Welcome to the Terraton Challenge Webinar!

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CHALLENGE

September 10, 2019

indigo

Agenda

1. Welcome
2. Intro to Indigo and the Terraton Initiative ™
3. Terraton Challenge FAQ Recap
4. Terraton Challenge: Why Now?
5. Q&A and Open Discussion

Bringing everyone to the table is essential to find solutions to the planet's biggest challenges

To date the Terraton Challenge has generated over 80K impressions from 78 countries around the world

Alison Etheridge
Program Manager

Jacqui Podolski
Community Manager

Ciara Cronin-Albert
Manager, Technology Partnerships

Emily Oldfield, PhD
Soil Scientist

Noah Walker
Head of Carbon Market Dev

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Harnessing Nature to Help Farmers Sustainably Feed the Planet

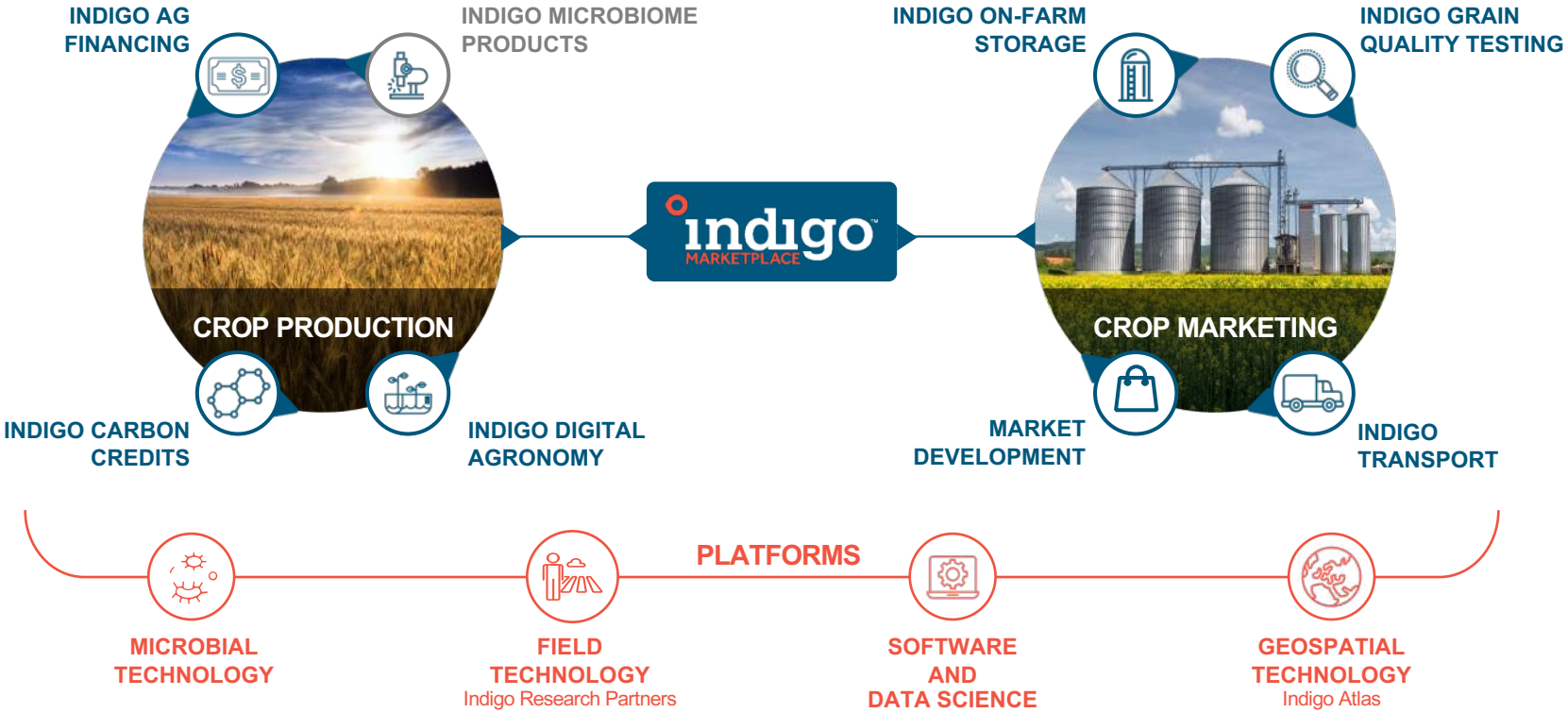
… by focusing on improving farmer profitability

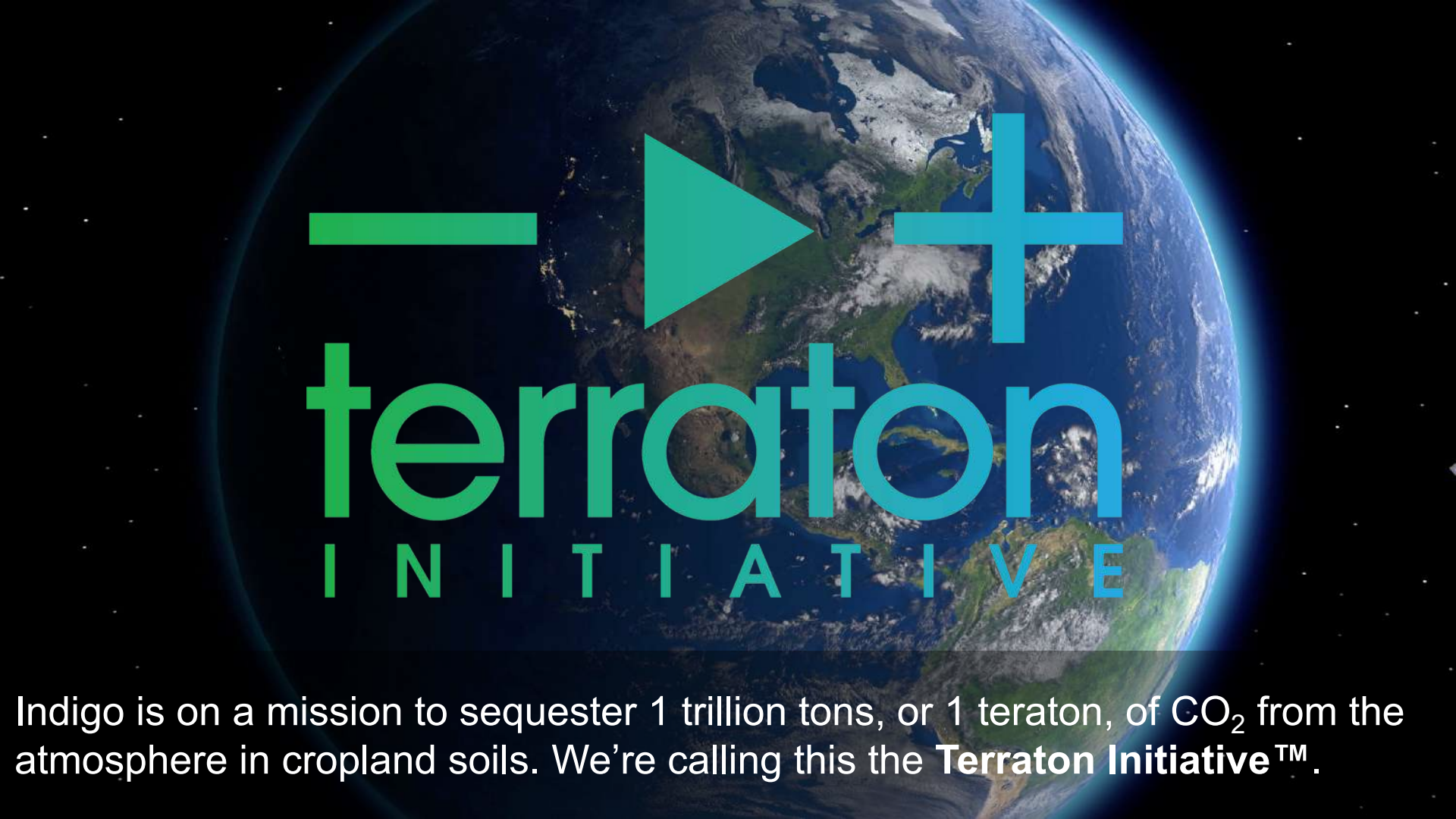
… by improving the sustainability of agriculture

… and by better aligning agricultural practices with consumer health

Indigo is reimagining agriculture along the entire value chain using new technologies and inventive business models

Solutions proposed as part of the Terraton Challenge will inform a number of Indigo business units





Indigo is on a mission to sequester 1 trillion tons, or 1 teraton, of CO_2 from the atmosphere in cropland soils. We're calling this the **Terraton Initiative™**.

We have launched four parallel efforts to achieve the objectives of the Terraton Initiative™

The Terraton Experiment™ - the world's largest study to measure carbon stocks and other outcomes on tens of thousands of farms

Carbon Cup™ - Galvanize grower competition – host a competition to rewards growers to achieving the highest carbon stock levels and highest sequestration rates

Indigo Carbon™ - incentivize growers to adopt regenerative practices

The Terraton Challenge™ – spur entrepreneurial activity to discover new solutions to increasing soil carbon stocks

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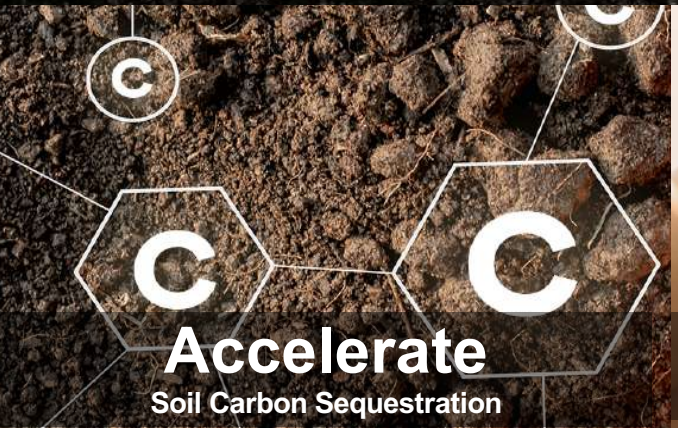
Accelerate
Soil Carbon Sequestration


Quantify
Soil Carbon Sequestration


Reward
Soil Carbon Sequestration

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Frequently Asked Questions

1. Should I apply to the Terraton Challenge?
2. What Challenge Track should I apply to?
3. What do I need to do to apply?
4. How will my application be evaluated?
5. What are the benefits of participating?

Should I apply to the Terraton Challenge?

Do you have an idea on how to support soil carbon sequestration?

If yes, then apply!

ALL GEOGRAPHIES

This is a global problem that needs a global solution. Innovators from around the world are encouraged to apply.

ALL STAGES

- **All levels of funding:** $0 - $1B in funding
- **All levels of development:** Idea in a notebook – profit generating venture

ALL INDUSTRIES

Carbon-sequestering solutions exist across sectors. Curious about whether your solution could apply to soil carbon? We encourage you to apply.

What Challenge Track should I apply to?

Accelerate TRACK

Increasing the speed at which carbon dioxide is sequestered in cropland soils

Potential Solutions

- Soil Amendments
- Novel crops or crop varieties (including perennial crops)
- Optimized cover crop seeds
- Microbial technologies
- Technologies that reduce the use of chemicals and fertilizers
- Farm management practices
- On-farm or in-field biochar solutions

Adjacent Tech

- Hydrology
- Entomology
- Ecology
- Plant Genetics
- Environmental Engineering

Quantify TRACK

Catalyzing the next generation of soil carbon sampling & measurement systems

Potential Solutions

- Better tools for extracting samples
- Better tools for measuring bulk density
- Autonomous systems that extract soil samples or directly quantify soil carbon
- Solutions that enable remote analysis of soil carbon
- Technologies to automate in-field and in-lab processing
- Algorithms for optimizing where to sample

Adjacent Tech

- Remote Sensing
- Mining
- Robotics
- Forestry/Ecology
- Geology

Reward TRACK

Incentivizing growers to sequester soil carbon

Potential Solutions

- Insurance products
- Short-term and long-term financing for regenerative practices
- Government policies
- Methods for supply chain insetting
- Landlord-tenant cost-sharing instruments
- New carbon credit methodologies

Adjacent Tech

- Real estate
- Industrial Engineering
- Consumer Package Goods | Certification programs
- Blockchain

What do I need to do to apply?

- ☑ Come up with an idea
- ☑ Find a partner
- ☑ Develop a project plan
- ☑ Determine what testing is required
- ☑ Create a pitch deck
- ☑ Submit an application by Oct. 1st

Apply at:
https://www.indigoag.com/the-terraton-challenge

How will my solution be evaluated?

Expert Panel of Judges

- Academics
- Industry Representatives
- Investors
- Growers
- Thought Leaders
- Indigo Executives

Unbiased Evaluation

Double Blind Review Process

3

Each application will be reviewed by at least 3 judges

Standard Criteria

All applications will be evaluated against a standard rubric that considers:

- Feasibility
- Impact
- Originality
- Communication and Presentation

We have recruited a world class panel of judges to review Round 1 Applications

GENERATECAPITAL

FOODSHOTGLOBAL

THRIVE

S2G VENTURES SEED 2 GROWTH

CAPITAL ID

University of Colorado Boulder

RODALE INSTITUTE™

SVG VENTURES

LAND LIFE COMPANY

FFAR Foundation for Food and Agriculture Research

What are the benefits of participating?

- Mentorship from a cohort of ag & tech experts to take your idea to the next level
- Access to the world's largest agricultural lab to test your solutions
- Demo your solution at BeneficialAg 2020 in front of stakeholders from across the ag value chain
- Be eligible for $3.5K in cash prizes, just for submitting an idea
- Maintain full ownership and IP rights throughout the Challenge and beyond
- Up to $60K in grants and $3M in contracts for semifinalists who can prove scalability

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Accelerate

Increasing the speed at which carbon dioxide is sequestered in cropland soils

Traditional Methods	Promising Solutions	Why Innovation is Still Needed
Soil amendments including biochar, microbial inoculants, and “circular” materials from waste	Trait modification, low-volume applications, improved methods for microbial selection, alternative cropping practices, alternative crops, reimagined farm models, moonshots	**Scalability:** need solutions that are affordable, easy to implement, applicable to a variety of different geographies **Standardization:** no current standard for measurement of carbon sequestration and lack of historical testing **Ambiguity:** lack of clarity around soil health claims and their actual direct impact on carbon sequestration Measured LCA Life Cycle Assessment (LCA) – generally not considered

Quantify

Catalyzing the next generation of soil carbon sampling & measurement systems

Traditional Methods	Promising Solutions	Why Innovation is Still Needed
Time Intensive: people in the field, selecting sampling points, manually extracting samples, shipping them to the lab, prepping them for analysis (e.g. dry combustion) Expensive: Personnel and analytical costs are prohibitive in terms of getting spatial & temporal coverage that captures landscape heterogeneity	Robotics for smart sampling design & soil extraction, spectral methods, remote sensing techniques	**Efficiency**: quicker turnaround of results **Accuracy**: measures precisely at depth, captures variation in landscape **Scalability**: affordable, easy to implement, applicable to a variety of different geographies

Reward

Incentivizing growers to sequester soil carbon

Traditional Methods

Few structures in place to reward growers for soil health or carbon sequestration.

Incentives targeted at enabling regenerative practices have tended to **come from government**. Notable examples include:

- The Federal NRCS Conservation Reserve Program (CRP) and Environmental Quality Incentive Program (EQIP)

Promising Solutions

We are inspired by the range of cross-sector activity in this space:

- Australia soil carbon trading pilot
- Tyson Food and EDF partnership to drive transparency & generate economic benefits
- General Mills commitment to practice dev & grower training
- Certification development projects for grower practices
- ... And more

Why Innovation is Still Needed

Drive consumer & corporate **demand**

Stimulate **investment**

Decrease **payment lags** and **transaction costs** in grower rewards

Improve **verification** to reduce costs and increase buyer certainty

Enable **cross sector solutions**
- E.g., additive private, public, NGO partnership structures

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What questions do you have?
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Thank you for joining the Terraton Challenge Webinar!

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Next Steps

- **Finalize your applications (all applications are due by Oct. 1st at 12am ET)**
- **Reach out** to terratonchallenge@indigoag.com with any additional questions.
- **Spread the word** and encourage other innovators to join the Terraton Community.

Apply at: https://www.indigoag.com/the-terraton-challenge

Appendix: Pitch Deck Example

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Your Pitch Deck can be in any format you like, and needs to cover the following information

Project Overview

Name of project, team members, short explanation of solution

Solution

Overview of your solution and how it is unique

Impact

What is the value and impact of your solution?

Team

Who is on your team and what are their backgrounds?

Stage

How developed is your product and what stage is your company or idea at?

Experimental Design

Describe the experiments that need to be done to validate your technology

Additional Slides

1-2 additional slides about your solution or company

UPLOAD A PITCH DECK THAT FOLLOWS THESE GUIDELINES*

Choose File No file chosen

A Pitch Deck Template is available online within each application track

Carbon Capture's pitch deck for Indigo Ag's Terraton Challenge

CARBON CAPTURE

The Best Carbon Sequestration Technology Ever

& terraton CHALLENGE

PRESENTED BY indigo™

SAMPLE DECK

Accelerate Track Application

CARBON CAPTURE

The Best Carbon Sequestration Technology Ever

& terraton CHALLENGE

OUR TEAM

Ian Campbell

Recent graduate from Northeastern University with a background in Innovation and entrepreneurship.

Jacqui Podolski

Recent graduate from Northeastern University with a background in Environmental Science

Our team at Carbon Capture has come up with an idea to accelerate soil carbon sequestration by developing a new process to convert all cover crop biomass into soil organic matter and soil carbon!

OUR SOLUTION

PROBLEM

Climate change is a pressing issue that needs to be solved. We have a unique opportunity to enable agriculture to transition from being a major contributor of green house gas emissions to a major source of carbon sequestration

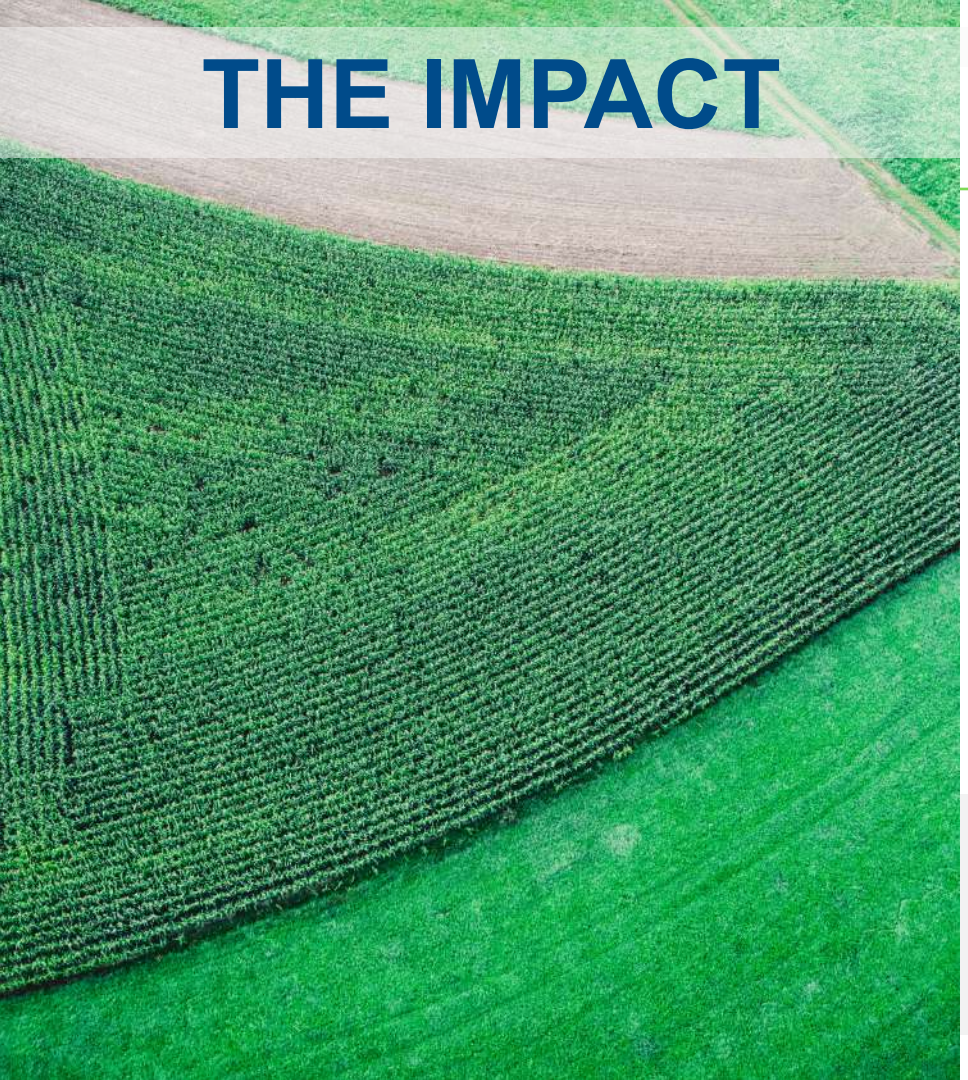
SOLUTION

Our new process for converting cover crop residue into soil organic matter and soil carbon gives growers the opportunity to sequester 1 ton of CO2 eq. per acre per year just by using our new product

HOW WE ARE DIFFERENT

Our solution is a novel method for cover crop management that is different from anything currently on the market. This process enables all of the cover crop biomass to be converted to soil organic matter.

THE IMPACT



Our solution will increase carbon sequestration at a low cost to growers

- Increase carbon sequestration by increasing the amount of cover crop biomass converted to soil organic matter and soil carbon
- Increase the number of options growers have to manage cover crops

- Decrease the cost of terminating cover crops compared to other methods
- Reduce the amount of herbicides applied to the field by eliminating the need for chemical use in cover crop termination

Carbon Capture increases grower profitability by reducing input requirements and increasing carbon sequestered on their fields – this supports the mission of building a Beneficial Ag system of the future

MEET OUR TEAM

IAN CAMPBELL

- Recent graduate from Northeastern University
- Studied Innovation and Entrepreneurship
- Experience working with startups and creating business plans for the coolest new technologies

JACQUI PODOLSKI

- Recent graduate from Northeastern University
- Studied Environmental Science and Economics
- Experience researching new technologies and iterating on ideas in the lab

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We started working together in July while brainstorming solutions to the Terraton Challenge. While we have not worked together for very long, we believe that our skill sets and experiences are complimentary to each other and we are well positioned to take on the Terraton Challenge. We are ready to work full-time on building the Carbon Capture technology and business!

DEVELOPMENT STAGE

FUNDING

We are currently self-funded but are planning to apply for research grants to support our project.

PRODUCT DEVELOPMENT

We will create a V1 of our product this summer and run lab-scale tests to iterate on design before bringing it to field trials in the spring.

BUSINESS DEVELOPMENT

We are actively iterating on our business plans with a trusted advisor – our current target would enable us to scale to 1M acres within 2 years.

PLAN FOR THE FUTURE

After field trials, we will scale manufacturing of our product. We are targeting 20,000 acres in year 1 and 1M acres in year 2.

EXPERIMENTAL DESIGN

What do we need to have a meaning for pilot of our technology?

PILOT OVERVIEW:
Our solution should be tested on both broadleaf and grass cover crops to compare the difference in performance. This solution is applied before crop planting and remains throughout the season.

DATA COLLECTION REQUIREMENTS:
This will require soil samples before our technology is applied to the field and at the end of the growing season. We will need to periodically collect samples throughout the season.

PILOT SCALE:
We would like to test our solution on a minimum of 5 acres for each crop + cover crop pairing. We would like to test 4 different crop + cover crop pairings plus controls for a total of 40 acres.

KEY OUTCOMES:
- Measure the change in soil carbon
- Compare the performance to control fields
- Find areas for improvement in our technology
- Gain grower approval of our soil amendment

PILOT TIMELINE:
This is applied to the field at the time of cover crop termination and can be reapplied to crop residue post-harvest in no-till fields. We will need to monitor the field throughout the growing season.

POST TESTING SCALABILITY:
Post-testing we will need to find lab space to manufacture more of our soil amendment. Since only a small amount needs to be applied to the field, we will not need a large space or team.

OUR PLAN FOR THE NEXT YEAR

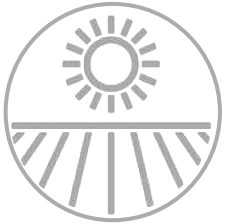
Summer 2019

During the fall we will create a business plan for our technology and set goals for development.

Winter 2019 / 2020

Over the spring we will implement and iterate on our testing plans to learn more about the Carbon Capture technology.

Summer 2020



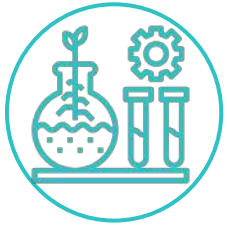
Find a Solution → Business Plan → Testing Plan → Tests and Pilots → Scale Up

We came up with the idea for Carbon Capture in July 2019.

We are developing our Carbon Capture technology and understanding its potential.

Fall 2019

Over the winter we will create a plan for testing. We will create hypotheses to test and finalize the experimental design.



Spring 2020

After testing and iterating on our product over the spring we will be ready to find partners for scaling up our technology to more acres!