

# Advancing Digital Agriculture and Conservation: A Virtual, Multi-Day Policy Workshop



# Farm Foundation

*Farm Foundation is an accelerator of practical solutions for agriculture. Our mission is to build trust and understanding at the intersections of agriculture and society. We accomplish this by leveraging non-partisan objective dialogue, information and training, catalyzing solutions and creating multi-stakeholder collaboration. Our vision is to build a future for farmers, our communities and our world.*

*Since 1933, we have connected leaders across agricultural sectors—farming, business, academia, organizations and government.*

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Workshop made possible with the generous support of our sponsors and organizers:



Cornell Initiative for Digital Agriculture (CIDA)



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# Advancing Digital Agriculture and Conservation: A Virtual, Multi-Day Policy Workshop

- During the webinar, participant audio will be muted.
- Participants can submit questions by clicking on the Q & A button at the bottom of their screens.
- When submitting questions, please include your name and company so questions may be contextually understood.
- Due to time limits, the moderator may not be able to ask all questions submitted.
- This webinar is being recorded and will be posted on our website at [farmfoundation.org](https://farmfoundation.org).
- If there are any connectivity issues during the webinar, we ask that you stay on the webinar as those generally rectify themselves after a few moments.



# Advancing Digital Agriculture and Conservation: A Virtual, Multi-Day Policy Workshop



**Steven Wolf**

Cornell University



**Katherine Baylis**

University of Illinois

**Moderator**



**Jonathan Coppess**

University of Illinois

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# Workshop Objectives

*Advance policy dialogue to realize the potential of data applied to the challenges of conservation in agriculture*

- How can policy support development and application of tools that advance conservation?
- What opportunities do new tools present for policy changes?



# Workshop Objectives

## *Strengthen the science-policy interface*

- Articulate a policy-research agenda
- Networking among researchers, research administrators, and people that use research in their work

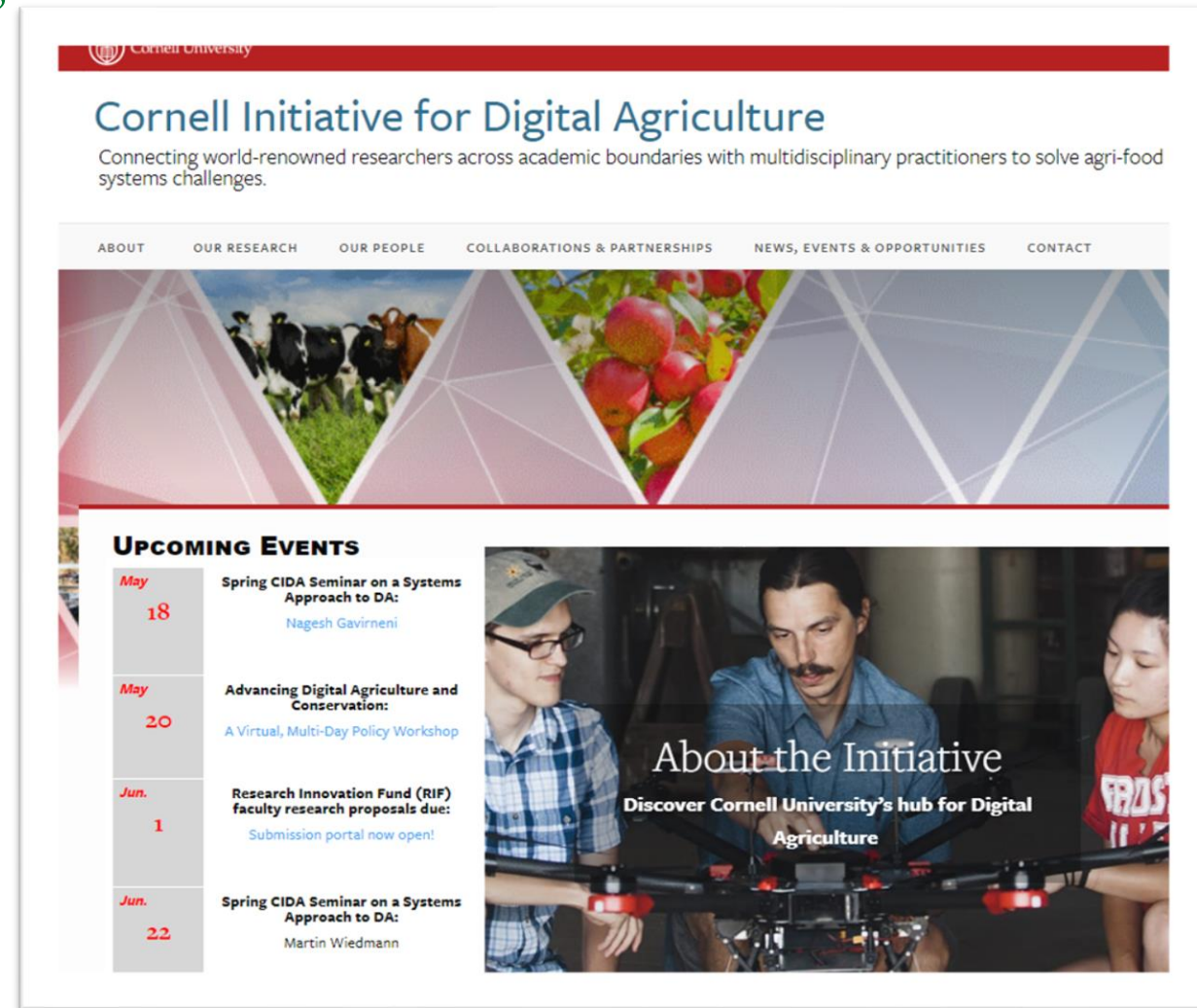




# Cornell Initiative for Digital Agriculture

<https://www.digitalagriculture.cornell.edu/>

- Over 100 faculty from 5 colleges
- Annual Digital Agriculture Hackathon
- Research Innovation Fund
- Curriculum
- External partnerships



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# Session One: Risks and Opportunities of Digital Agriculture for Environmental Conservation

## Panelists



**Jason Weller**

Vice President of Truterra,  
Land O'Lakes



**Charles Baron**

Chief Innovation Officer  
and Co-Founder,  
Farmers Business Network

# Jason Weller

Vice President of Truterra,  
Land O'Lakes



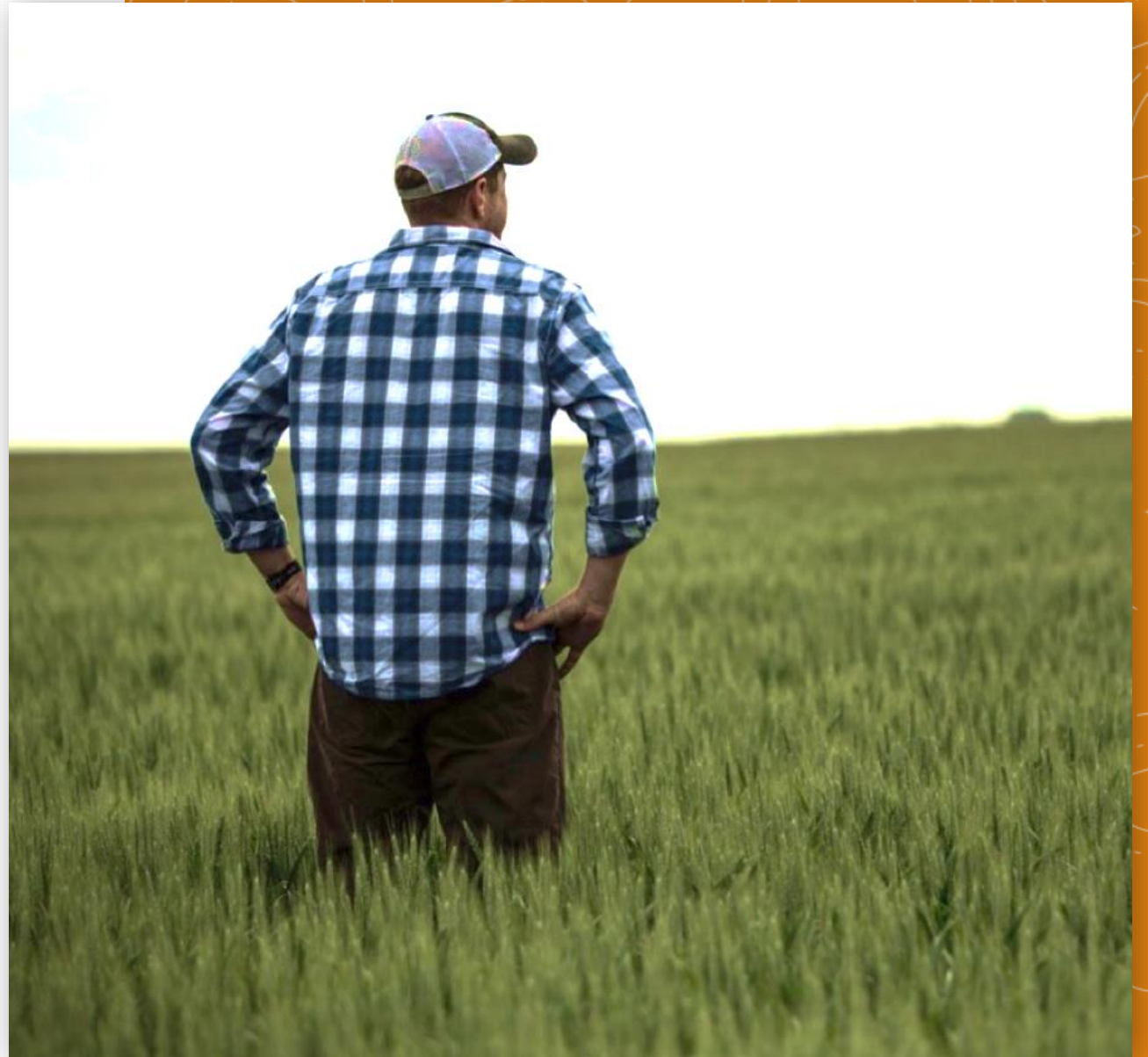
Weller joined Land O'Lakes, Inc., in 2017 where he serves as the Vice President of Truterra, leading the team that is generating conservation solutions for the farmer cooperative's members and owners. He previously served as Chief of USDA's Natural Resources Conservation Service, the nation's largest working lands conservation organization. Prior to serving as Chief, Jason served on the U.S. House Appropriations subcommittee on Agriculture, the U.S. House Budget Committee, and in the White House Office of Management and Budget. He and his family live in Minnesota and he's proud that his young daughters are 6th generation Minnesotans.



# Unlocking the Potential of Precision Stewardship

Digital Ag Promise or Peril?

TRUTERRA



# Diminishing Returns

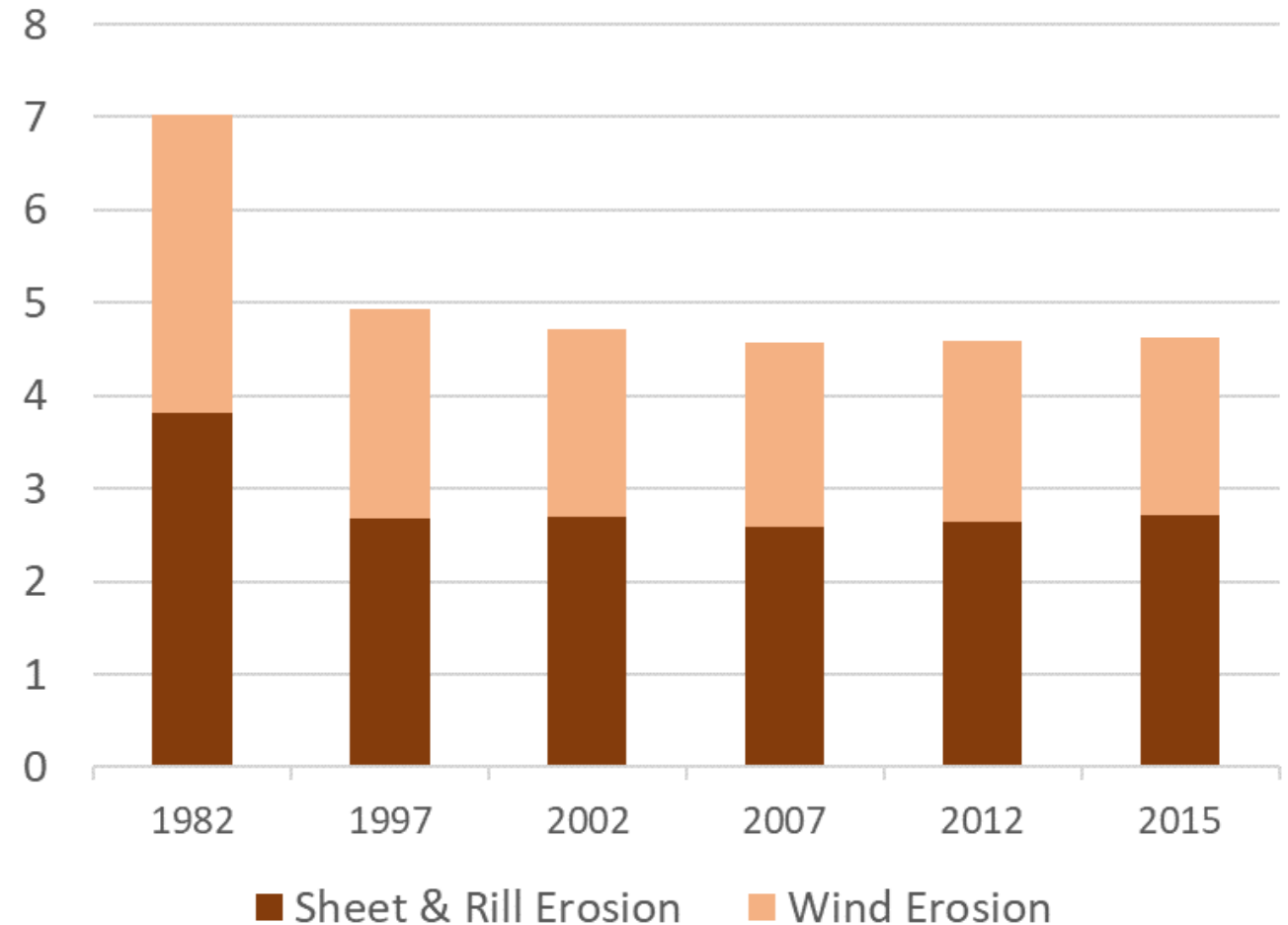
Why?

How do we advance results?

Source: U.S. Department of Agriculture. 2018. *Summary Report: 2015 National Resources Inventory*, Natural Resources Conservation Service, Washington, DC, and Center for Survey Statistics and Methodology, Iowa State University, Ames, Iowa.

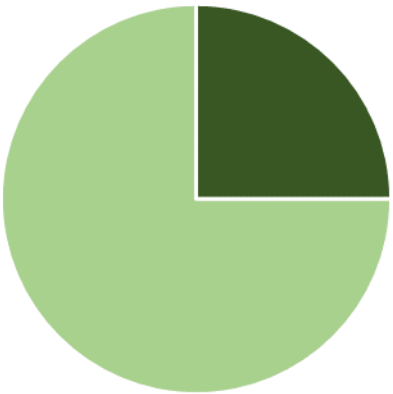
## Erosion Rate on Cropland

Tons per Acre per Year

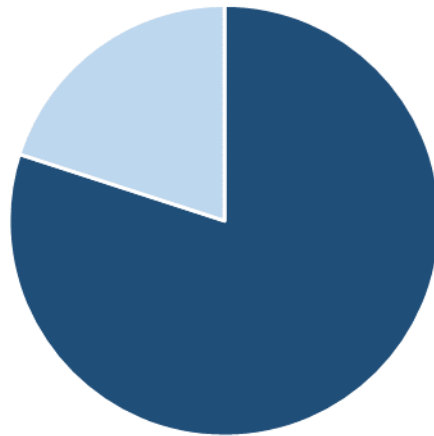


# “80 / 20” Rule of Thumb

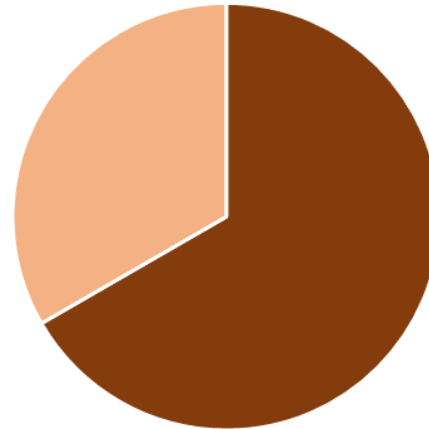
Percent Vulnerable Acres  
in Watershed



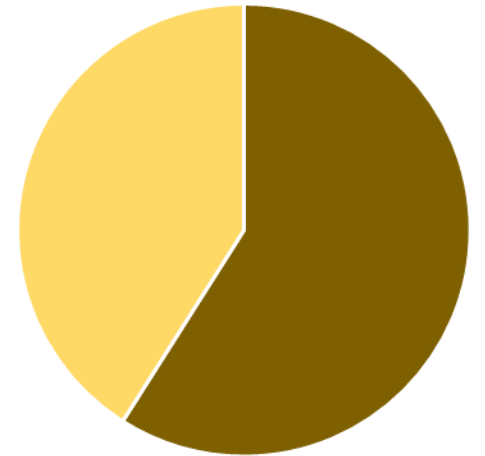
Sediment Loss



Phosphorus Surface Loss



Nitrogen Surface Loss



Source: U.S. Department of Agriculture, Natural Resources Conservation Service. 2016. Effects of Conservation Practice Adoption on Cultivated Cropland Acres in Western Lake Erie Basin, 2003-06 and 2012.



# Precision Stewardship

Manage Acres for Potential . . . and Risk



Nitrogen Use Efficiency



Water Erosion



Profitability

# Challenges with Adoption

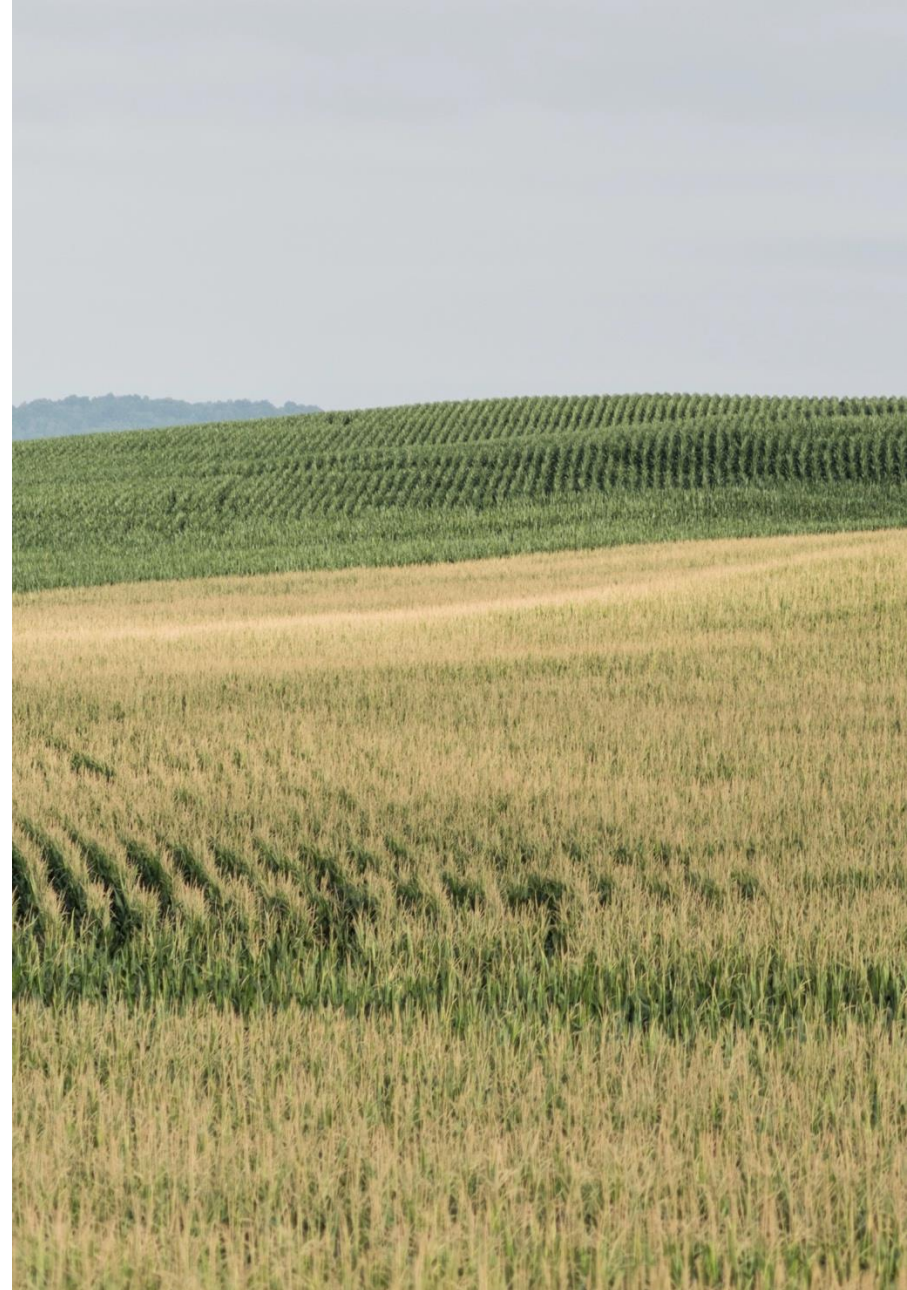
Value proposition

Trust

Tech Adoption

Expense

Segmentation





# Risks

**Regulatory**

**Others Profit**

**Over Promise**

**Over Complicate**

**Credibility**



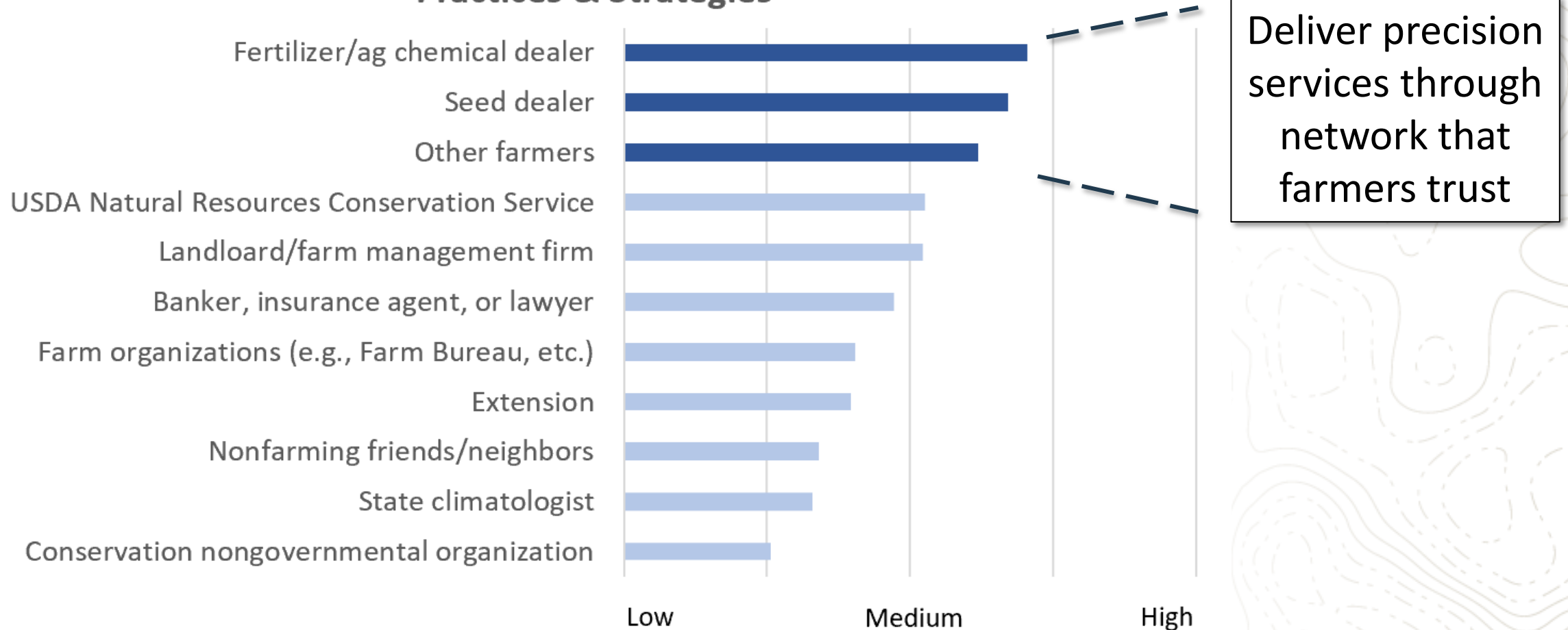


# **THE ONLY FARMER-OWNED AND FARMER-DRIVEN SUSTAINABILITY PROGRAM IN THE U.S.**

Truterra™ Platform connects agriculture with precision conservation results.

# Where farmers turn for advice & support

## Influence of Ag Stakeholders on Farmers' Decisions about Ag Practices & Strategies



# Today

Truterra™ Insights Engine is the industry-leading precision stewardship platform – generating field-by-field insights and opportunities to advance economic and environmental performance

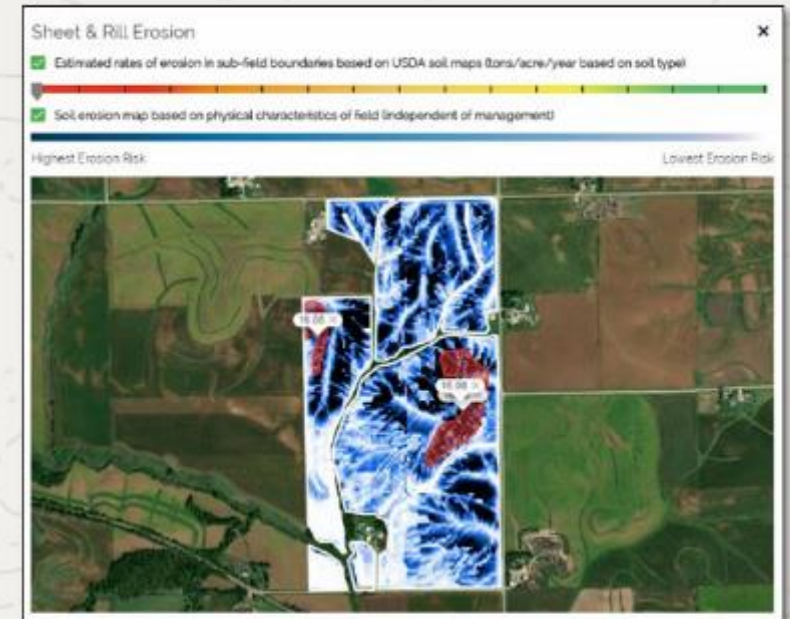
## Stewardship Score



## Profit Insights

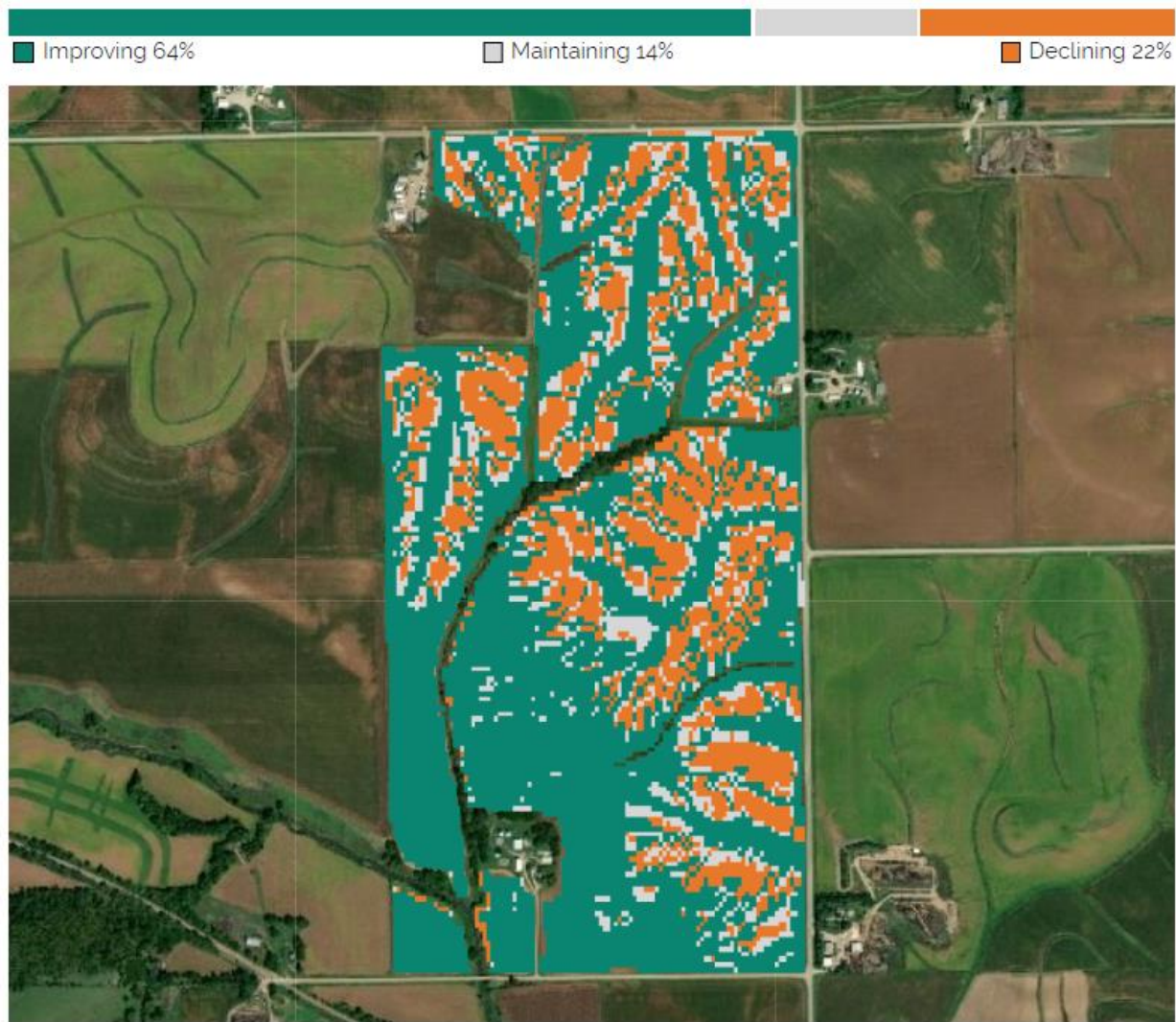


## Precision Soil Insights

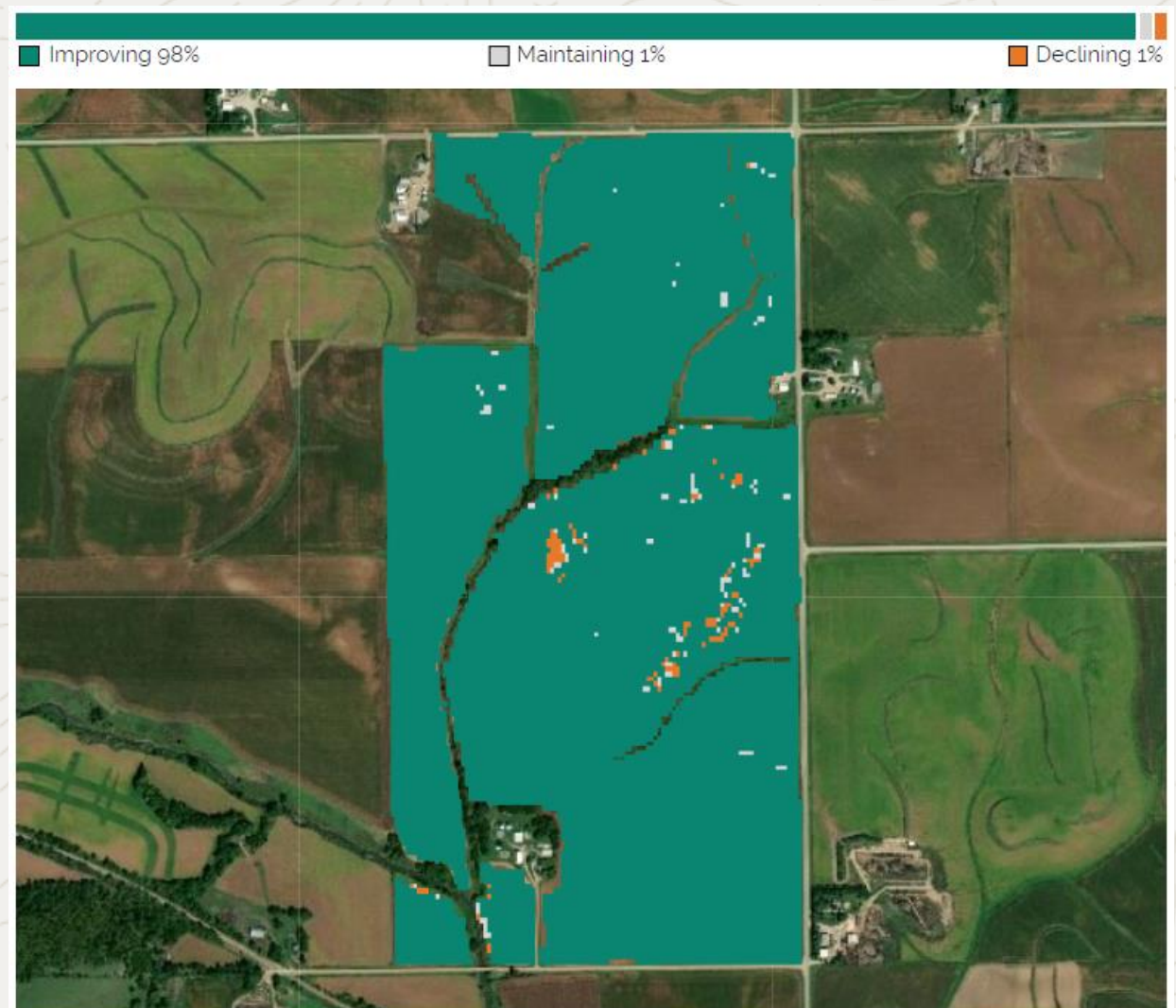




# Conventional Till

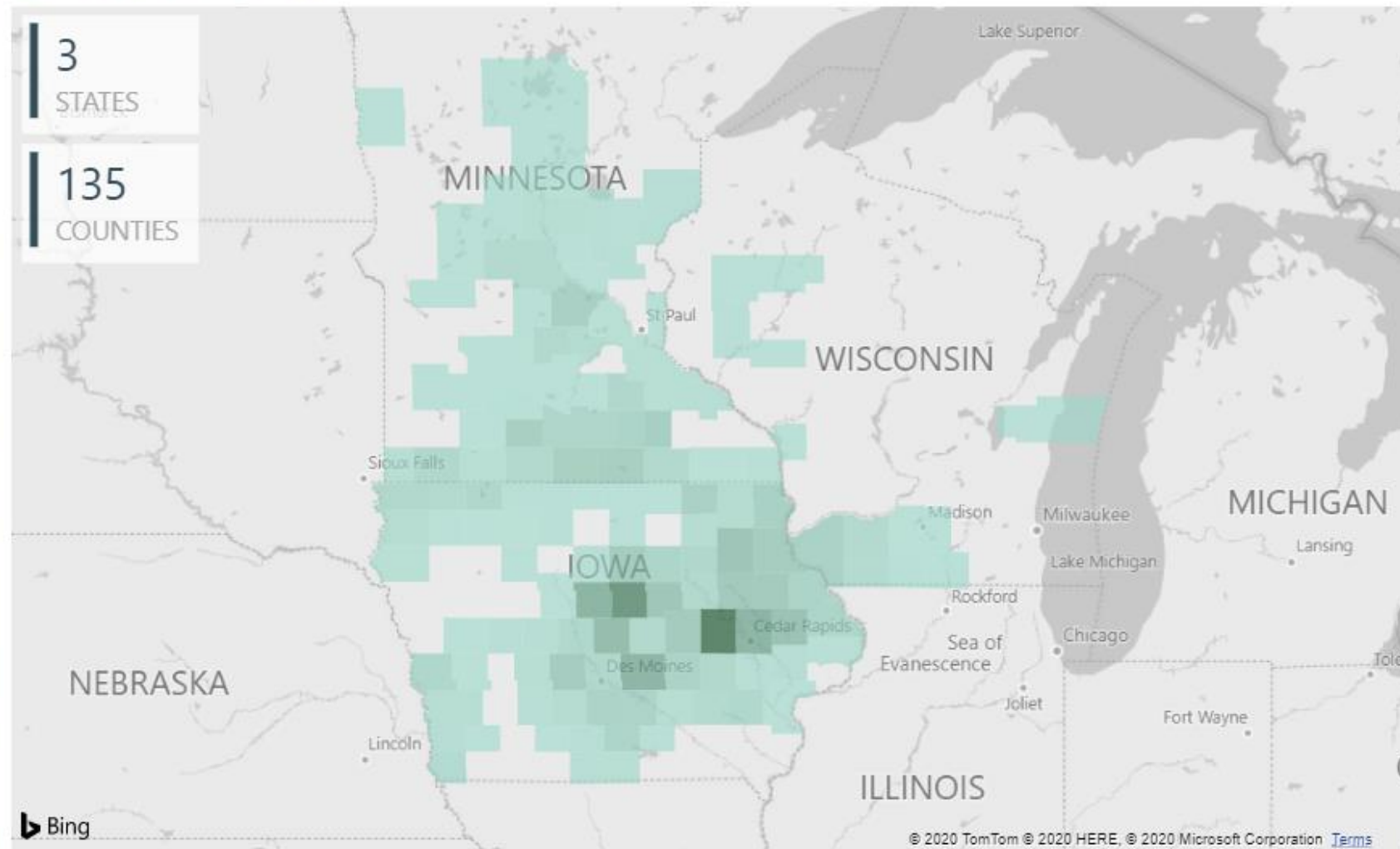


# Reduced Till

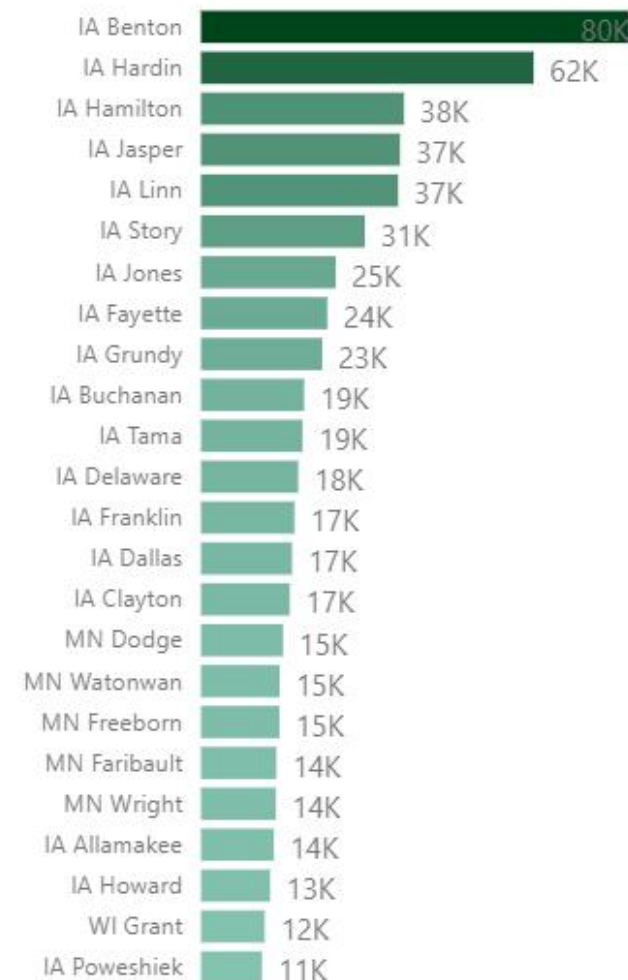




## ACRES BY COUNTY



## TOP COUNTIES BY ACRES

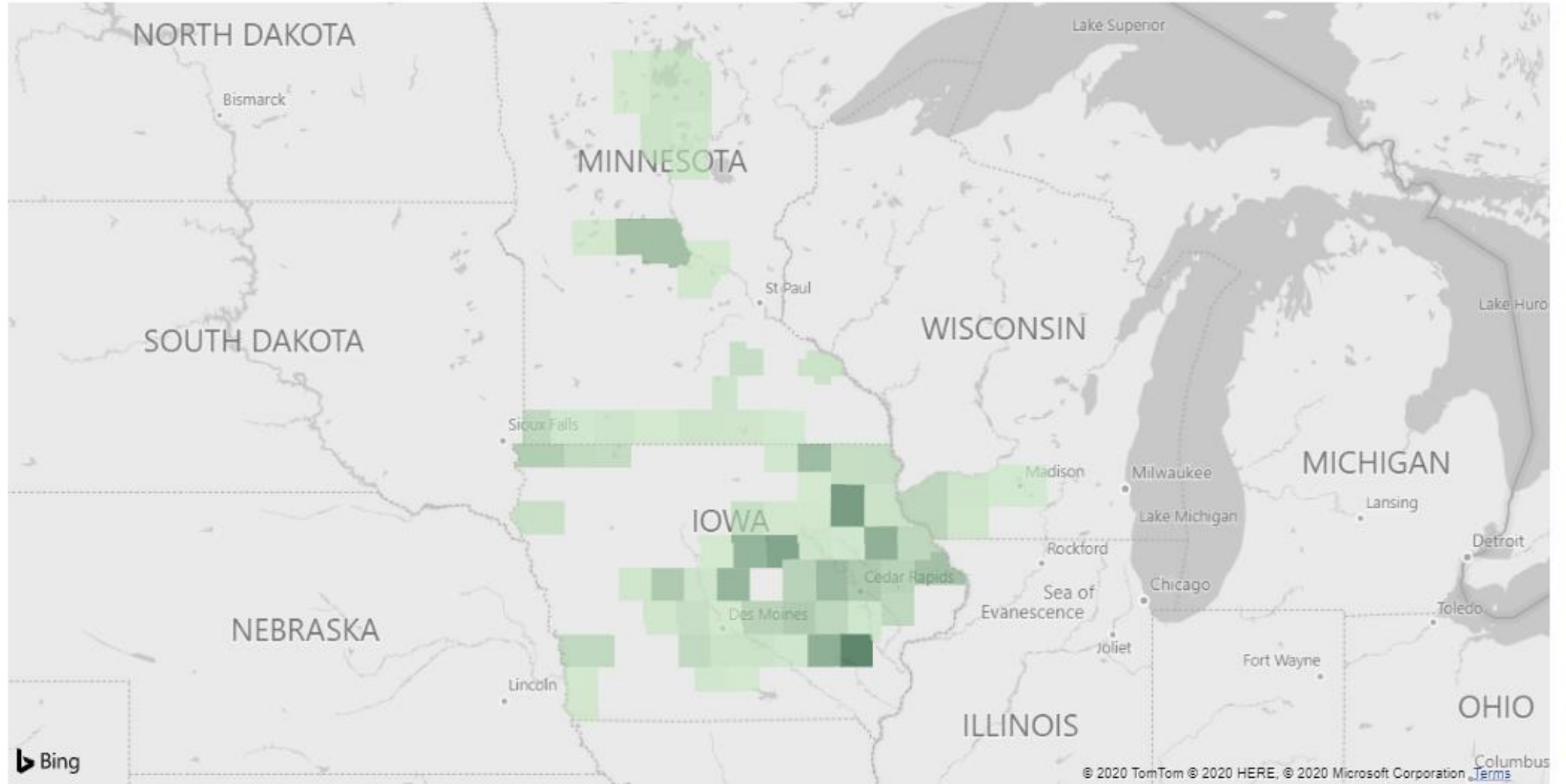


# TRUTERRA™ 2019 COVER CROPS

COVER CROPS

ACRES USING COVER CROPS

● No ● Yes



LAST REFRESHED 5/17/2020 9:13 AM



24 OF 26 PRACTICES IN USE

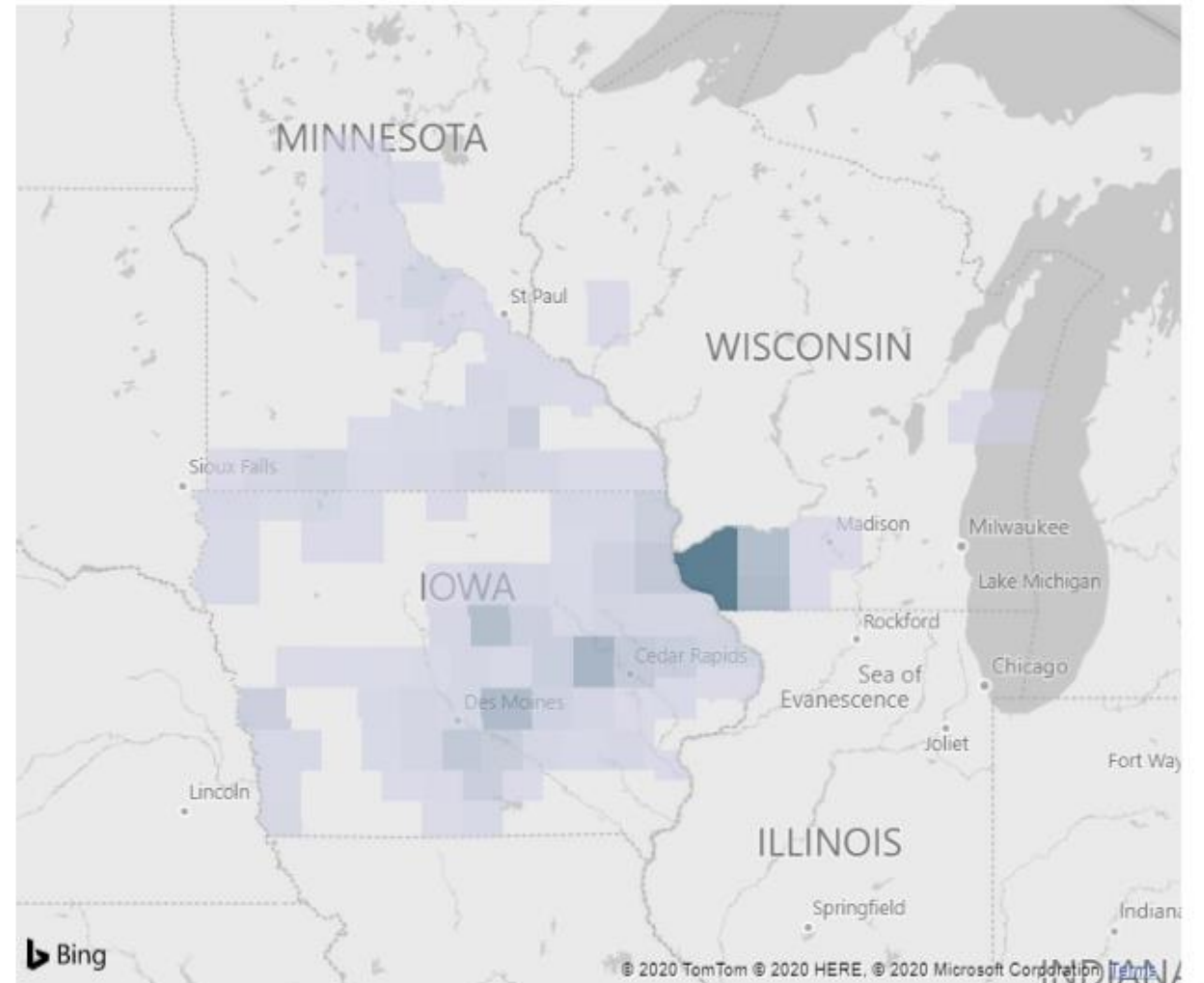
15,555

TOTAL PRACTICES IN USE

## PRACTICE USAGE (BY COUNT AND % OF FIELDS)

| Practice                                      | Count | % of Fields |
|---|-------|-------------|
| Grassed Waterway                              | 7,129 | 53%         |
| Terrace                                       | 1,416 | 11%         |
| Field Border                                  | 1,127 | 7%          |
| Amending Soil Properties with Gypsum Produ... | 1,027 | 6%          |
| Sediment Basin                                | 1,013 | 6%          |
| Conservation Cover                            | 675   | 5%          |
| Contour Farming                               | 516   | 4%          |
| Filter Strip                                  | 535   | 3%          |
| Contour Buffer Strips                         | 363   | 3%          |
| Controlled Traffic Farming                    | 501   | 2%          |
| Strip Cropping                                | 274   | 2%          |
| Windbreak/Shelterbelt Establishment           | 268   | 2%          |
| Pond  | 290   | 2%          |
| Vegetative Barrier                            | 80    | 1%          |
| Riparian Forest Buffer                        | 104   | 1%          |
| Drainage Water Management                     | 71    | 1%          |

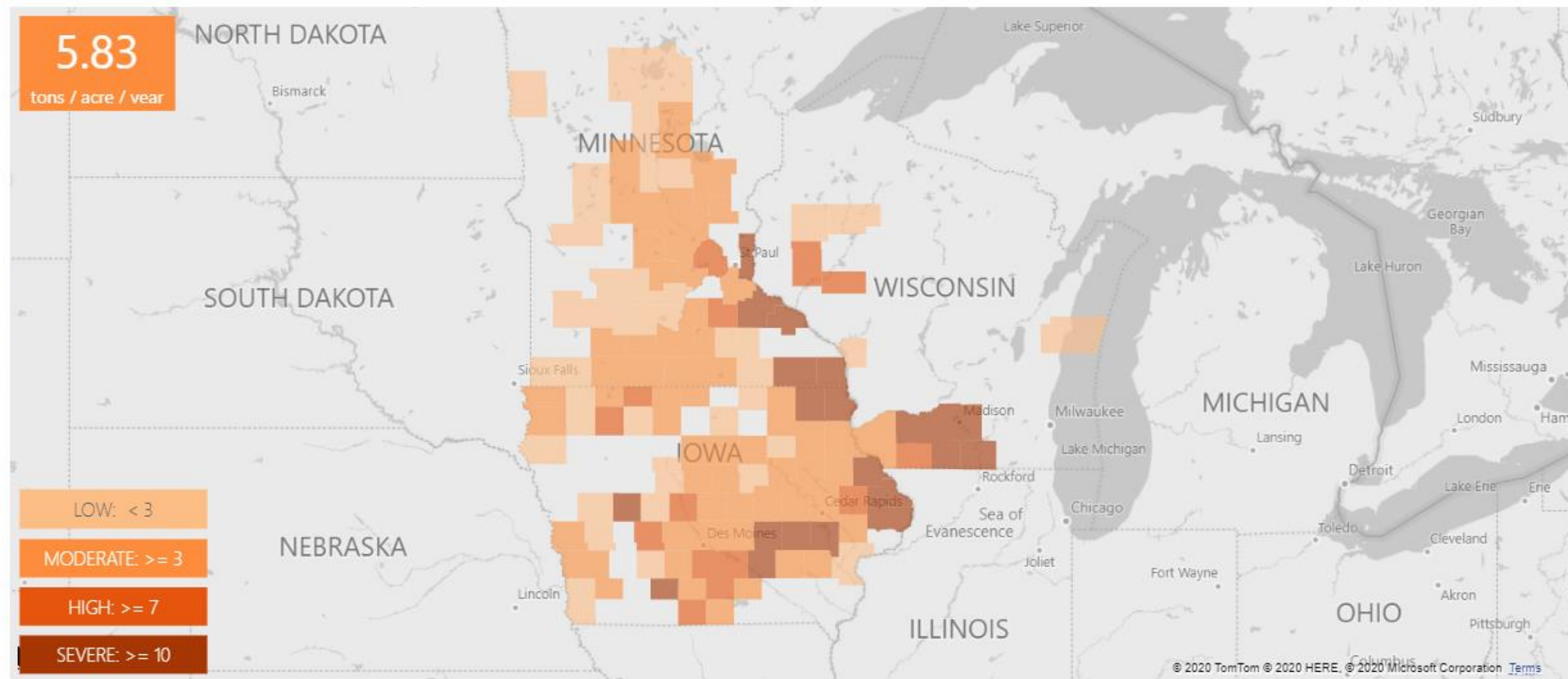
## TOTAL PRACTICES IN USE BY COUNTY







## AVERAGE HIGHEST EROSION BY COUNTY





**THANK YOU**



# Charles Baron

Chief Innovation Officer and Co-Founder  
Farmers Business Network



Baron guides the development of the breakthrough farmer-to-farmer network. Previously, Charles was a program manager at Google where he started and led product, investment and research initiatives in advanced energy technologies. Charles' passion for farming developed after working a corn harvest on his brother-in-law's farm in Arapahoe, Nebraska, prior to joining Google. Charles earned a bachelor's degree from Dartmouth and an MBA from Harvard with coursework at MIT.





# RISKS & OPPORTUNITIES

## THE POTENTIAL OF DIGITAL AG & CONSERVATION



# STRENGTH IN NUMBERS

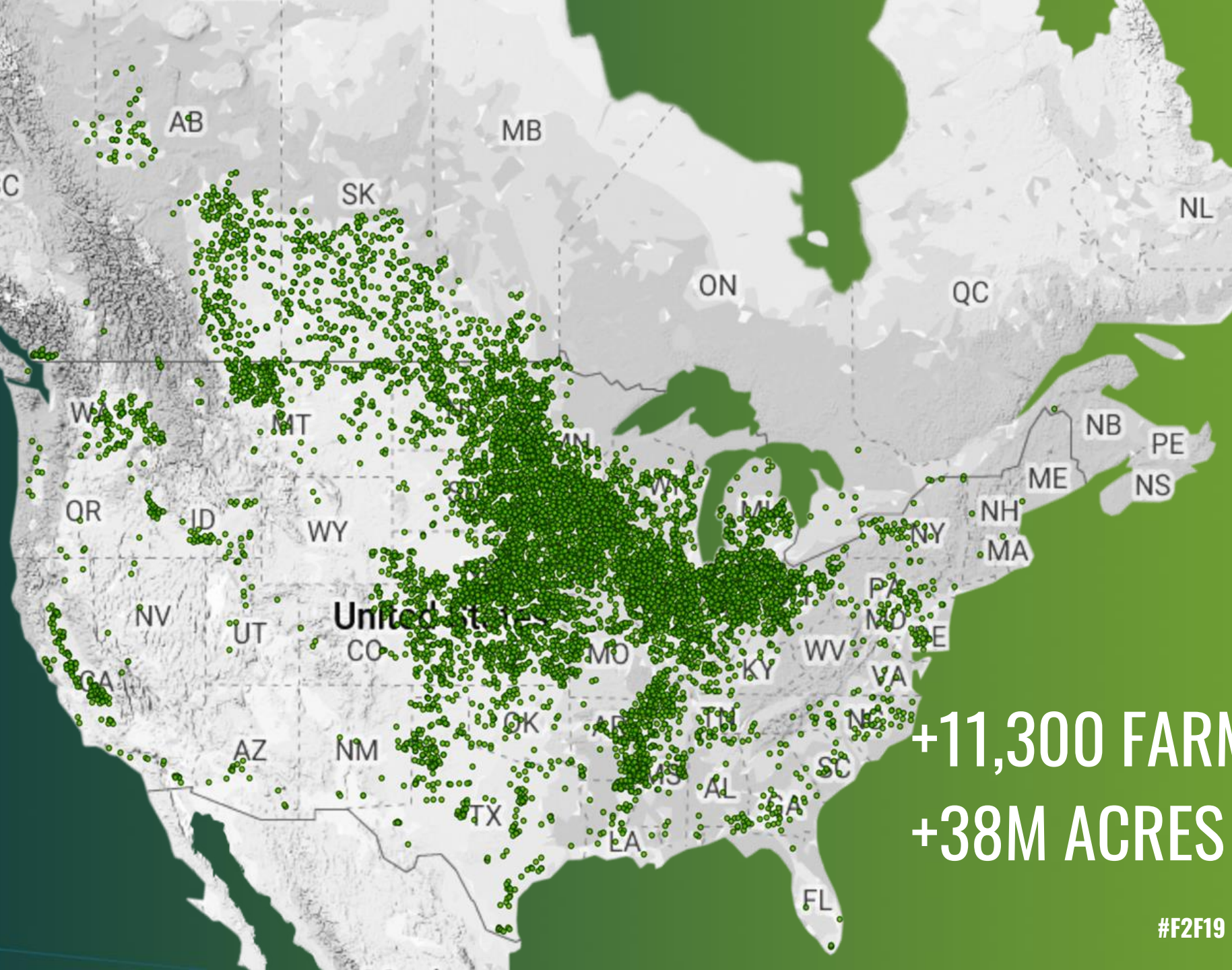
*Farmers First*® Network  
for information & pricing



All Trademarks Property of Respective Owners



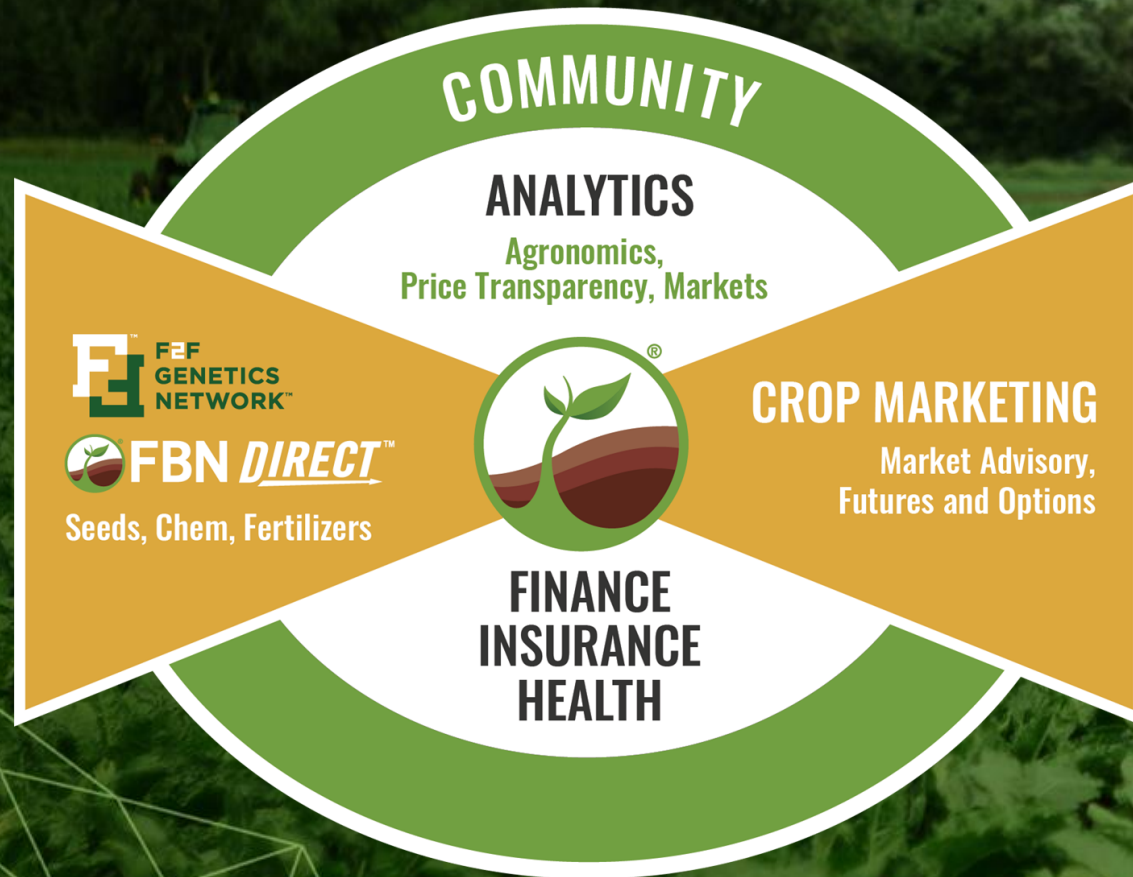
# THE FBN NETWORK



**+11,300 FARMS**  
**+38M ACRES**



# FBN FARM ROI SYSTEM



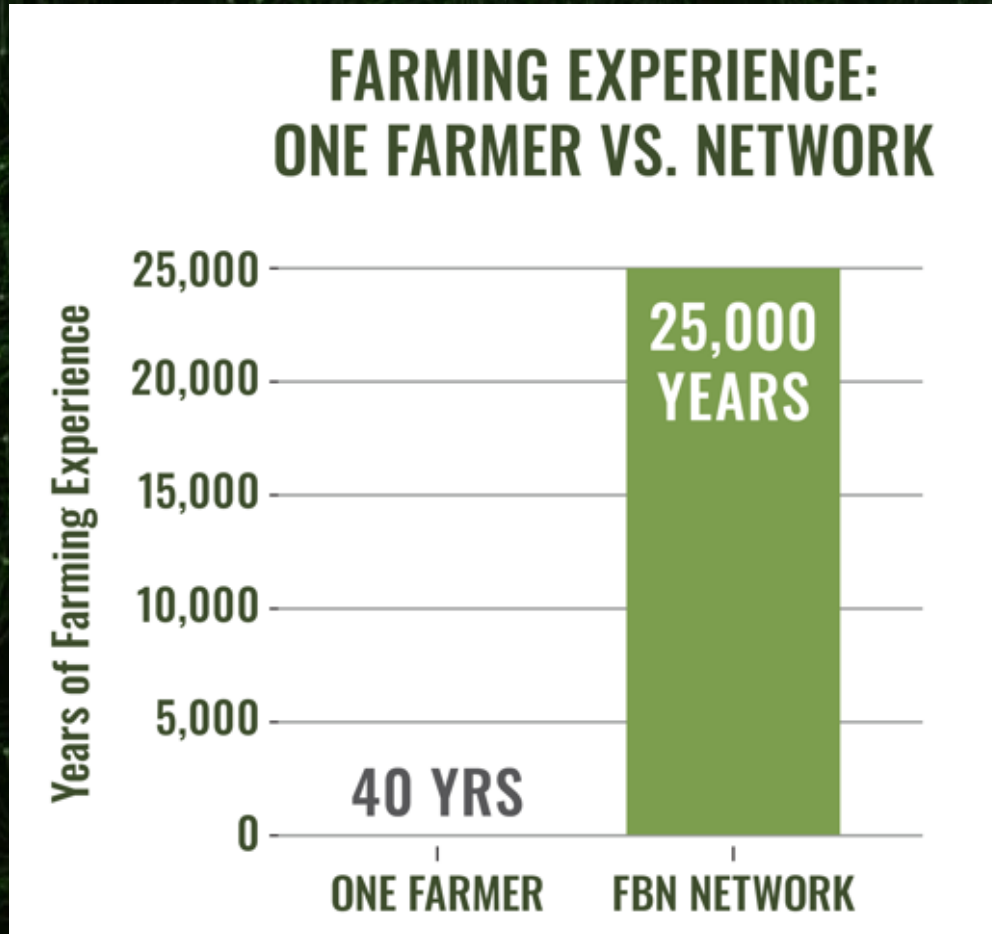


# WHAT IF YOU HAD A 230M ACRE PLOT TRIAL?



# NETWORK ANALYTICS

## LEARN FASTER

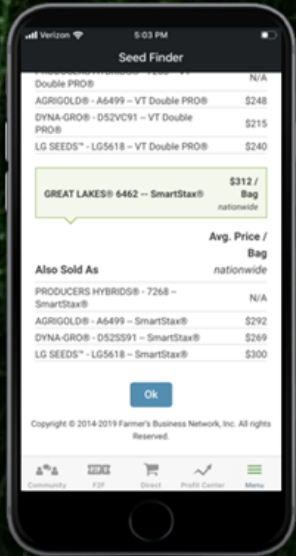


**25,000  
YEARS  
OF EXPERIENCE**



# SEED FINDER

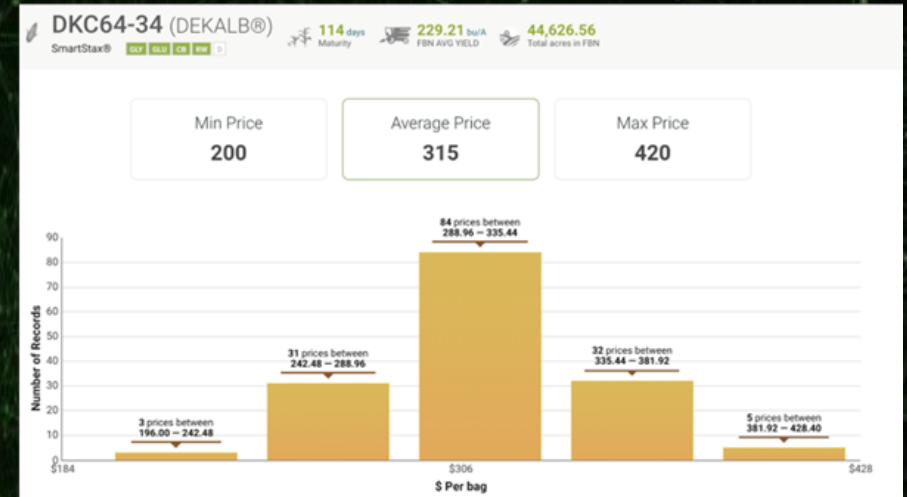
RELABELING



PERFORMANCE



PRICE TRANSPARENCY

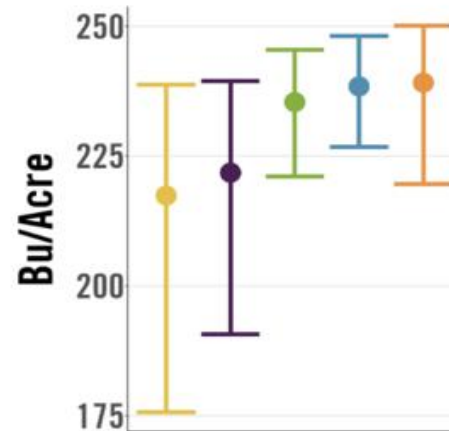


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# AUTOMATED STRIP TRIALS

| Treatment Summaries (field edges excluded) |                           |  |                           |
|--|---------------------------|--|---------------------------|
| Color                                      | Median Yield<br>(Bu/Acre) | Product Name(s)                                    | Median Rate<br>(Gal/Acre) |
| Orange                                     | 239.1                     | 29-0-0-3   Boron 10%   Agrotain Ultra   Fertilizer | 31                        |
| Blue                                       | 238.4                     | 29-0-0-3   Boron 10%   Agrotain Ultra   Fertilizer | 35                        |
| Green                                      | 235.4                     | 29-0-0-3   Boron 10%   Agrotain Ultra   Fertilizer | 28                        |
| Purple                                     | 221.8                     | 29-0-0-3   Boron 10%   Agrotain Ultra   Fertilizer | 23                        |
| Yellow                                     | 217.4                     | 29-0-0-3   Boron 10%   Agrotain Ultra   Fertilizer | 19                        |



CHEM

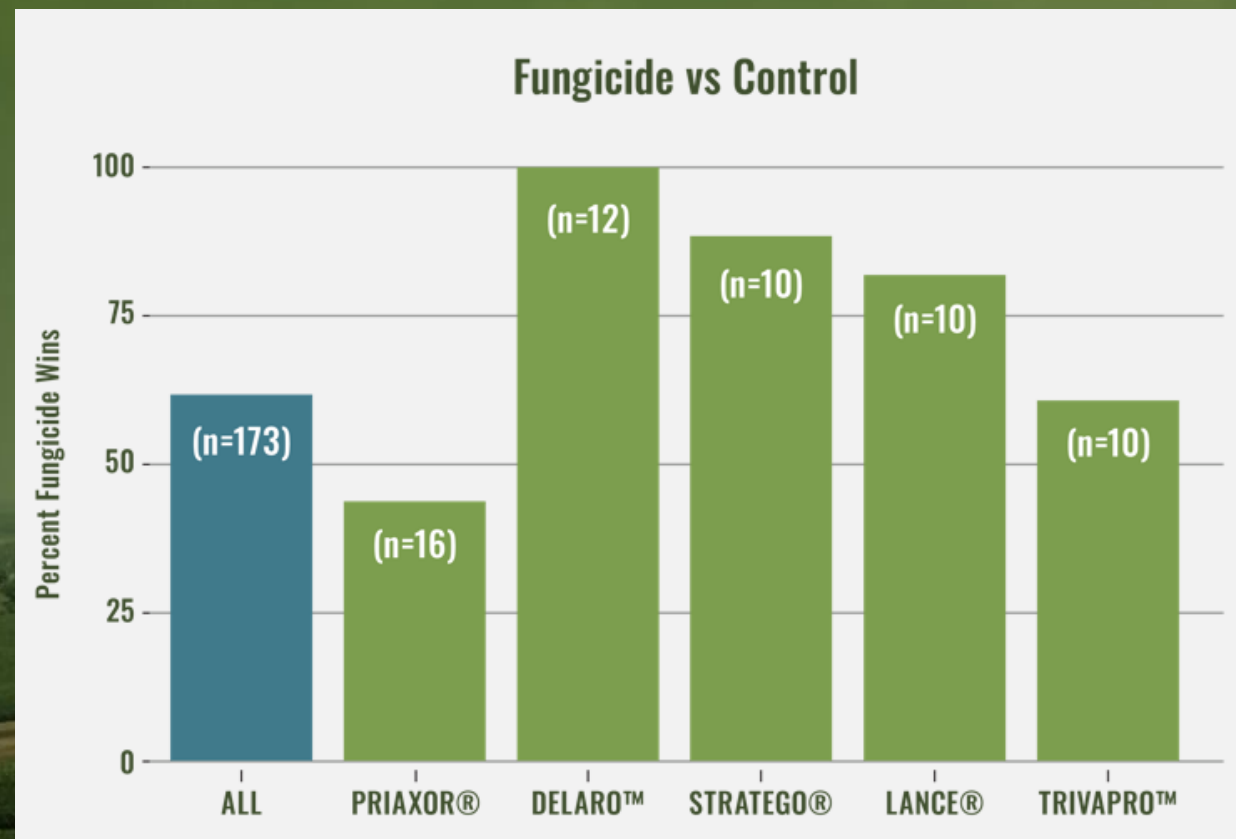
FERTILIZER

SEED

AGROTAIN Ultra is a registered trademark of Koch Agronomic Services LLC.



# AUTOMATED STRIP TRIALS = NETWORK CHEM & FERT ANALYTICS



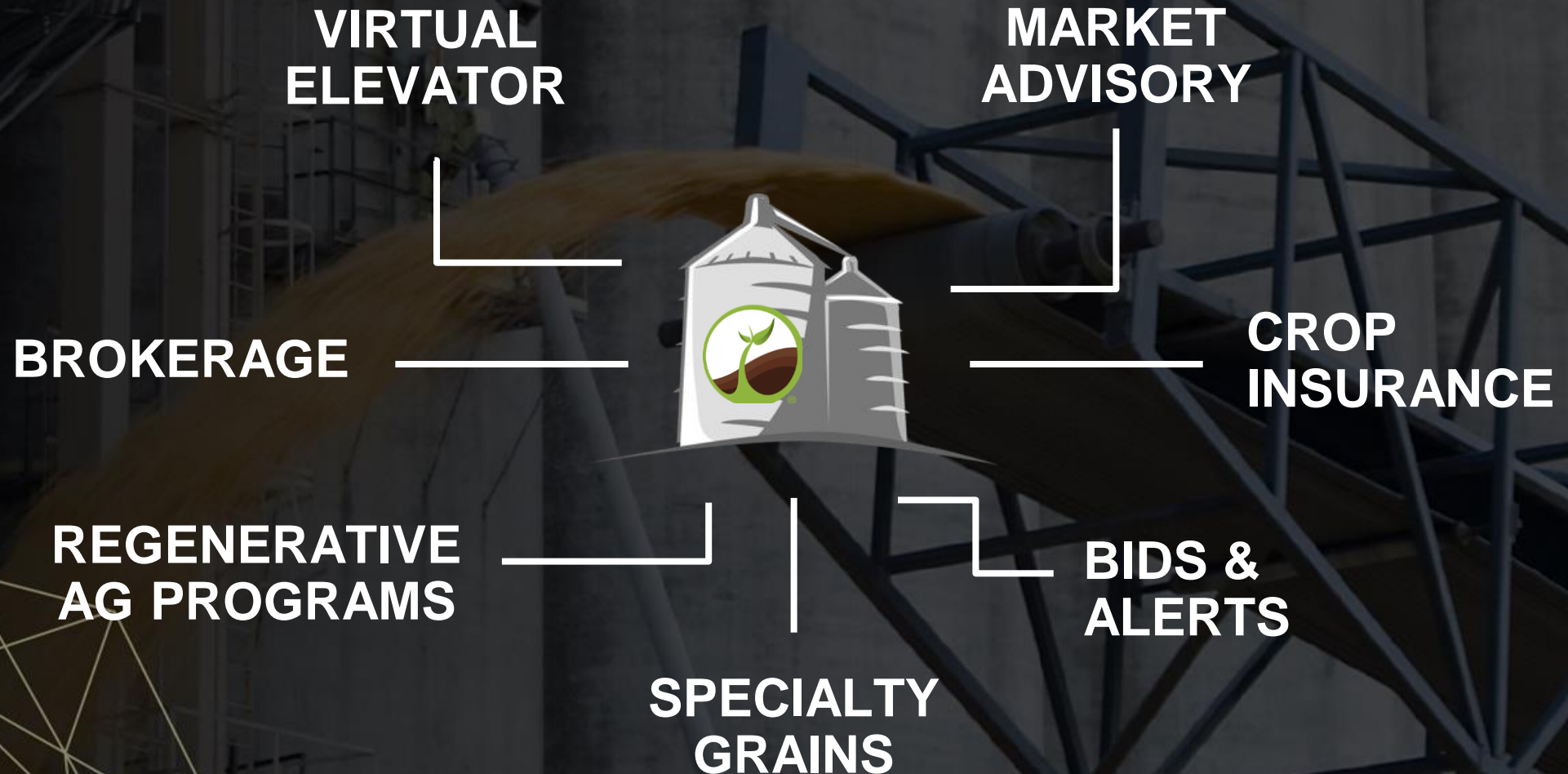
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# THE FBN GENETICS NETWORK VISION





# COMPREHENSIVE FARMER SERVICES





# OPPORTUNITY

- The creation of a system that provides growers with economically better outcomes while delivering conservation & sustainability benefits.
  - Enabling farmers to differentially market based on their attributes
  - Enabling food manufacturers to "purchase" regenerative attributes at scale
  - Enabling consumers to know their food



# RISKS

- CPG premiums, can we really get meaningful premiums for producers?
- No unified definition of “sustainable” or “regenerative”
- No standardized soil data test & reporting system
- No clearinghouse of field data, at scale.



# REGENERATIVE AG GETTING PAID FOR PRACTICES





# SUSTAINABILITY IS TOP OF MIND

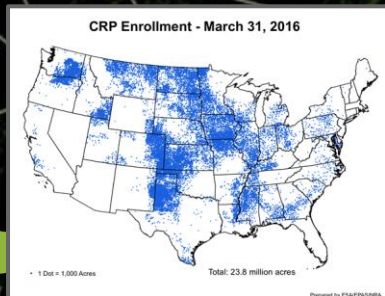
GROWERS: ECONOMICS & SOIL



Planting Strategy



Application Plan



Field Allocation

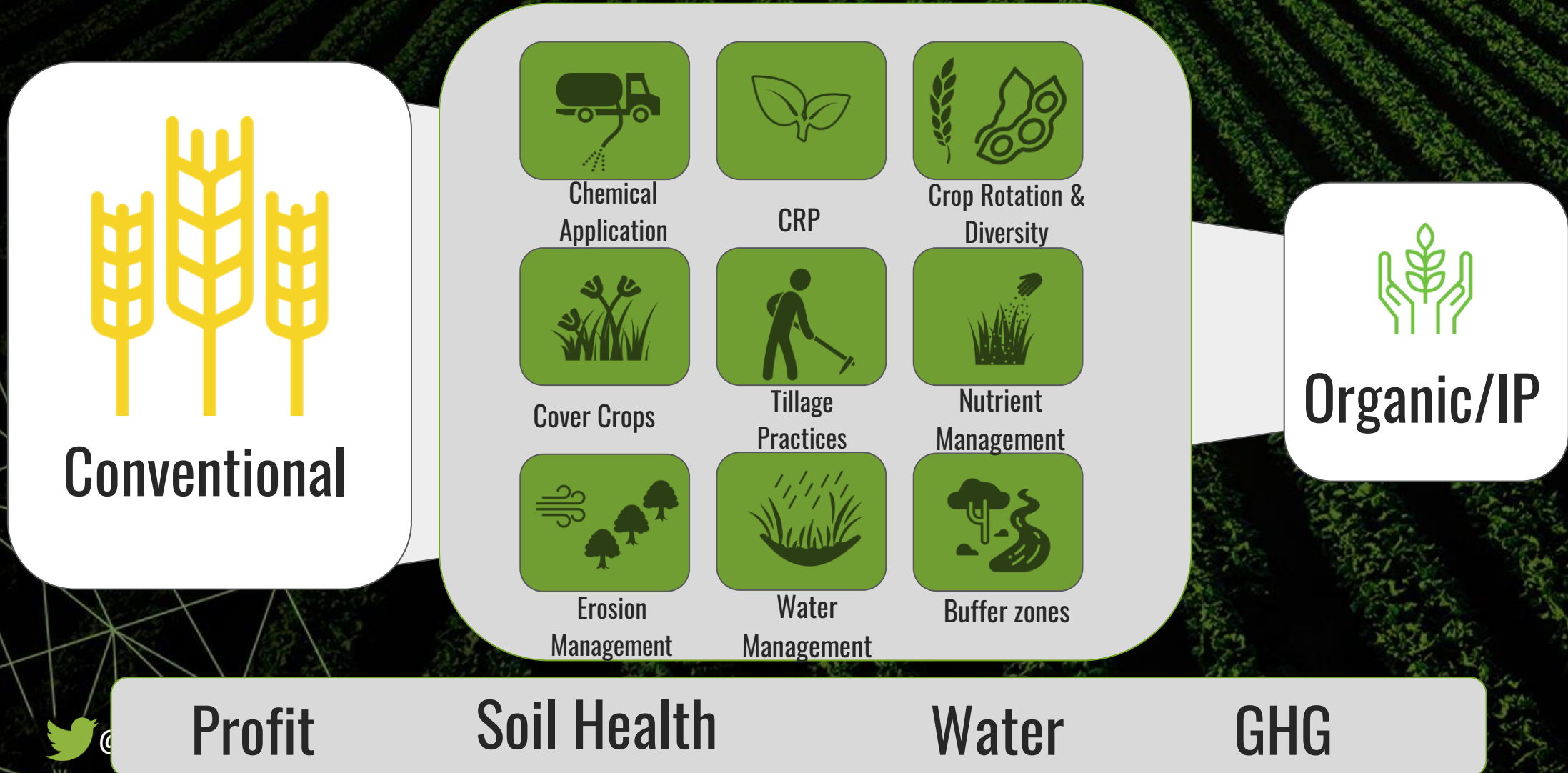
BUYERS: CUSTOMERS & CLIMATE



#F2F19



# COMMODITY CROPS CAN BE SET APART





# FARMERS & BUYERS SPEAK DIFFERENT LANGUAGES



Definitions  
Vary

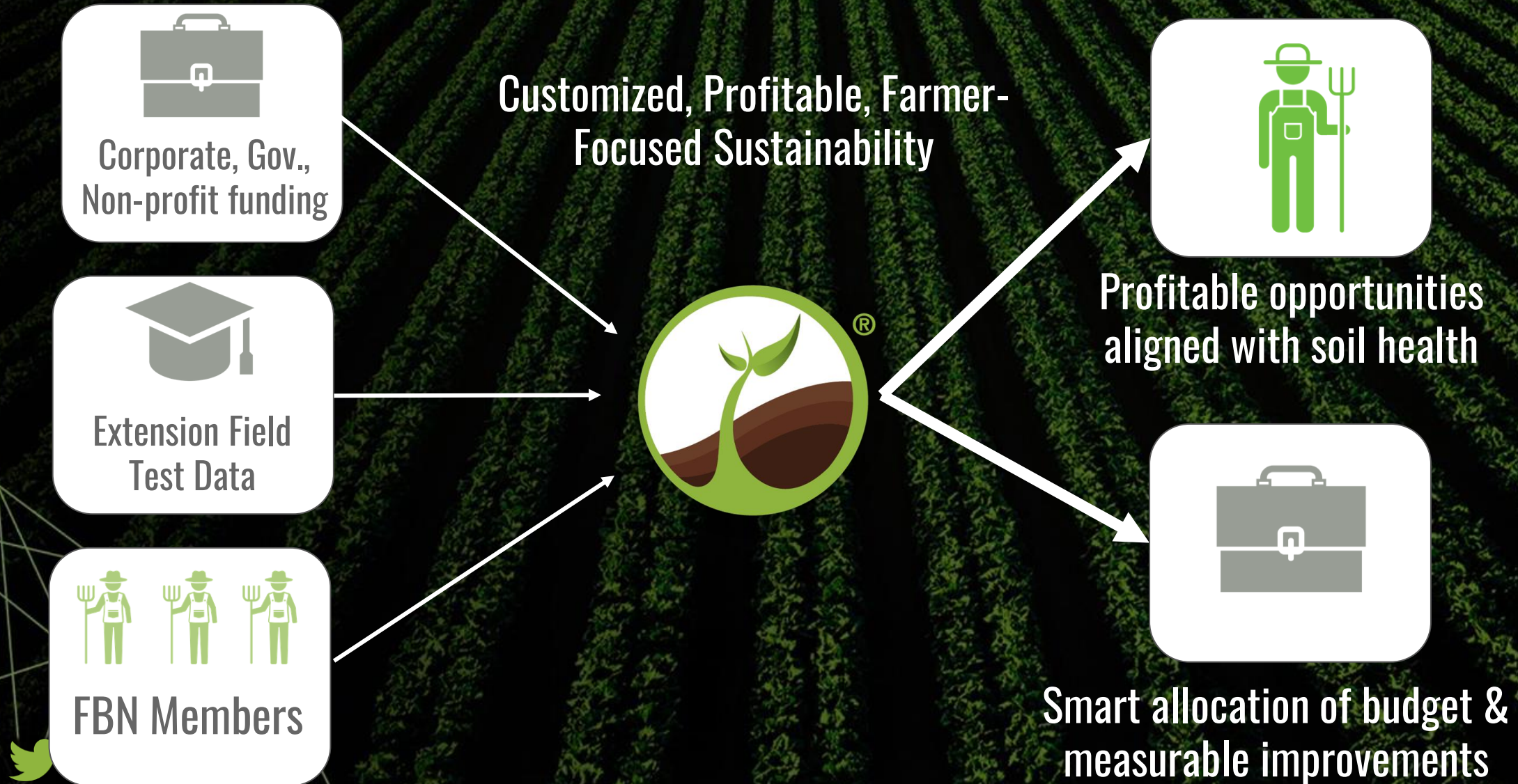
Opportunities  
Muddled

Reporting  
Arduous





# FBN VISION: HUB FOR SUSTAINABILITY





# WHY WOULD BUYERS PAY MORE?

- Appeal to Millennial consumers buying preferences
- Direct customers like Walmart and McDonalds have pressure campaigns to measure and reduce carbon footprint of supply chains
- ESG Activist Investors
- Talk credibly about their supply chain transparency and avoid shock PR from environmental groups
- Prepare for state or federal environmental policy



# WHAT PRACTICES MATTER?

- No Till! (reduced soil disturbance)
- Nitrogen efficiency - lbs of nitrogen per bushel
- Cover crops
- Nitrogen
- Manure application
- Buffers



# TYSON OVERVIEW

- Carbon Scoring & Efficiency Program: Focused on N Usage
- 400,000 acres
- 117 farms
- Representation from 16 states - do not need to deliver to Tyson
- 3 years
- Participation incentive in cash or Direct/ Advisory credits
- Data is primarily machine-collected + 20 minute survey



# TYSON FARMER EXPERIENCE

- Average grower makes \$1,300-\$2,600 per year
  - Payment in Cash
  - OR FBN Services
- 1 hour in reporting (less if you share data with FBN already)
- FBN helps you collect data
- Are not obligated to adopt changes
- Reports can help reveal how you compare in Nitrogen efficiency



# UNILVER PROGRAM

- Durum wheat program in North Dakota
- Supports the Sustainable Farming initiative for Knorr Pasta brand
- Uses Field to Market Fieldprint Calculator



# PROGRAMS EXPANDING SOON





**NETWORK  
+  
DATA**



**Regenerative Premiums**

**Price Transparency**

**Better Seed & Chem**

**Better Loans**

**Better Insurance**

**Better Hedging**



**BETTER  
FUTURE**





# FARMERS<sup>®</sup> FIRST





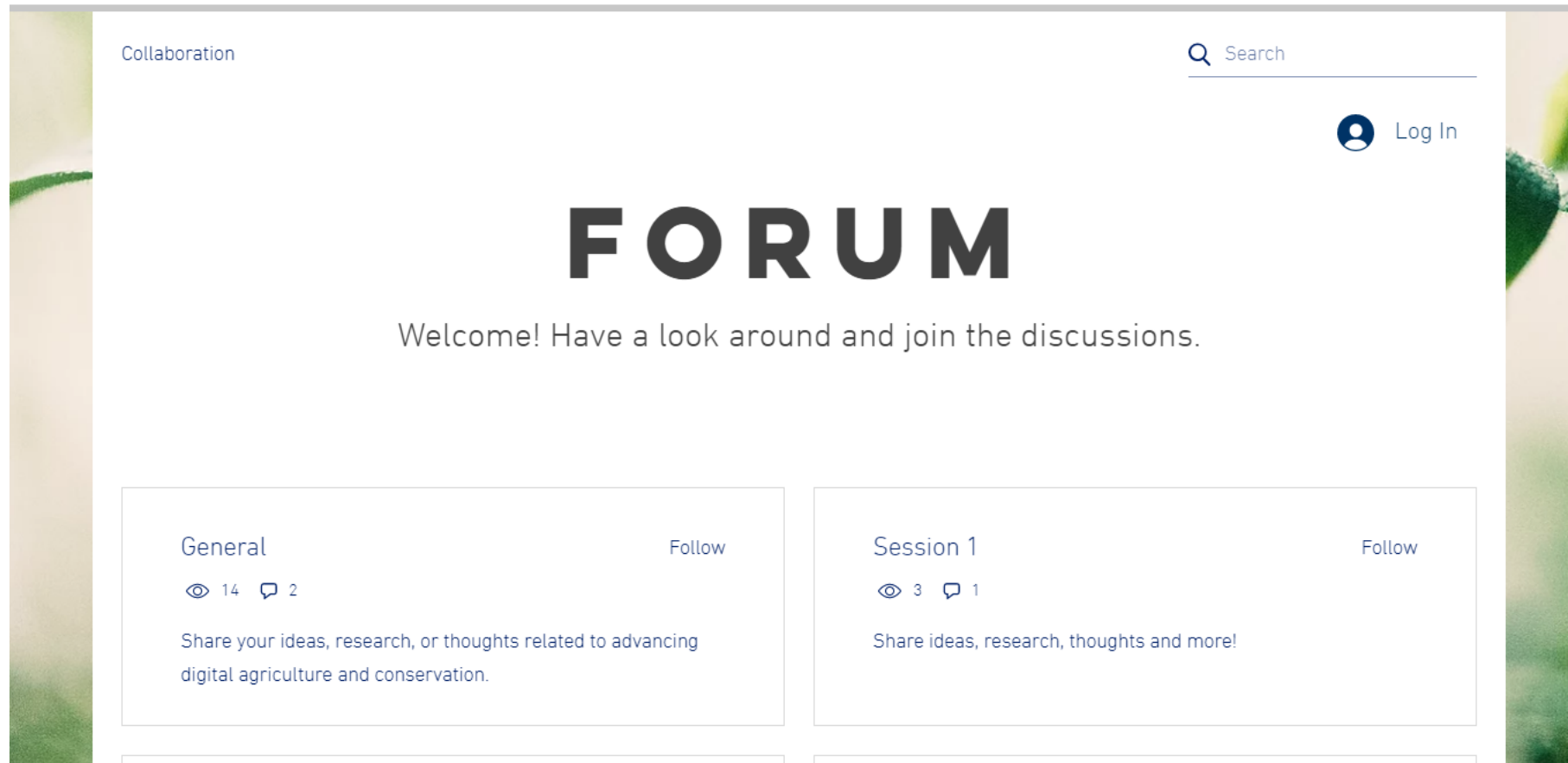
# Advancing Digital Agriculture and Conservation: A Virtual, Multi-Day Policy Workshop

Session One: Risks and Opportunities of  
Digital Agriculture for Environmental Conservation

Q&A

# Let's continue the conversation...

## [advancingdigitalagandconservation.com/collaboration](https://advancingdigitalagandconservation.com/collaboration)



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# Save the date – May 27 & 29

Session Two – Conservation Implementation and  
Policy Perspectives

Session Three – Mobilizing Data for Conservation:  
On- and Off-Farm Perspectives