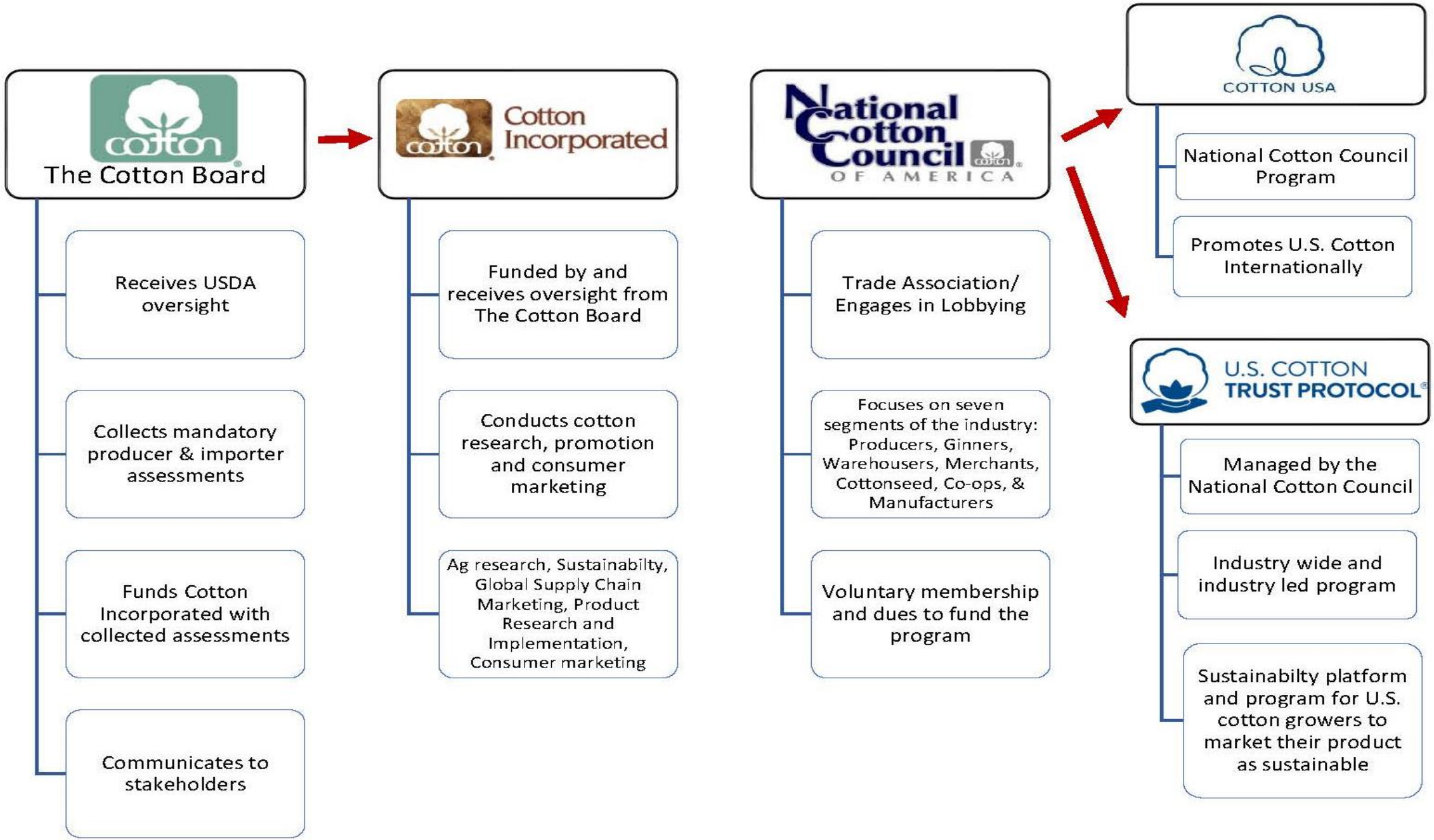
Cotton Incorporated

2023 West Texas Ag Chem

IPM in Cotton and Research and Promotion

Gaylon Morgan

Director of Agricultural & Environmental Research


The Cotton Board
Receives USDA oversight
Collects mandatory producer & importer assessments
Funds Cotton Incorporated with collected assessments
Communicates to stakeholders
Cotton Incorporated
Funded by and receives oversight from The Cotton Board
Conducts cotton research, promotion and consumer marketing
Ag research, Sustainabilty, Global Supply Chain Marketing, Product Research and Implementation, Consumer marketing
National Cotton Council of America
Trade Association/ Engages in Lobbying
Focuses on seven segments of the industry: Producers, Ginners, Warehousers, Merchants, Cottonseed, Co-ops, & Manufacturers
Voluntary membership and dues to fund the program
COTTON USA
National Cotton Council Program
Promotes U.S. Cotton Internationally
U.S. COTTON TRUST PROTOCOL
Managed by the National Cotton Council
Industry wide and industry led program
Sustainabilty platform and program for U.S. cotton growers to market their product as sustainable

Promotion of Cotton

Traditional promotion – TV, social media, etc.

Educating the textile industry and fashion institutions

- **seeding fashion trends**
- **tradeshows**
- **educate the educator**

Direct engagement with brands and retailers

- **farm tours**

Removal of obstacles for cotton use from fiber quality, to finishes, to sustainability

OUR MISSION

Increase the demand for and profitability of cotton through research and promotion

COTTON INCORPORATED REVEALS NEW PATH FOR COTTON WASTE RECYCLING, TACKLING MICROFIBRES

(Just Style, September 5, 2023)

Ankeny tells Just Style the development is "fantastic" for textiles. She explains that while extending the lifespan of garments is the "ultimate goal of sustainability", ultimately garments will eventually wear out, but this gives the apparel industry an option to promote the reuse of materials elsewhere.

STRONG & SOFT? COTTON INCORPORATED INTRODUCES NEW SHEETING TECHNOLOGY

(Home Textiles Today, September 6, 2023)

"Restech Cotton technology takes the best attributes of cotton and cotton finishes to create a unique, durable product with non-fluorine technology," said Hongqing (Mike) Shen, Ph.D., vice president and managing director of product development and implementation for Cotton Incorporated.

"It allows sheets to hold less moisture, dry more quickly, maintains remarkable softness and comfort. This combination makes it a triple threat," he added.

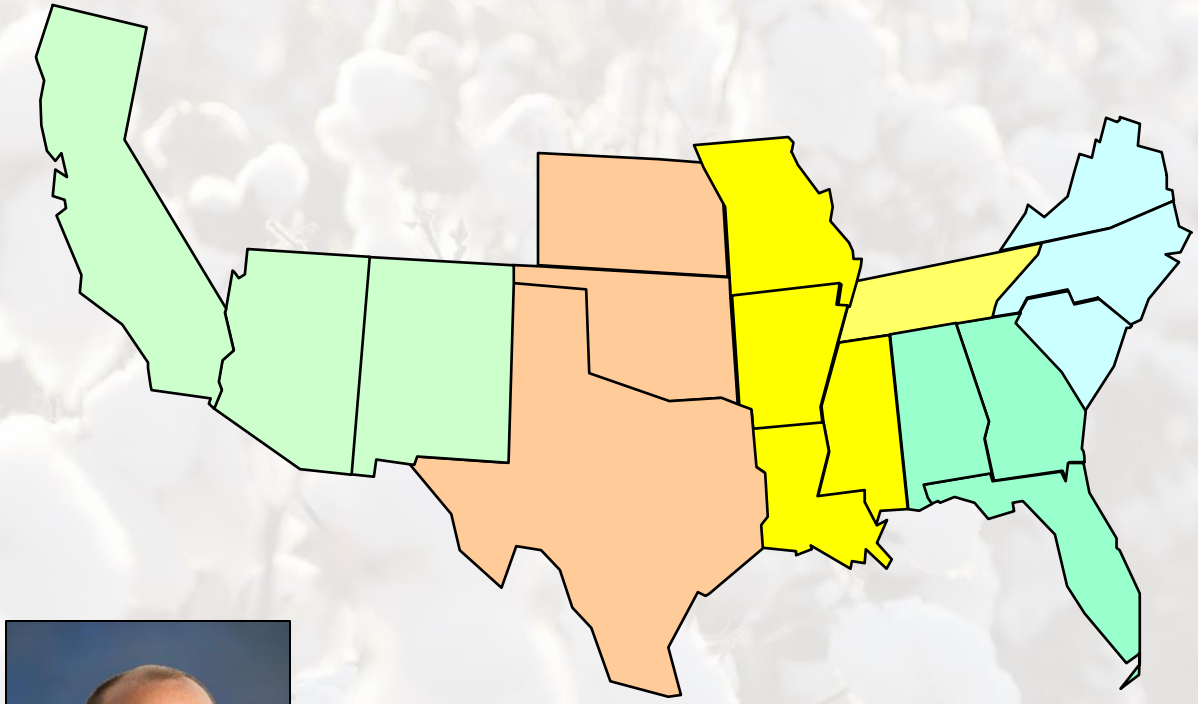
Microfiber and Plastic Pollution

A great marketing opportunity

- Cotton is a natural fiber and degrades as quickly as an oak leak.

Ag and Environmental Research

Dr. Ryan Kurtz
VP AERD



Dr. Ed Barnes
Ag Engineering

Dr. Evy Jaconis
Cottonseed
Human & Animal Nutrition

Dr. Gaylon Morgan
Soil Health
Weed Science

Dr. Don Jones
Breeding

Dr. Kaitlyn Bissonnette
Pathology & Nematology

Dr. Sally Taylor
Entomology

Key Strategic Areas

Pest Management	Weeds Insects Pathogens
Cottonseed	Planting Seed Quality Human/Animal nutrition
Sustainability Support	Soil Health Nitrogen Management Carbon Capture
Emerging Technologies	Machine Vision Automation
Genomics	Breeding Genetic Innovations

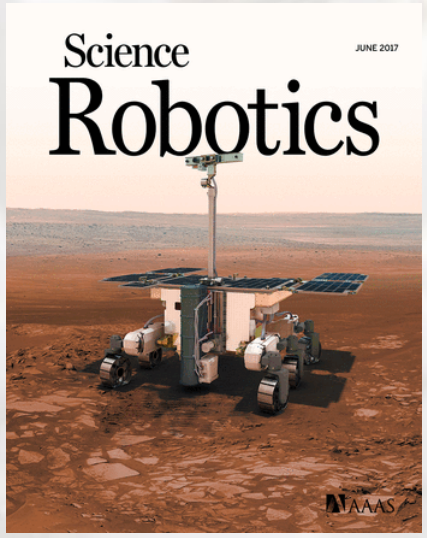
Ag Division projects

		Texas
State Support Committee projects	171	58
CORE projects	272	66
Total	> 443	

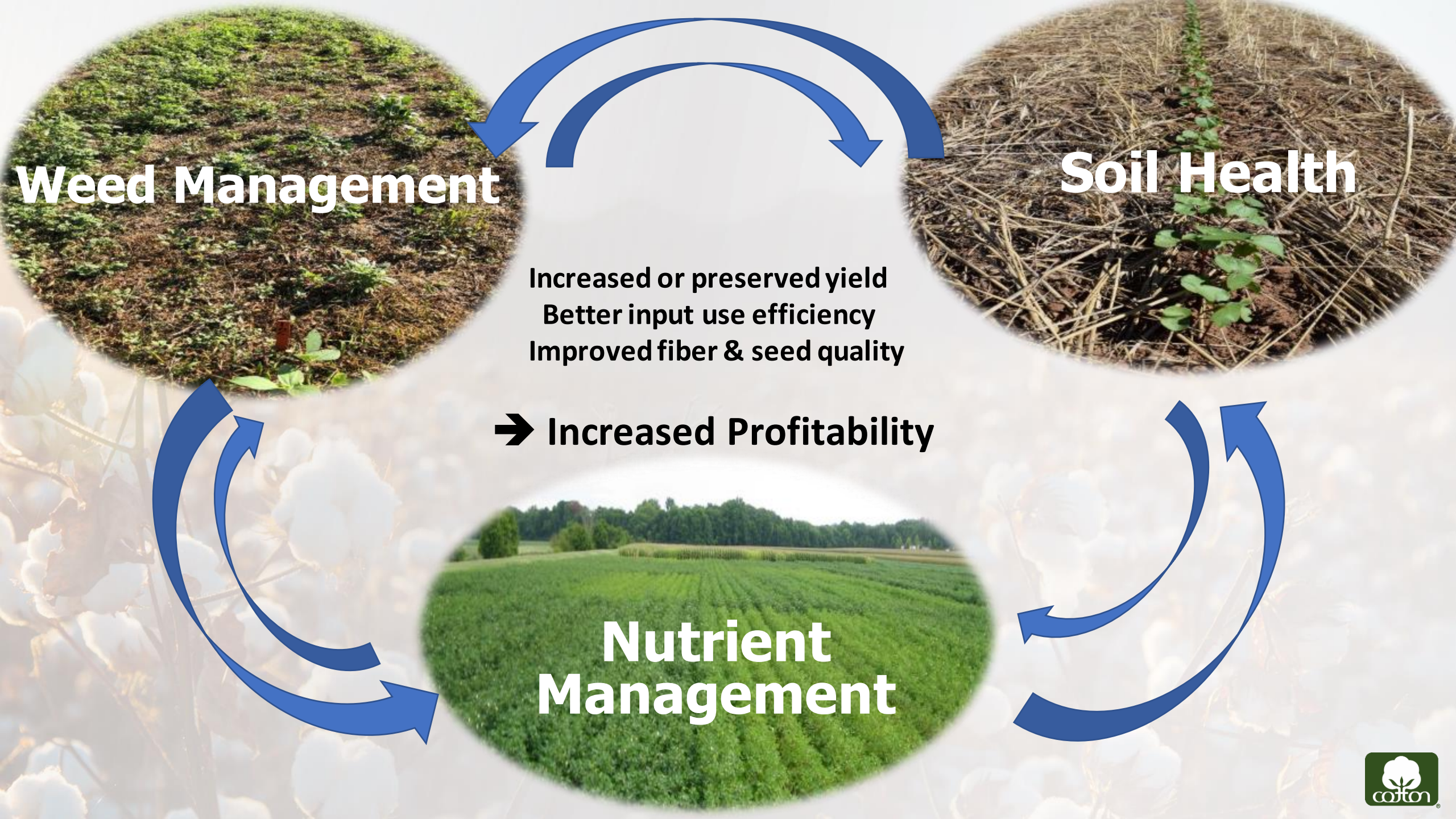
Less Well-Known Activities

- Leveraging of funds
  - State and federal grants
    - seed money for research
    - letters of support for large federal grants
    - developing research priorities with funding agencies
  - Graduate student support and training
- Engagement with allied industry
  - emerging technologies
  - industry-wide research topics
- Collaboration with other organizations
  - NCC
  - Other commodities and international
- Support of scientists
  - promotion
  - publications

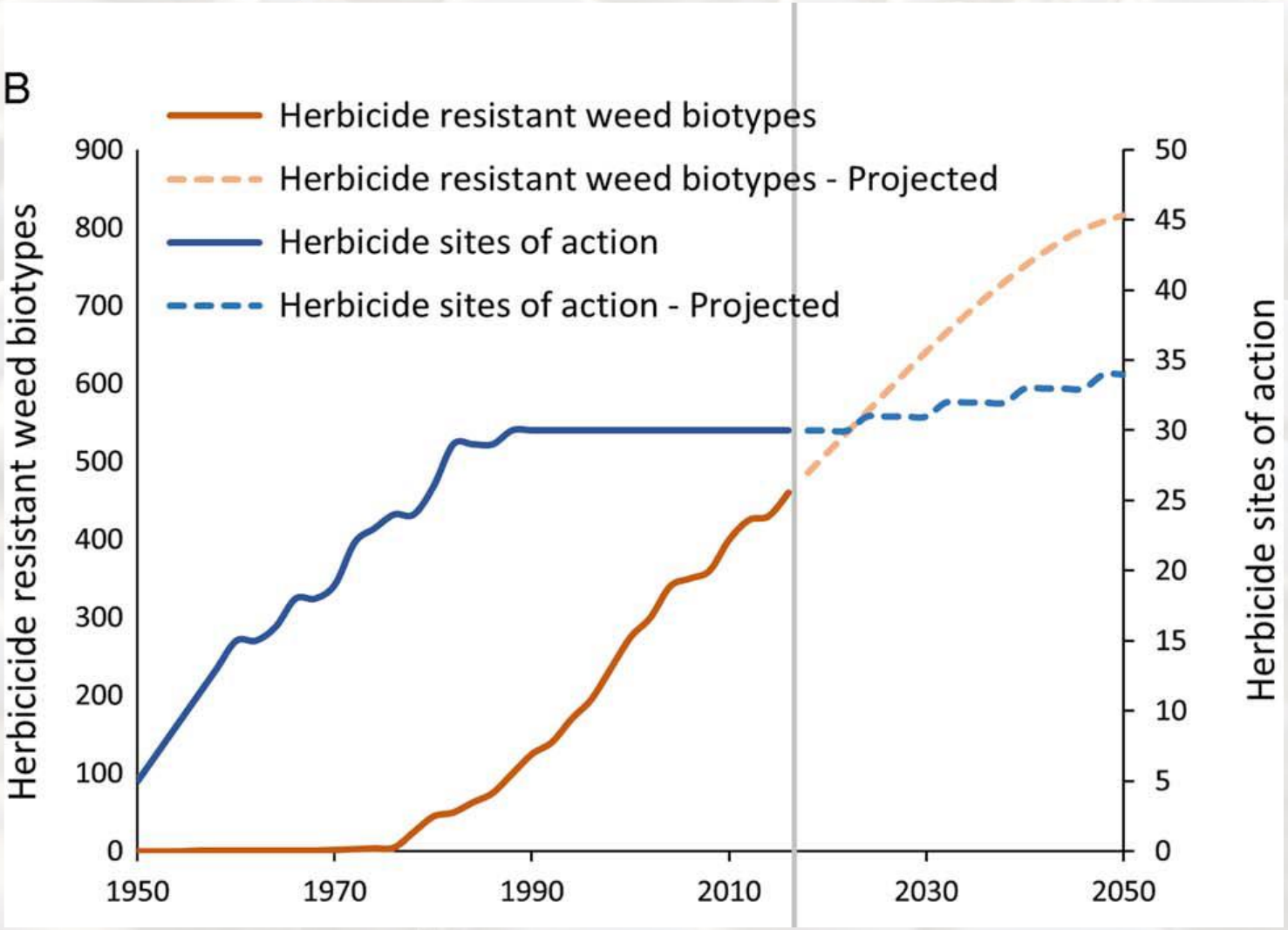
Cotton's emerging technologies

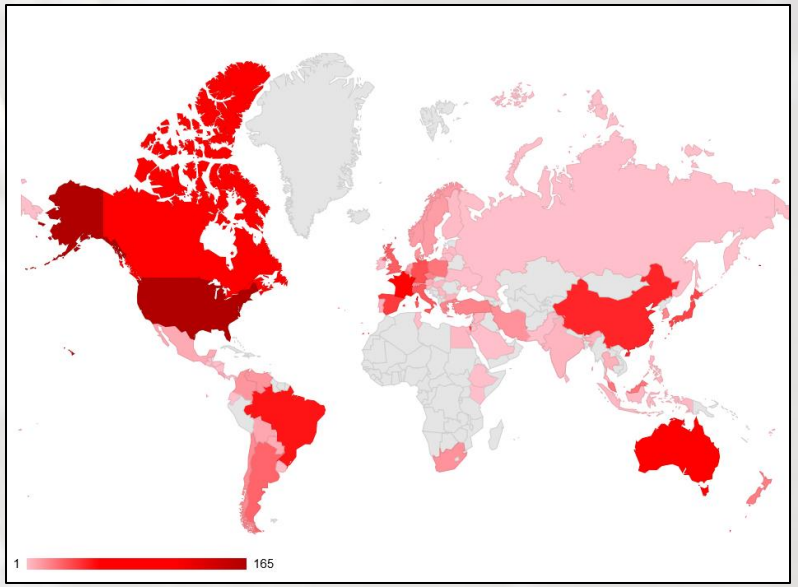


- Breeding advances derive from human genetics and from well funded crops such as rice and corn
- Automation innovations will come from outside of agriculture
- Machine vision is transforming all industries, so cotton specific uses are emerging rapidly
- AI into more integrated systems across all disciplines


Weed Management
Soil Health
Increased or preserved yield
Better input use efficiency
Improved fiber & seed quality
➔ Increased Profitability
Nutrient Management

Herbicide Resistance is Outpacing Chemical Development





Advanced Weed Control Technologies

Finger Weeder cultivator attachment

Camera Guided Precision Cultivation

Pete Dotray & Wayne Keeling – Texas A&M - Lubbock
Mark Siemens – Univ of Arizona

Machine Vision Libraries

- Field Image Libraries in Development for:
  - Weeds (1 published)
  - Disease
  - Plant architecture (1 published)
  - Flowers
  - Bolls
  - Contamination related:
    - Bags in field
    - Damaged modules

https://www.deere.com/en/sprayers/see-spray-ultimate/

New non-chemical options to reduce weeds

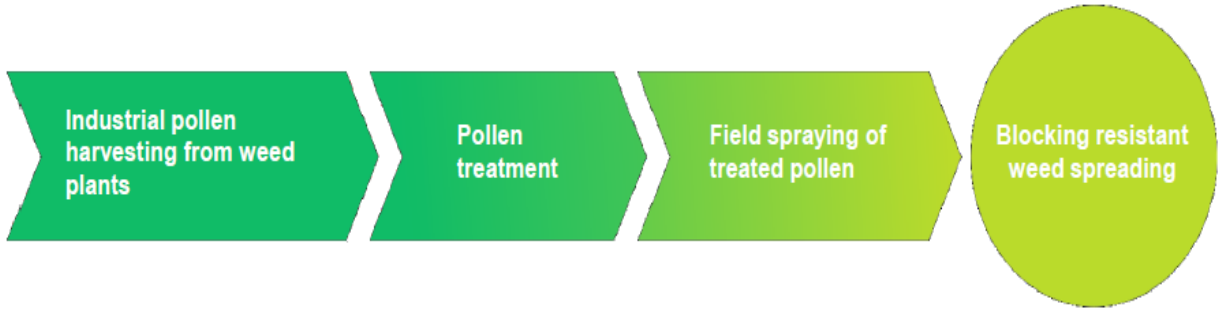
WEEDOUT'S TECHNOLOGY

WeedOUT

Spraying treated pollen to diminish resistant weed

Unique proprietary weed pollen:

- Efficiently fertilizes female ovule
- Leads to formation of aborted seeds



Nutrient Management

- Improve understanding of crop N needs and practically predict of N availability/loss leading to a refine N recommendations
  - Save $ for growers
  - Decrease carbon and greenhouse gas footprint
- Improve understanding of the impact of various cropping systems (cover crops, tillage, etc.) on available N, P, & K and recycling of these nutrients.

Soil Health

- Increasing soil productivity
  - Understanding of *root:soil:microbial* interactions that impact management
  - Nutrient cycling/availability
- Identify viable soil health practices by production regions to meet cotton's sustainability goals
- Adoption
  - Opportunities/Challenges
  - Role in meeting Cotton's sustainability goals

Planting Seed Quality

- High genetic and transgenic value in the seed
- Major concern for growers prices are paid for seed and seed treatments leading to reduced seeding rates
- Need better understanding of seed quality characteristics
- More transparency on seed quality
- On-going research

Insect Pest Management

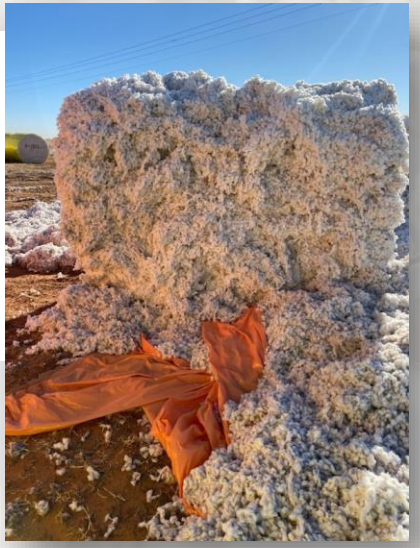
- Combine field techniques, geospatial data, and statistical tools to better understand risk, enable quick and accurate decision making, and predict pest outbreaks.
- Reexplore and revitalize Integrated Pest Management techniques and Extension education to reduce reliance on broadcast insecticides and save money.
- Promote sustainability and conservation without compromising yield or complicating the logistics of farming.

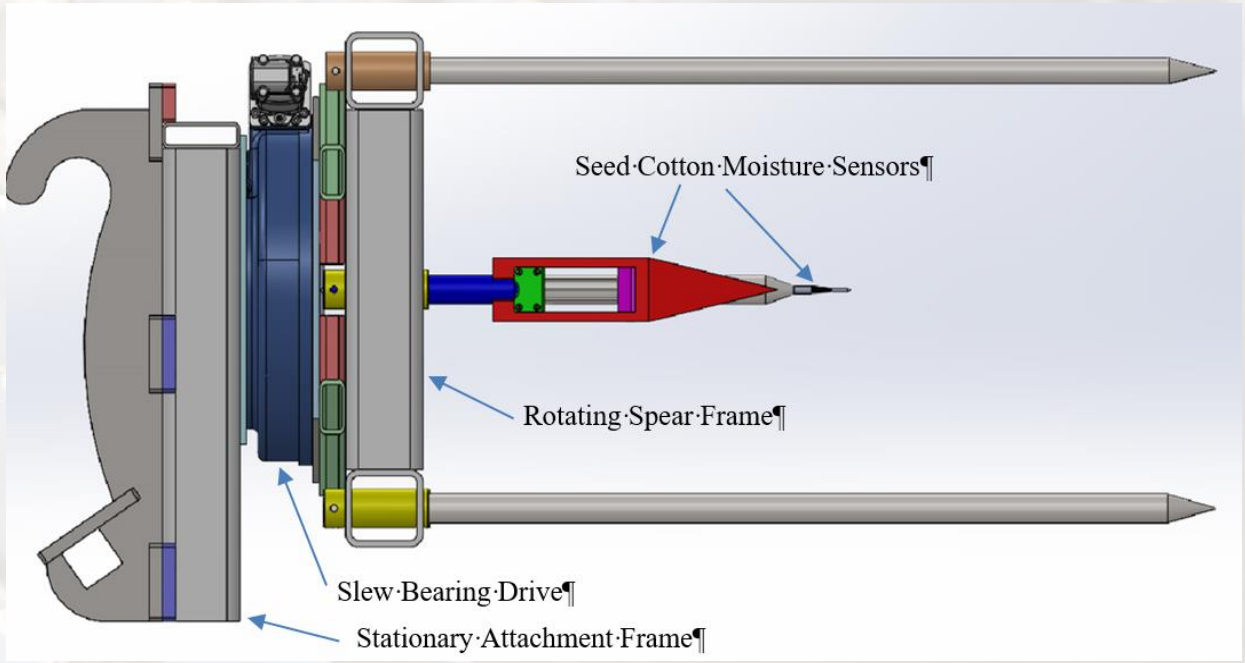
Contamination Prevention

ASABE S615.2 FEB2022
Cotton Module Cover Material Performance

ASABE

American Society of Agricultural and Biological Engineers

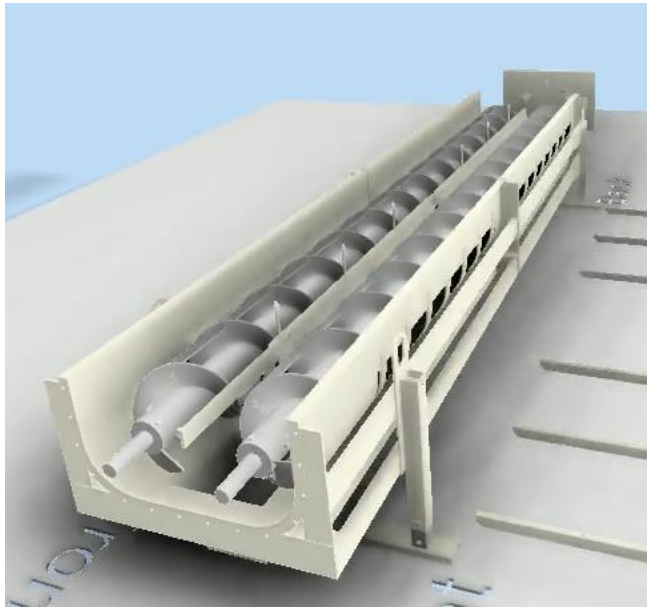




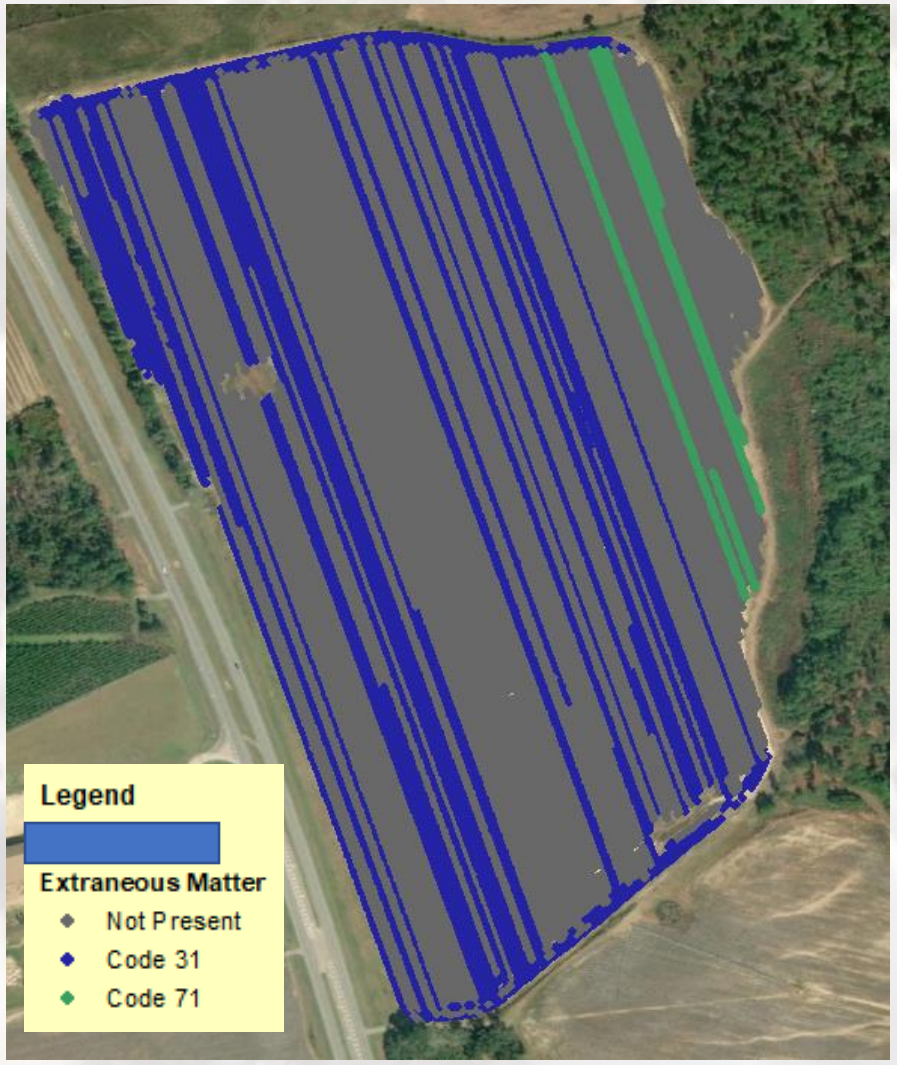
- ASABE-615 Standard published
- Module rotation system developed
- Automated damage detection progressing

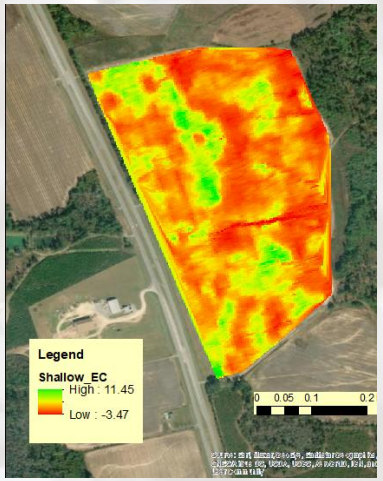
- https://www.cotton.org/tech/quality/approved-rmw-products.cfm

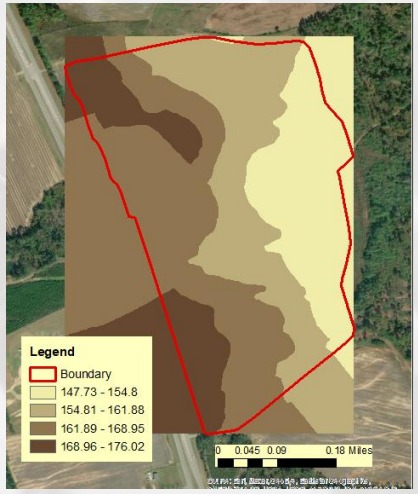

VIPR™

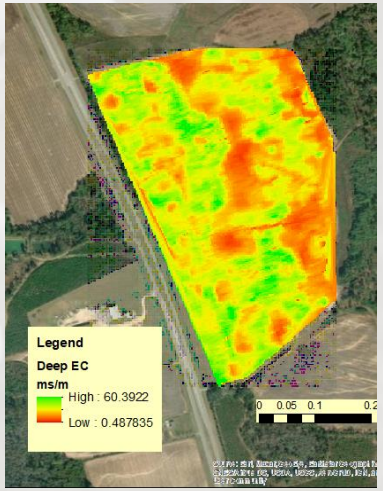


Mapping Fiber Quality Back to the Field

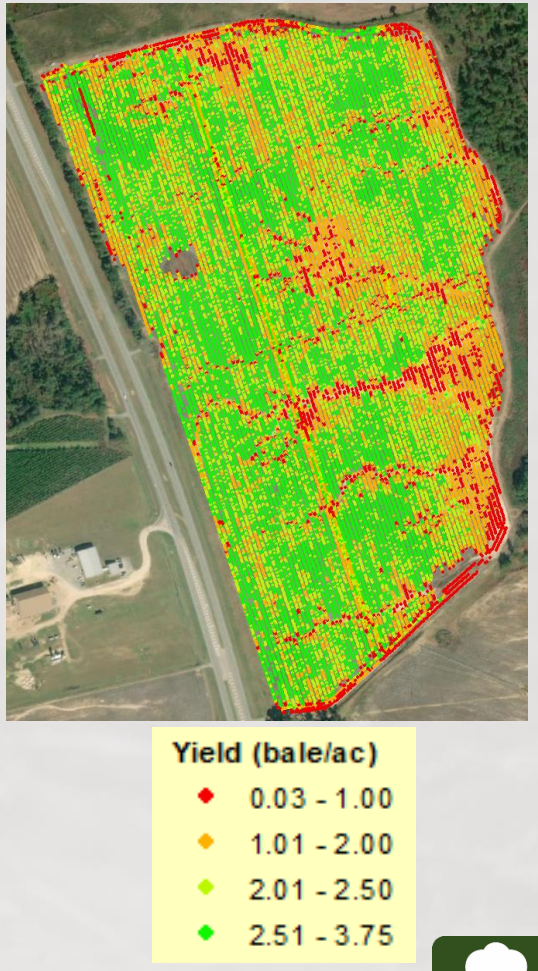








Luke Fuhrer & Wes Porter



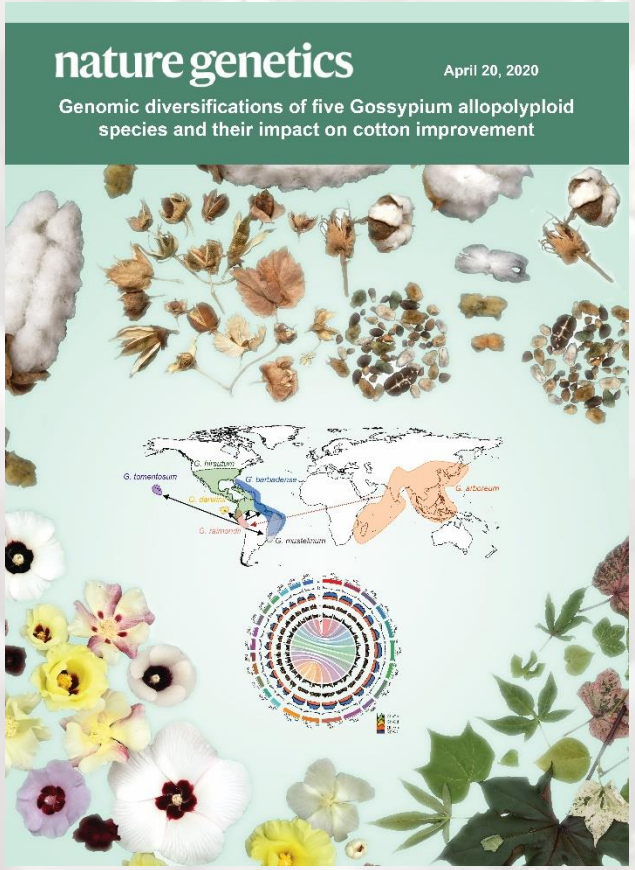
Challenges in the western cotton belt

- FOV4
  - Density of FOV4 and isolate contribute to pathogen virulence
    - Detection is difficult in early stages
    - Differences among CA and TX isolates
  - Root knot nematode and other pathogens increase risk of FOV4 damage
  - Some resistance development in Upland germplasm
  - Enhancing collaborative efforts to address gaps in pathogen understanding

Challenges in the western cotton belt

- Reniform nematode
  - Thresholds for nematodes differ in drier regions making management more imperative
  - Highly virulent populations of Reniform present in some areas of Texas
  - Single gene resistance – variety trials indicating stable to date
  - Continued need for host resistance development

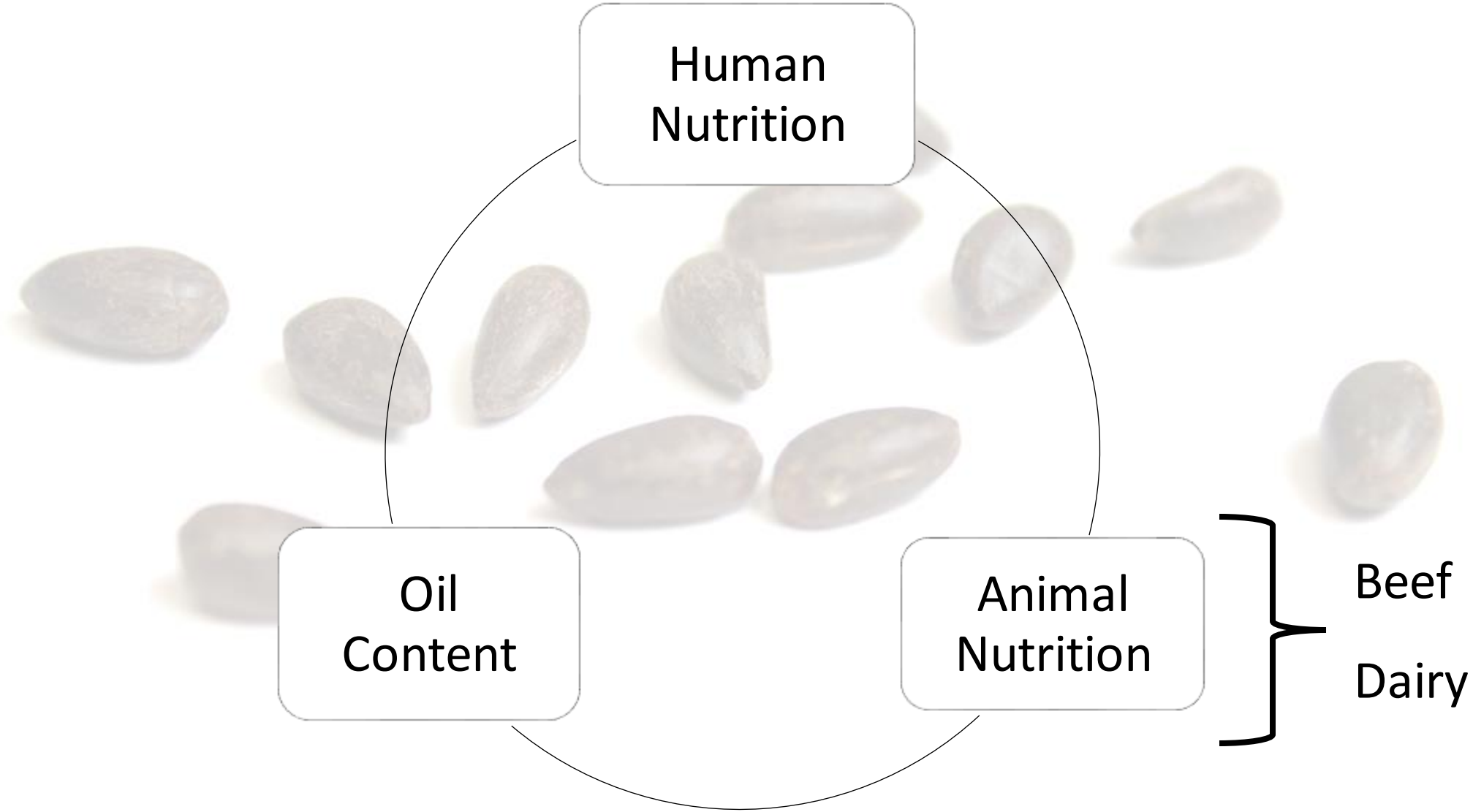
Application of Genomics will be Critical



5 Reference Grade Tetraploids

- Resistance to Diseases(e.g. FOV4) and nematodes delivered through advanced breeding solutions
- New germplasm & breeding tools such as PanGenome, NAM and CRISPR gene editing
- Fiber of the Future to enhance understanding of genes that impact fiber and seed improvement
- Extremely sensitive pest detection
- Area for high leveraging grower investments

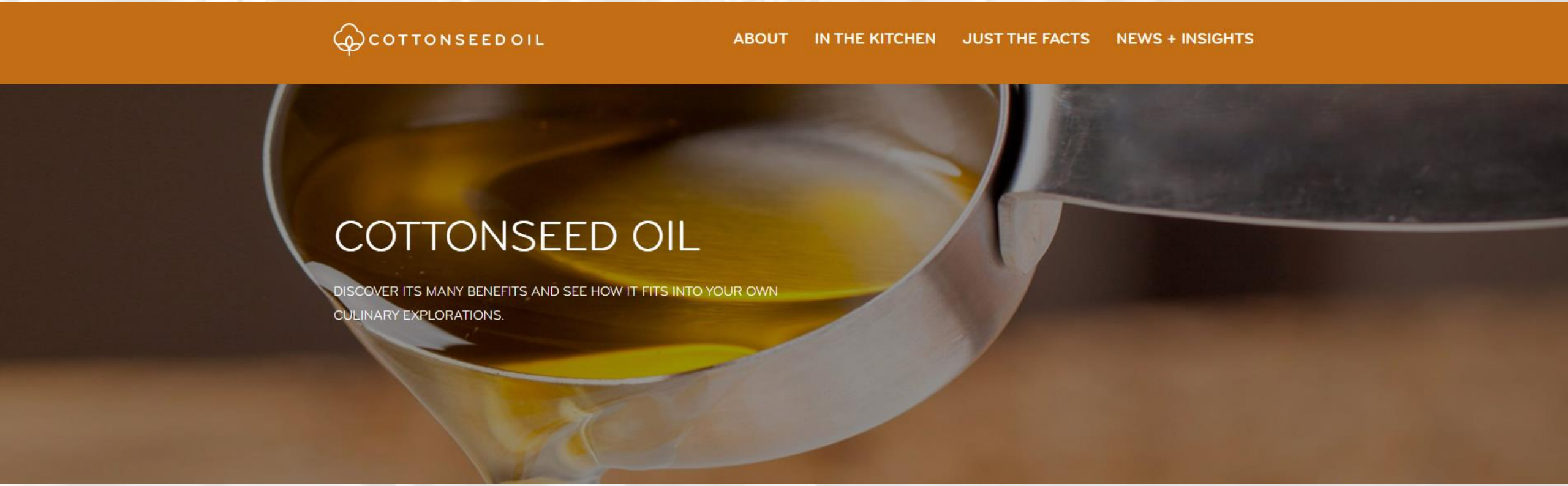
Cottonseed Research



Cottonseed Coproduct Utilization

- A growing body of research showing how cottonseed oil may help improve cholesterol levels
- Opportunity to learn more and to better understand cottonseed oil consumption

Cottonseedoil.org



Cotton Cultivated

OPERATIONS INDUSTRY RESOURCE DIRECTORY ABOUT FORUMS CONTACT

Grow your crop and your business with the right resources, right at your fingertips.

Select a category below to get started.

PRODUCTION MARKET REGION SEASON MY FEED

Thank you!

Gaylon Morgan
Gmorgan@cottoninc.com
919-678-2370

Leadership

William Kimbrel - Executive Vice President and Chief Operating Officer

Ryan Kurtz - Vice President, Agricultural and Environmental Research
Cotton Incorporated

US Cotton's Sustainability Goals for 2025

13% Increase in **Land Use Efficiency**

15% Reduction in **Energy Use**

50% Reduction in **Soil Loss**

39% Reduction in **GHG Emissions**

18% Increase in **Irrigation Water Use Efficiency**

30% Increase in **Soil Carbon**

THE COTTON RESEARCH AND PROMOTION PROGRAM

USDA

- Oversees Program

THE COTTON BOARD

- Collects Assessments
- Administers Program
- Communicates with Stakeholders

COTTON INCORPORATED

- Implements Program
- Conducts Research
- Promotes Cotton to Consumers
- Creates Demand and Profitability


POLY (1,4-CIS-ISOPRENE)
POLY (2-HYDROXYETHYL METHACRYLATE)
POLY (2-HYDROXYPROPYL METHACRYLATE)
POLYACRYLATE
POLYACRYLONITRILE
POLYACRYLONITRILE BUTADIENE STYRENE
POLYACTIDE
POLYALKYD RESINS
POLYALKYL STEREATE/VINYL ACETATE COPOLYMERS
POLYBUTHYLENE/ETHYLENE/STYRENE COPOLYMER
POLYBUTYL ACRYLATE
POLYBUTYL METHACRYLATE
POLYBUTYLENE TERSPHTHALATE
POLYCAPROLACTAM (NYLON 6)
POLYCELLULOSE ACETATE
POLYCELLULOSE NITRATE
POLYCHLOROPRENE
POLYDIMETHYLSILOXANE (SILICONE)
POLYETHYLENEIMINE
POLYETHYLENE-GLYCOL
POLYELASTINE-LIKE POLYPEPTIDE
POLYEPOXY RESINS
POLYETHYL ACRYLATE
POLYETHYL METHACRYLATE
POLYETHYLENE METHYLACTYLATE COPOLYMER
POLYETHYLENE VINYL ACETATE
POLYETHYLENE/ACRYLATE COPOLYMER
POLYETHYLENE/PROPYLENE/STYRENE COPOLYMER
POLY (ε-CAPROLACTONE)
POLYFORMALDEHYDE (OXYMETHYLENE)
POLYGLYCOLIC ACID
POLYISOBORNYL ACRYLATE
POLYISOBUTYL METHACRYLATE
POLYISOBUTYLENE
POLYISOPRENE
POLYLACTIC ACID
POLYLAUROLACTAM (NYLON 12 OR AMIDE-12)
POLYLAURYL METHACRYLATE
POLYMETHACRYLATED HYALURONIC ACID
POLYMETHACRYLONITRILE
POLYMETHYL ACRYLATE
POLY (N-HEXYL METHACRYLATE)
POLY (N-ISOPROPYLACRYLAMIDE)
POLYOCTYL METHACRYLATE
POLYPENTAERYTHRITYL TEREPHTHALATE
POLYPROPYL ACRYLATE
POLYPROPYL METHACRYLATE
POLYPROPYLENE OXIDE
POLYPROPYLENE TEREPHTHALATE
POLYSTEARYL METHACRYLATE
POLYSTYRENE
POLYSTYRENE/ACRYLATE COPOLYMER
POLYTETRAFLUOROETHYLENE (TEFLON)
POLYTETRAHYDROFURAN
POLYTRIMETHYLSILOXYSILICATE (SILICONE RESIN)
POLYURETHANE
POLYVINYL ACETATE
POLYVINYL ALCOHOL
POLYVINYL CHLORIDE
POLYVINYLIDENE CHLORIDE
POLYVINYLPOLYPYRROLIDON
ETHYLENE VINYL ALCOHOL COPOLYMER
POLYISOBORNYL METHACRYLATE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