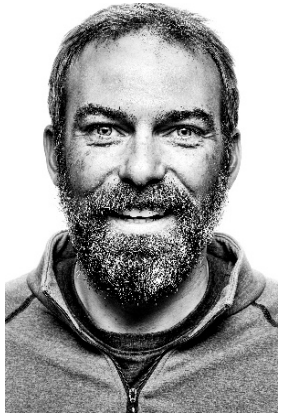
Pure Strategies

Roian Atwood
Director, Sustainability
Wrangler

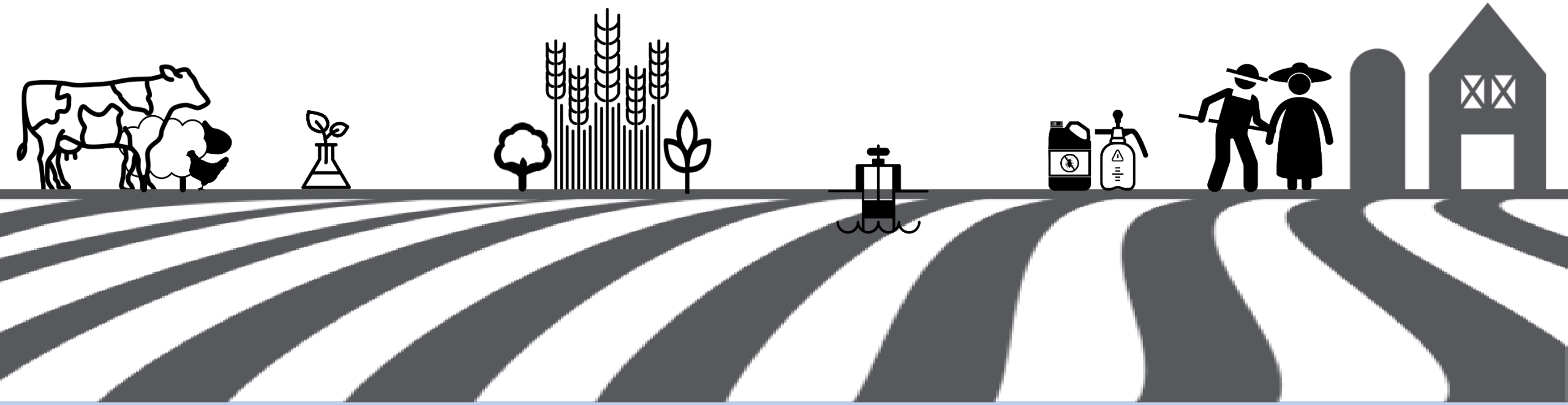


James Rogers
Director, Sustainability
The North Face

Stuart Adams
Agricultural Standards Advisor
Textile Exchange

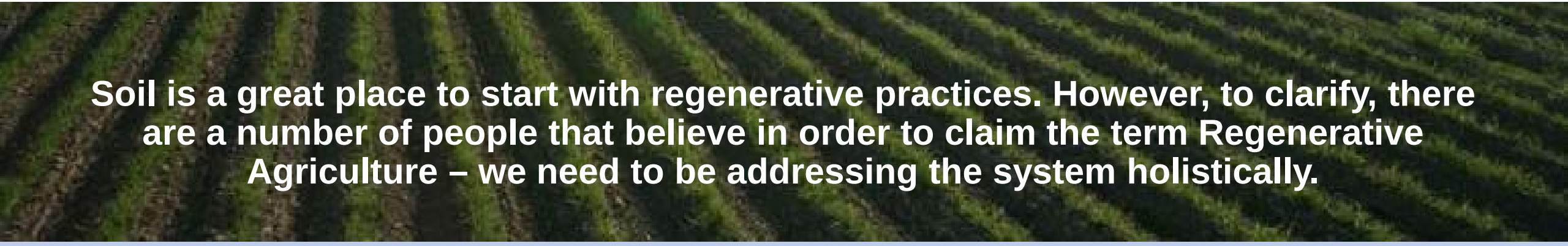
Components of an Agricultural System?

- Eco-System
- Biodiversity
- Crop Diversity – Annual, Seasonal?
- Cover Crops
- Land Use
- Labor
- Weed Control
- Insect Management
- Water – Irrigation? or Rain fed?
- Soil Health - Fertility



How is the Word “Regenerative” Used?

REGENERATIVE:	causing something to heal or become active again after it has been damaged or inactive.
REGENERATION:	renewal or restoration of a body, bodily part, or biological system (such as a forest) after injury or as a normal process
REGENERATIVE AGRICULTURE:	“Regenerative Agriculture” describes farming and grazing practices that, among other benefits, reverse climate change by rebuilding soil organic matter and restoring degraded soil biodiversity – resulting in both carbon drawdown and improving the water cycle.



Soil is a great place to start with regenerative practices. However, to clarify, there are a number of people that believe in order to claim the term Regenerative Agriculture – we need to be addressing the system holistically.

Regenerative Organic Certification

ROC is a holistic agriculture certification encompassing pasture-based animal welfare, fairness for farmers and workers, and robust requirements for soil health and land management.

Regenerative Organic Certification builds upon the near 100-year legacy of organic movement visionaries like J. I. Rodale and Dr. Rudolf Steiner and provides stepwise guidance for farming and ranching operations, transportation, slaughter, and processing facilities that produce food, cosmetics, and fiber. It is essential to farm in a way that enriches rather than degrades the soil, and values animals and workers. Regenerative Organic Certification leverages existing high-bar organic, animal welfare, and social fairness certifications, and includes additional regenerative requirements.

Regenerative Organic Certification

Regenerative Organic Certified

THREE PILLARS

Soil Health*

- No/low Tillage
- Cover Crops
- Crop Rotations
- Rotational Grazing
- No Synthetic Inputs
- No GMOs or Gene Editing
- Promotes Biodiversity
- Builds Soil Organic Matter
- No Soilless Systems

* Leverages USDA Organic, Biodynamic, etc.

Animal Welfare*

- Five Freedoms
- Grass-Fed / Pasture-Raised
- No CAFOs
- Suitable Shelter
- Minimum Transport Distances

* Leverages GAP 4+, AWA, Cert. Humane, etc.

Social Fairness*

- Living Wages
- No Child Labor
- No Forced Labor
- Maximum Working Hours
- Fair Pricing for Buyers/Farmers
- Long-Term Commitments

* Leverages AJP, Fair Trade, FFL, SPP, etc.

Regenerative Agriculture

Tim Greiner, Managing Director

Pure Strategies, Inc.

Soil loss afflicts many growing regions globally

- 70% of the worlds soil are degraded. In the US, half of the historic soil organic carbon has been lost and continues to decline[1].
- Conventional cultivation practices disturb and degrade the soil with tillage, bare soil surfaces, chemical inputs, and continuous monoculture crop production.

Overgrazing Land Also Leads to Soil Loss & Erosion

Photo: Atlas of the Future

Building Soil Health Has Many Benefits

- Reduced soil erosion.
- Improved water infiltration.
- Enhanced fertility.
- Increased biological activity.
- Greater pest suppression.
- Better crop rooting and soil condition.
- Cooler soil temperature.

Photo: USDA

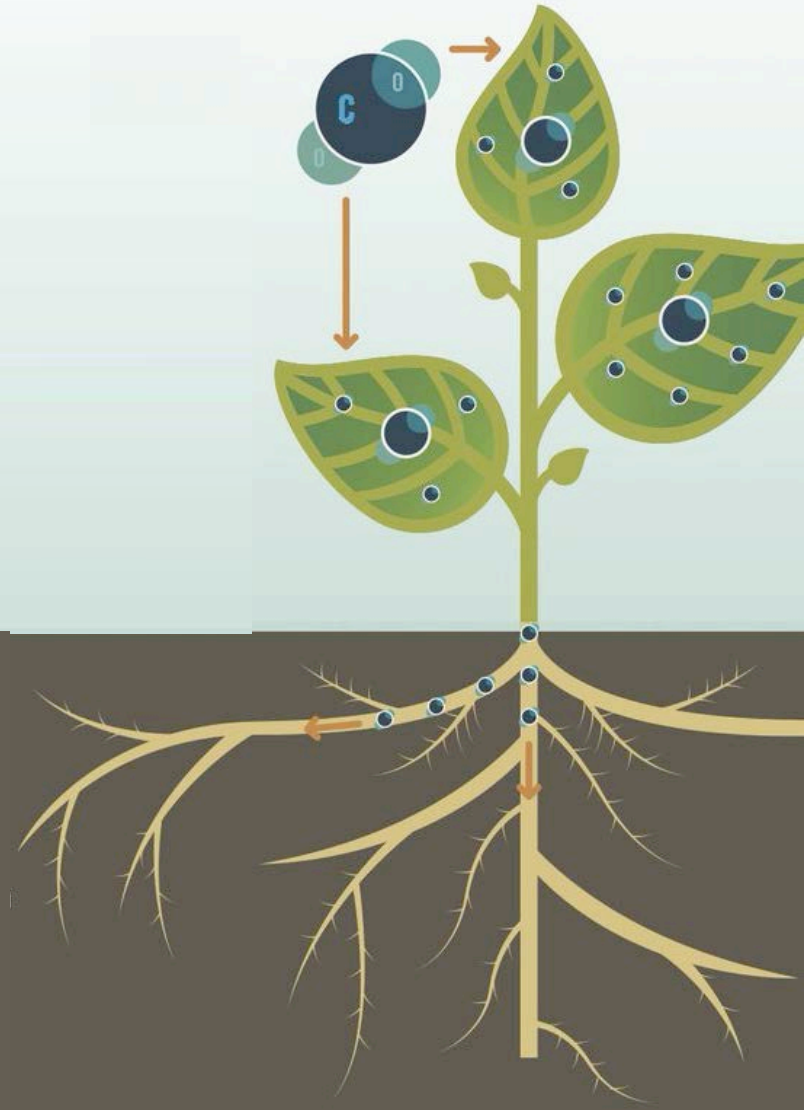
Soil Sequestration

1. **Photosynthesis**: process to change atmospheric CO2 in carbon based sugars

2. **Nutrient Exchange**: carbon-based sugars feed plant bacteria and fungi living in the soil

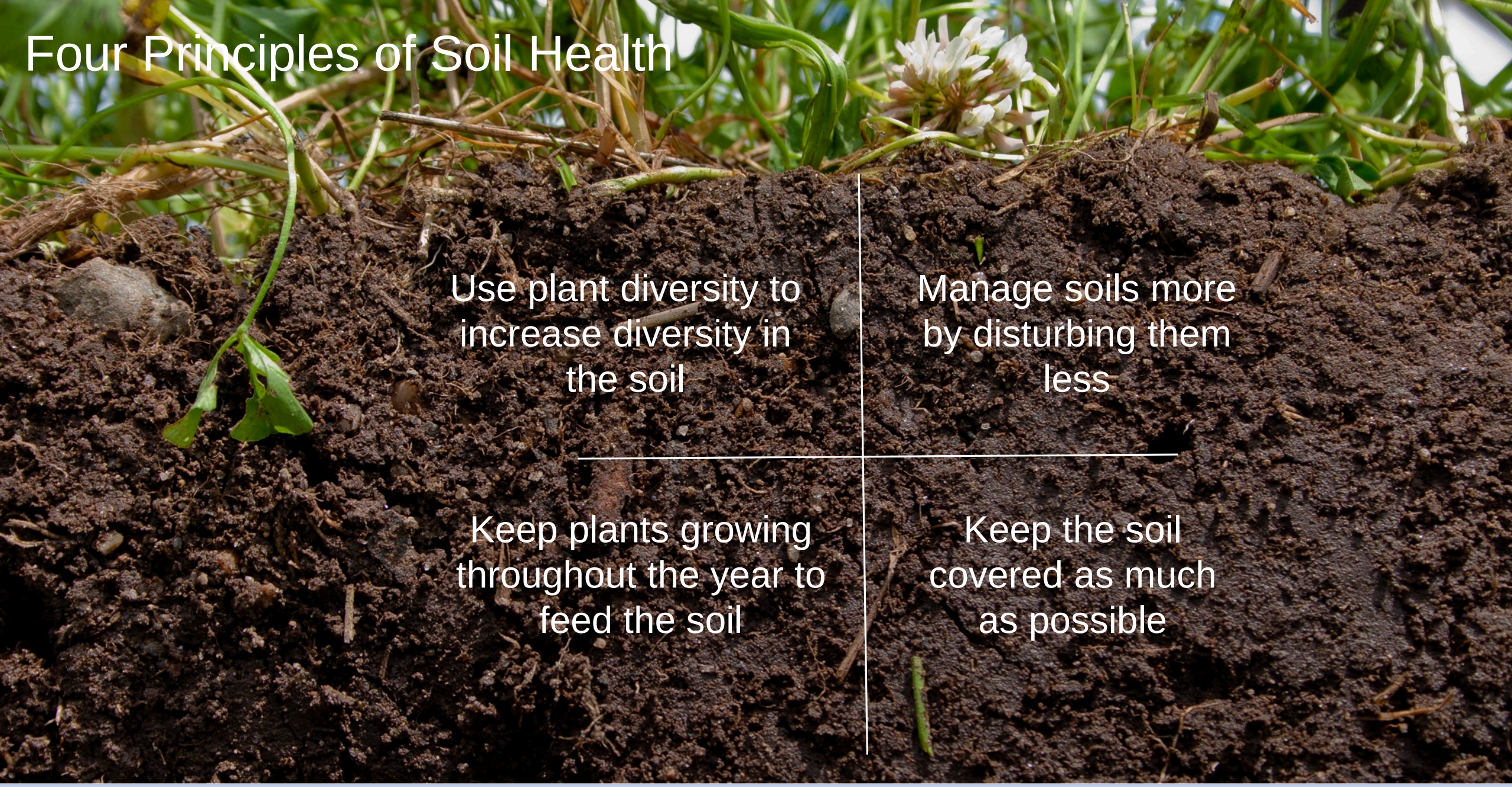
3. Capture Carbon: Root sugars & organic matter converted into more stable materials that help store carbon

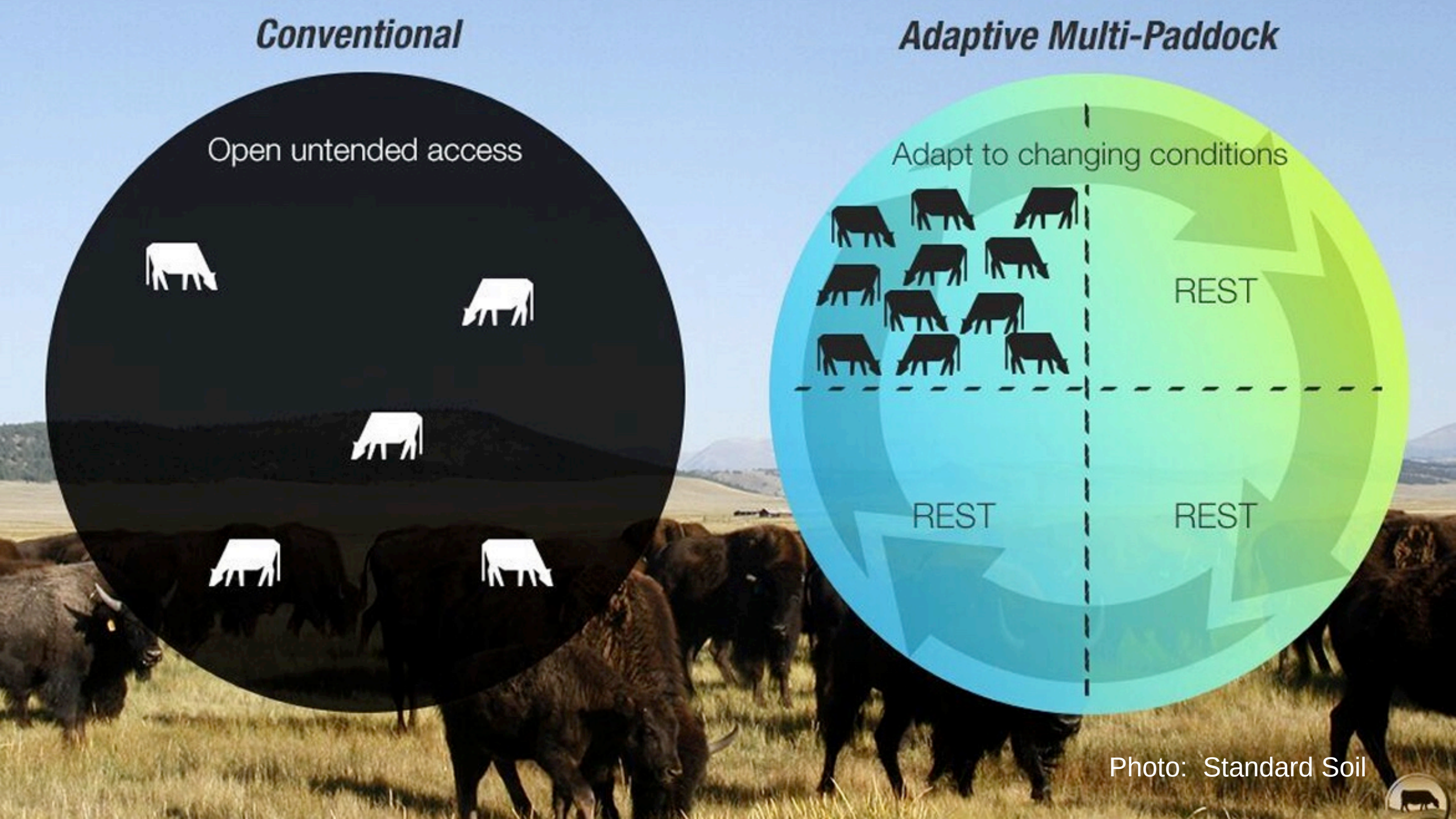
4. Restoring Balance: Increasing microorganisms in the soil increases carbon and in turn soil health



Source: Rodale Institute

Four Principles of Soil Health




Conventional
Open untended access
Adaptive Multi-Paddock
Adapt to changing conditions
REST
REST
REST
Photo: Standard Soil

WRANGLER

The benefits of land stewardship practices in cotton growing

Roian Atwood, Director of Sustainability

WRANGLER SINCE 1947

Historical brand:

Current brand representation:

Wrangler

Wrangler RED

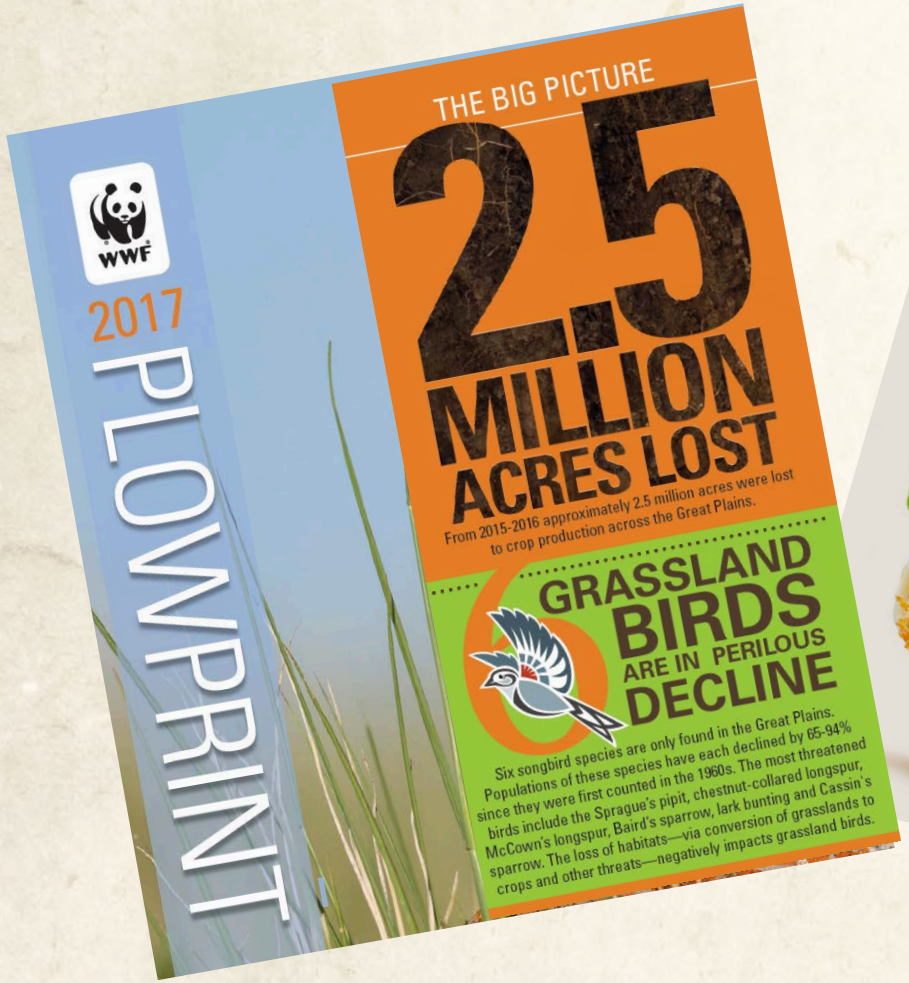
Wrangler JEANS Co ESTABLISHED 1947

Wrangler

RUSTLER HARD WORKING JEANS...GUARANTEED

Wrangler FIVE STAR Premium Denim

AGRICULTURAL RESPONSIBILITY

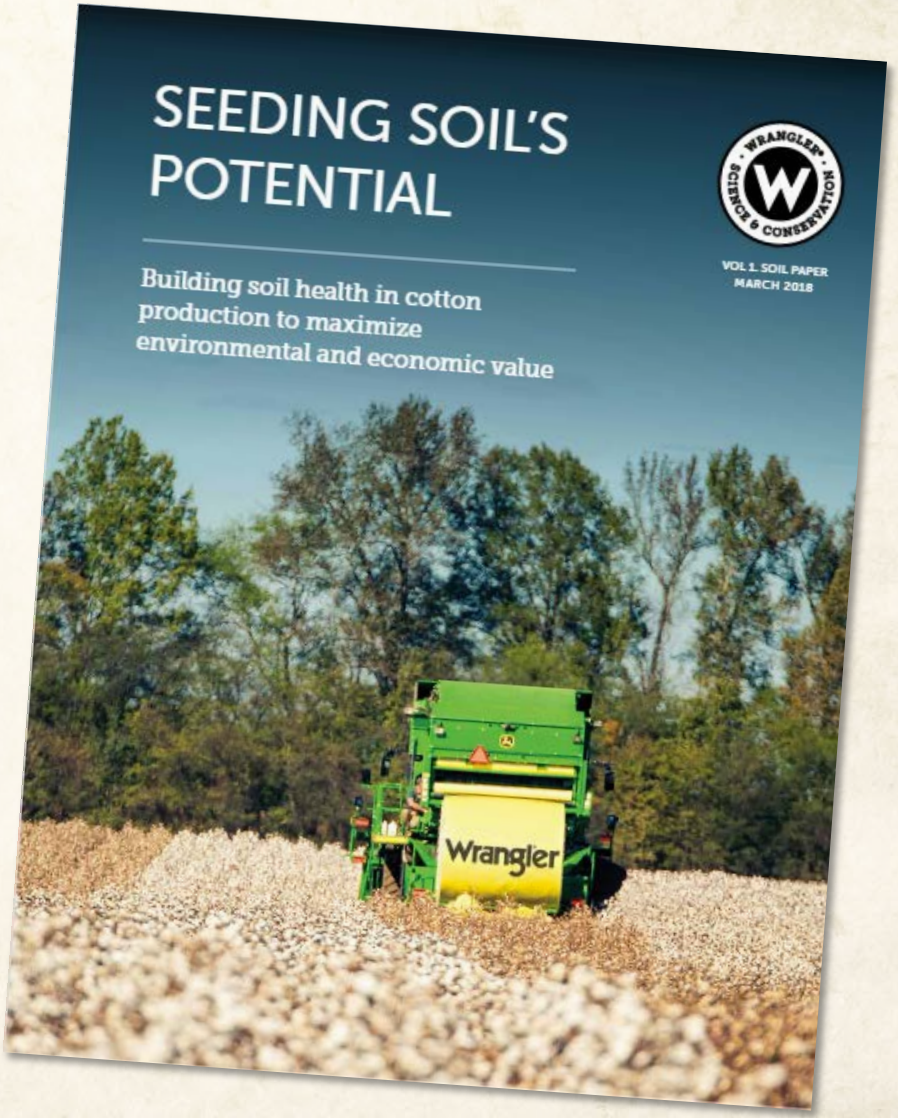


SUPPLY CHAIN RESPONSIBILITY + BEST PRACTICES

- Focused on using land conservation practices in cotton growing.

- Published in April 2018, based on 47 scientific papers.

- Reviewed by USDA NRCS, The Nature Conservancy, and the Soil Health Institute.



CONSERVATION TILLAGE

Partially adopted

Soil carbon loss is directly related to the volume of soil disturbed.

Conservation tillage includes a range of practices that reduce soil disturbance and maintain a minimum of **60% residue cover** on the soil surface throughout the year.

Conservation tillage practices in cotton production include:

- **No-till:** Less than 10 percent of the row width is disturbed to seed through residue from a previous crop.
- **Strip till:** Less than 30 percent of the row width is disturbed, leaving a narrow strip (6-8 inches wide) of tilled soil in which to plant the seed.

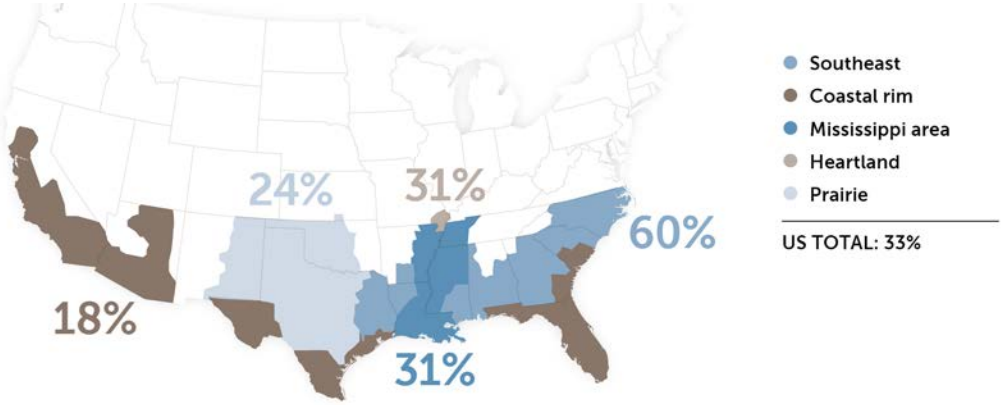
CONSERVATION TILLAGE

- Conservation tillage borrows from nature's method of managing the land – with little disruption.

- Keeping plant residue on the soil surface protects the soil against erosion, minimizes water evaporation, and increase organic matter near the surface.

- By reducing the number of passes required, time and money are saved.

Regional percentage of cotton acres planted with conservation tillage:

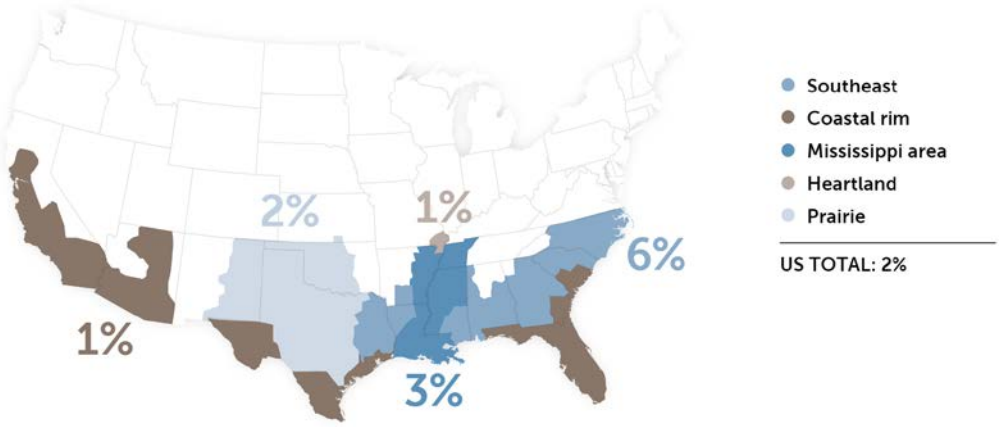


COVER CROPS

Limited adoption

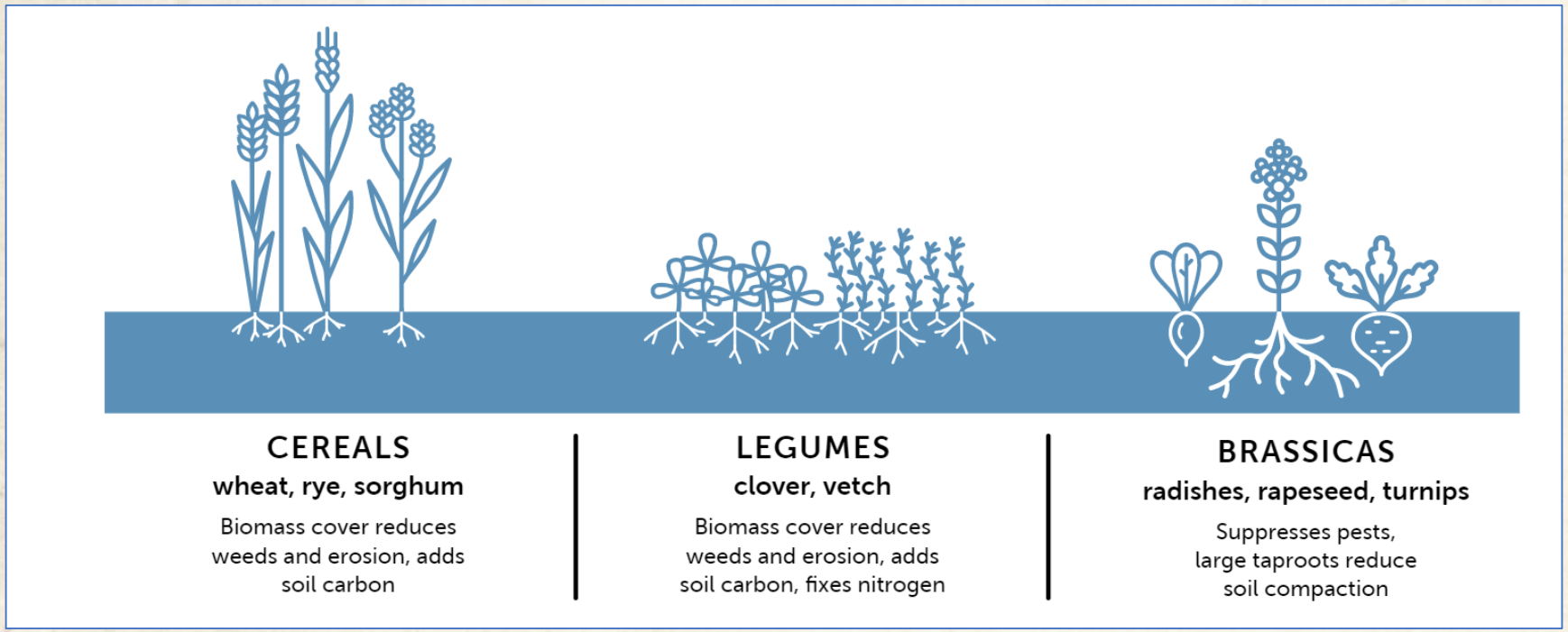
- When a cash crop is not growing, producers can add diversity to their system through cover crops.
- Cover crops are not typically harvested, but instead are terminated prior to cotton planting.
- Cover crops:
  - Produce biomass above and below the ground
  - Reduce erosion and nutrient loss
  - Enhance the soil structure and composition

Regional percentage of cropland acres planted with cover crops:



COVER CROPS

A mixture of cover crop species can be beneficial:

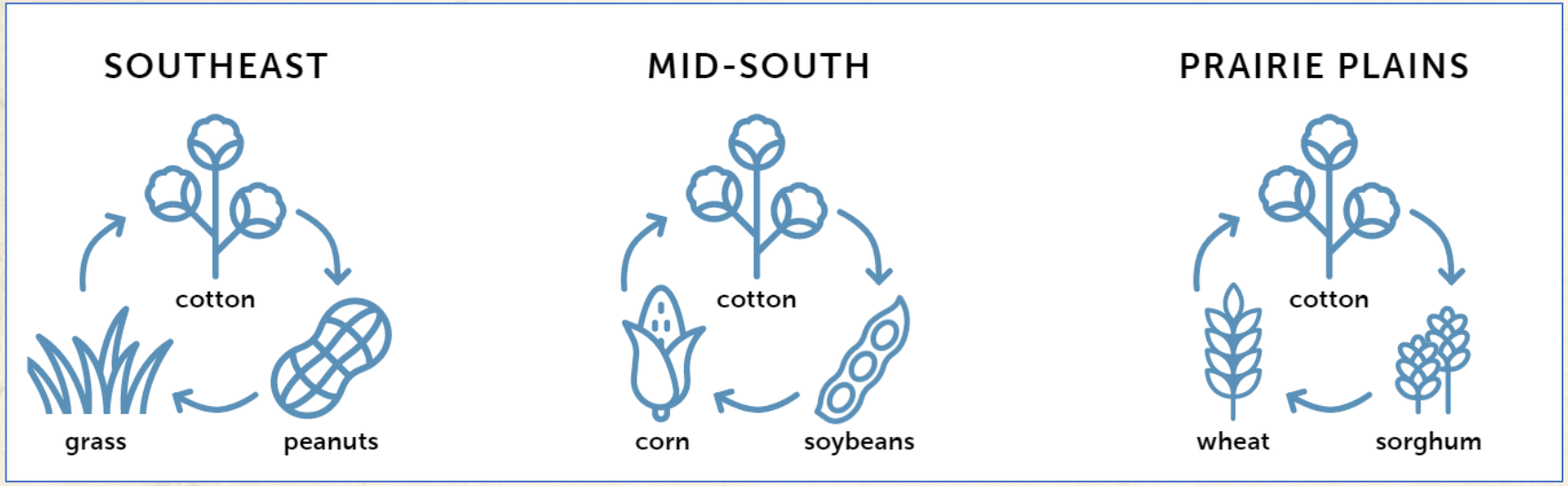


CROP ROTATIONS

Well adopted

- Crop rotations are well-accepted approach to manage pests and diseases and reduce the demand for herbicides.

- Diverse crops also provide nourishment to the biological community below ground.



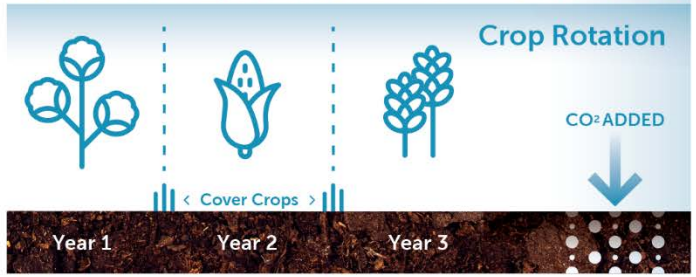
RESULTS IN MITIGATION & RESILIENCE

CONVENTIONAL PRACTICES

50% soil carbon already lost[1]

SOIL HEALTH PRACTICES

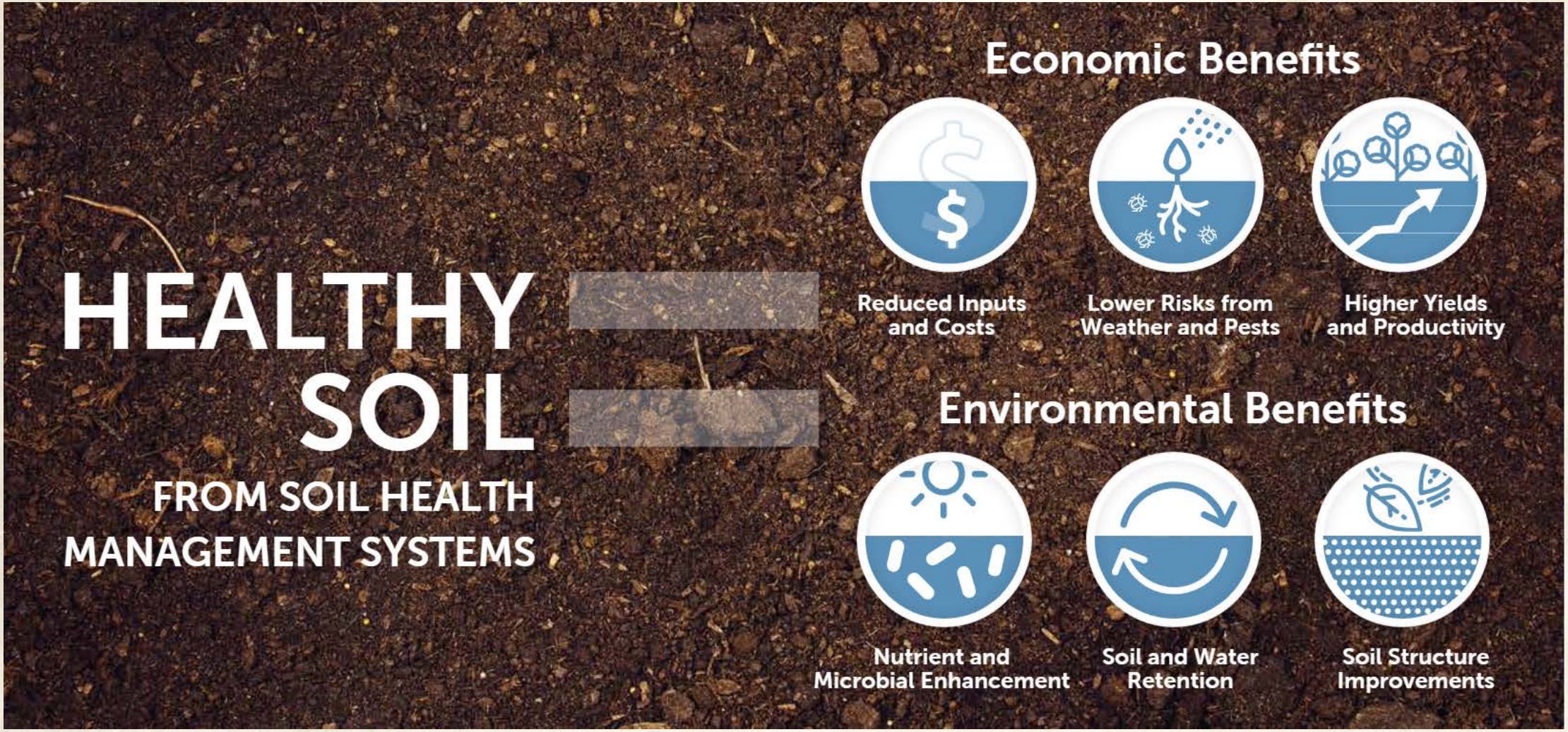
3x more carbon can be added yearly with widespread adoption[39, 40, 41]



Measured Carbon and Water Gains

	Soil organic carbon sequestration rates for cotton[44]	Cropland water infiltration *(rate at which water enters the soil surface)*[15]	Cropland water retention *(amount of water absorbed per volume of soil during dry period)*[15]
CONVENTIONAL	(baseline for comparison to other practices, typically a net loss of carbon)	2 in at 200 min	18.4 in^3 in^{-3}
NO-TILL	0.39 Mg C ha^{-1} yr^{-1}	4.7 in at 200 min	24.3 in^3 in^{-3}
COVER CROPS	0.45 Mg C ha^{-1} yr^{-1} (with no-till)	3.9 in at 200 min	20.5 in^3 in^{-3}
CROP ROTATION	0.43 Mg C ha^{-1} yr^{-1} (with no-till)	Not measured	18.4 in^3 in^{-3}

MULTIPLE BENEFITS

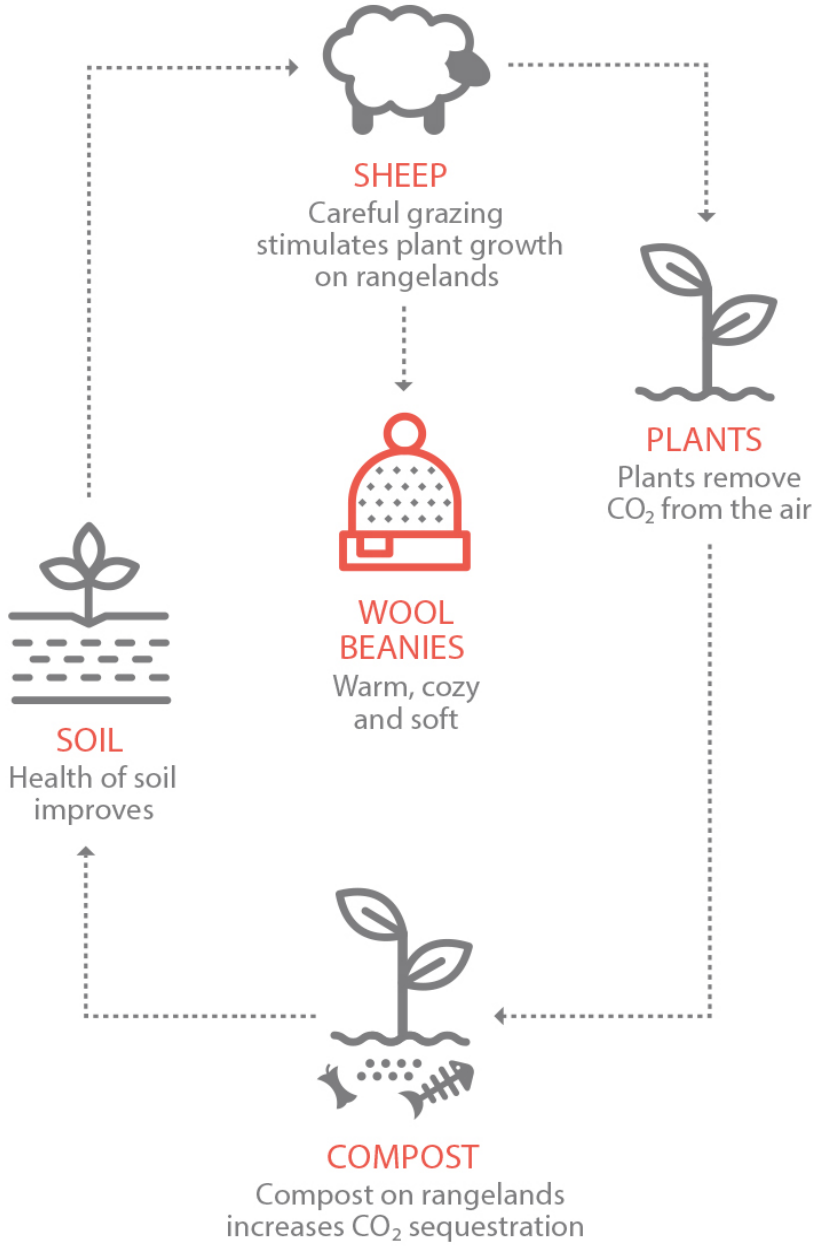


CLIMATE BENEFICIAL WOOL & THE CALI WOOL BEANIE

BACKYARD PROJECT

The Backyard Project represents our ongoing journey towards crafting responsible products from more sustainable materials. In 2014, we challenged ourselves to manufacture a collection of naturally colored hoodies, right here in our own backyard. Since then, we've established roots in the American apparel industry and built new relationships with domestic farms, fabric mills and garment manufacturers.

PHOTO: PAIGE GREEN

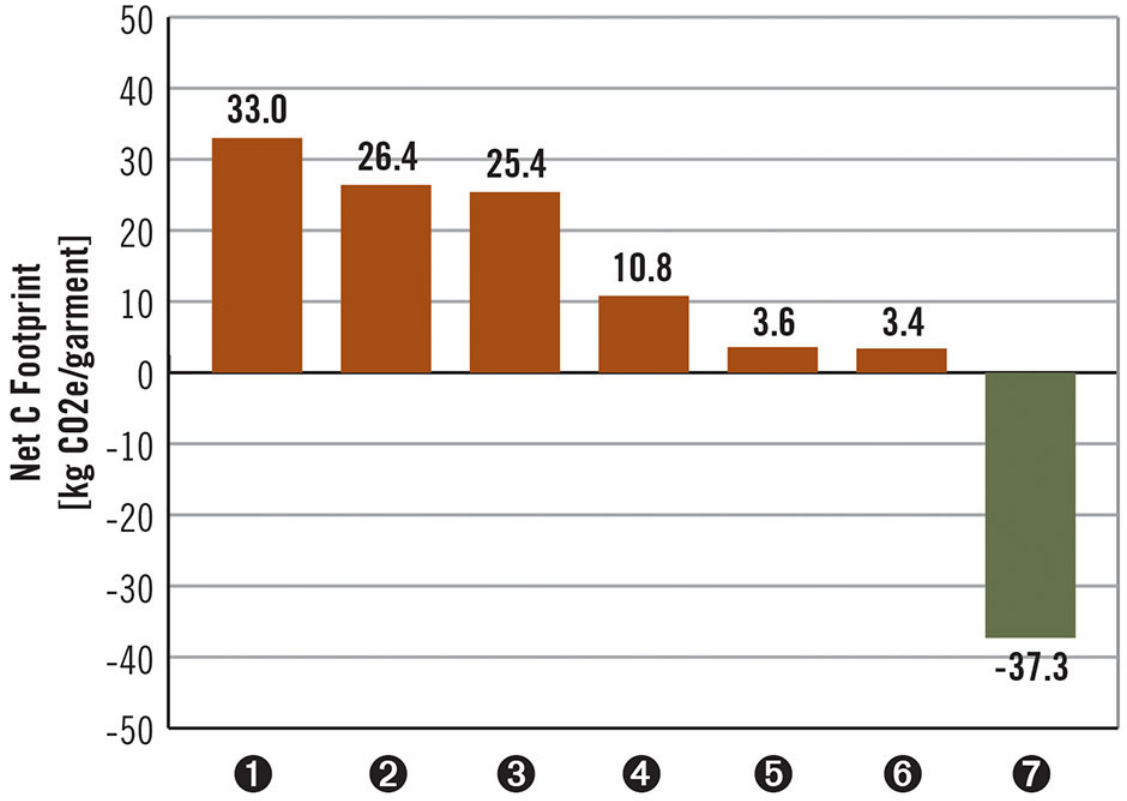


CARBON FARMING PRACTICES

- Mulching/compost application
- Residue & tillage management
- No till/strip till/direct seed
- Anaerobic digester
- Multi-story cropping
- Windbreak/shelterbelt establishment
- Silvopasture establishment
- Forage & biomass planting
- Nutrient management
- Tree/shrub establishment
- Forest stand improvement
- Contour buffer strips
- Riparian restoration
- Vegetative barrier
- Windbreak/shelterbelt renovation
- Alley cropping
- Riparian herbaceous cover
- Range planting
- Herbaceous wind barriers
- Critical area planting
- Forest slash treatment
- Filter strip
- Grassed waterway
- Hedgerow planting
- Cross wind trap strips cover
- Wetland restoration

CO2 FOOTPRINT

Life Cycle Assessment of Fibershed & Conventional Fabric Production



❶ **Conventional Realistic:** CA grid-derived energy, slightly higher C footprint relative to other cases due to loss in soil C, synthetic fertilizer use, higher transportation costs

❷ **Conventional Optimistic:** CA grid-derived energy, but no increase in soil C

❸ **Fibershed Neutral Soil:** geothermal-derived energy, but no increase in soil C

❹ **Fibershed Conservative:** geothermal-derived energy, good land management increases soil C at a more conservative rate than Case7

❺ **Fibershed Realistic:** geothermal-derived energy, conservative compost credit, good land management increases soil C at a more conservative rate than Case7

❻ **Fibershed Possible:** solar-derived energy, conservative compost credit, good land management increases soil C at a more conservative rate than Case7

❼ **Fibershed Optimistic:** solar-derived energy, optimistic compost credit, good land management increases soil C at optimistic rate, minor reductions in C footprint relative to other cases at several steps (transportation distances, commuter mgp, animal emissions, air-dried clothes, etc.)

THE NORTH FACE®

WARM YOUR DOME, NOT THE GLOBE

Our limited edition beanie is crafted from premium Climate Beneficial™ wool that's sourced from Bare Ranch in California.

thenorthface.com/backyardproject

What is happening with farming?

- Farmers are doing their best to raise healthy sheep and look after their land.
- Without a consistent means of measurement, it is difficult to determine if their practices are leading to actual improvements in soil and land health.
- With monitoring and measurement, we can understand which practices lead to better outcomes, and which ones need to be changed.
- Better practices will help everyone improve their bottom line, and will lead to positive outcomes for carbon sequestration, biodiversity, water quality and land productivity.
- If we want farmers to adopt better practices, we need to give them an incentive to change.

How Can We Drive Change?

Why don’t farmers want to change?

- Effort
- Risk
- Cost to change
- Education
- Timelines
- Commodity market price fluctuations
- Weather
- Aging population of farmers

How do we get them to change?

- **Define** good farming practices
- **Measure** good farming practices
- **Reward** good farming practices

GRASS

Grassland Regeneration and Sustainability Standard

- Implements adaptive management at two levels: at ecological and farm level.
- On site Monitoring Procedures allow the register of medium and long term changes of soils, vegetation, wildlife and production.
- Focused on results more than methods or activities. The results are measured through Rangeland Health Indicators (RHI), Carbon content, biodiversity and production indicators.

Responsible Wool Standard

- Recognize the **best practices** of farmers
- Ensure that wool comes from farms with a **progressive approach** to managing their land, and from sheep that have been treated responsibly
- Provide a robust **chain of custody** system from farm to final product so that consumers are confident that the wool in the products they choose is truly RWS
- Create an **industry benchmark** that will drive improvements in animal care and land management where needed

THANK YOU

Stay tuned for **Regenerative Agriculture Part II** webinar announcements

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Q&A

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