What if a healthier planet, began with a healthier farm?
Harnessing nature to 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

- Founded: 2014 by Flagship Pioneering
- Boston, MA: Global headquarters
- Mumbai: India operations
- Sao Paulo: Brazil headquarters
- Sydney: Australia headquarters
- Memphis, TN: Commercial Operations
- Buenos Aires: Argentina headquarters
- Basel: European headquarters

- >1000 Employees
- >$740M Private Equity Funding Raised
- 5 crops in production
- 19 Commercial Products

World’s largest:
- Digital Grain Platform
- Plant microbiome database
- Endophyte library
- Agricultural lab

Commercial Acreage:
- 2016: 0K
- 2017: 55K
- 2018: 1M
- 2019F: 4M+
Indigo solutions for systems change

**Microbial Technology**

5 crops in production
Applied on over 1.6 million hectares
Microbial collection 40k microbes
- Indigo Wheat +12.7% uplift
- Indigo Corn +5.5% uplift

**Digital Agronomy & Insights**

Advanced soil sensing + drone technology
Building a living map of the world’s food system with Indigo Atlas

**Indigo Marketplace**

A more transparent and efficient supply chain by connecting buyers and growers directly
- thousands of trucks enrolled
- $11B Inventory
- $49B Total bids

**The Terraton Initiative & Indigo Carbon**

5 million hectares submitted
260 applicants for the Terraton Challenge
In April, carbon dioxide levels hit a 14 million year high

Global Average Carbon Dioxide Concentration (ppm)

- 415 ppm today
- 280 ppm in 1770

Source: Bereiter. National Centers for Environmental Information. 2015; World Economic Forum; IPCC; Representative Concentration Pathway scenarios 8.5 and 4.5 http://www.iiasa.ac.at/web-apps/Tnt/RcpDb/dsd?Action=htmlpage&page=welcome
Carbon dioxide has been released from plants, soil, and fossil fuels into our oceans and atmosphere.

<table>
<thead>
<tr>
<th></th>
<th>Pre-industrial revolution</th>
<th>Δ (teratons)</th>
<th>Today’s carbon pools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmosphere</td>
<td></td>
<td></td>
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<tr>
<td>Plants</td>
<td></td>
<td>+ 1.0 Tt(^1)</td>
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<tr>
<td>Soil</td>
<td></td>
<td>- 0.6 Tt(^2)</td>
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<tr>
<td>Fossil fuels</td>
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<td>- 0.7 Tt(^2)</td>
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<tr>
<td>Ocean</td>
<td></td>
<td>+ 1.0 Tt(^3)</td>
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1. [https://scripps.ucsd.edu/programs/keelingcurve/](https://scripps.ucsd.edu/programs/keelingcurve/); 2. [http://www.jswonline.org/content/73/6/145A.full.pdf](http://www.jswonline.org/content/73/6/145A.full.pdf); 3. Residual calculated based on changes from other C stocks; 4. Eric Toensmei Solution
Reducing emissions alone will not address this problem

Historical and Forecast to 2100:
Global atmospheric CO$_2$e concentrations
(historical & forecast parts per million)

"Business as usual" scenario
(~1200 ppm)

"Moderate" scenario
(~580 ppm)

Pre-industrial
(~280 ppm)

Continued high use of fossil fuels with low adoption of alternative energy sources
No to few climate policies in place
Significant reduction in energy use and high adoption of alternative energy sources
Current climate policies + pledges in place

Note: Scenarios represent Representative Concentration Pathway (RCP) 8.5 and RCP 4.5
Source: IPCC (http://www.iiasa.ac.at/web-apps/tnt/RcpDb/dsd?Action=htmlpage&page=welcome)
In addition to emissions reductions, we must also find ways of removing carbon from the atmosphere.
The only affordable, scalable, immediate process for drawdown is photosynthesis

### Photosynthesis

- **Cost**: $0/ton
- **Estimated Cost to Plant Trees or Change Farming Practices**: $15-20/ton
- **Carbon storage capacity\(^1\)**: 1+ trillion tons
- **New infrastructure required**: None – uses existing farmland and pastureland

Harnesses the natural power of photosynthesis to draw down CO\(_2\) in plants across the globe

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### Direct Air Capture

- **Cost**: $100+/ton
- **Carbon storage capacity**: 1+ trillion tons
- **New infrastructure required**: Development & deployment of 100 million+ new machines\(^2\)

Would also require new sources of energy and locations to store CO\(_2\)

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1. 1 trillion tons of capacity from 3.6B acres of farmland; likely significant additional capacity from pastureland
Sequestering carbon into agricultural soil via photosynthesis is scalable, affordable, and immediate

<table>
<thead>
<tr>
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<th>Scalable</th>
<th>Affordable</th>
<th>Immediate</th>
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</thead>
<tbody>
<tr>
<td><strong>Agriculture</strong></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
| Potential for 1+ trillion tons of CO₂ | $15-20 / ton CO₂ stored, with increased farmer profitability | Farmer control of land
Means to make change
System to harness collective efforts |
| **Trees** | ✓ | | |
| Potential for ~700 billion tons of CO₂ | $15-20 / ton CO₂ stored, unknown opportunity cost | 76% of forest land not controlled by individuals
No system to harness collective effort today |
| **Oceans** | ✓ | | X |
| Potential for 1+ trillion tons of CO₂ | Largely untested; still high cost today | No scalable and affordable solution yet developed |

How do farmers sequester carbon?
Is it possible to protect crops without harming nature?
BBC

Farmers feel scapegoated in climate blame game.
Irish Independent

Climate change threatens future of farming in Europe
European Environment Agency

Farmer protests signal need for deep solutions to the climate crisis
Grain.org

Dutch farmers to stage another protest,
AP News
The way to sequester carbon is via regenerative farming practices

These 5 practices are proven to develop carbon enriched soils …

- Plant cover crops
- Use no-till farming
- Rotate crops
- Reduce inputs
- Incorporate livestock
... Experts agree this can have huge impact ...

Bringing carbon back home through regenerative agriculture is one of the greatest opportunities to address human and climate health, along with the financial well-being of farmers.

Paul Hawken, Drawdown

These crops and practices have the potential to contribute mightily to what is perhaps the most pressing issue of our time.

Eric Toensmeier, The Carbon Farming Solution

restoring degraded soils and ecosystems is a win, win, win option. It’s a bridge to the future.

Dr. Rattan Lal

no/low tillage conservation, agroforestry, etc., have potential to increase yields while also providing a range of co-benefits such as increased soil organic matter.

IPCC

...And there are farmers who have already restored their soils to pre-cultivation soil carbon levels

We apply beneficial microbes to crop seed that support plant growth under stress

Indigo collects plant samples, isolates associated microbes, and employs powerful bioinformatics tools to identify beneficial microbes.

Indigo adds beneficial microbes in the form of a seed coating which improve plant performance.

Abiotic
...and tolerance to environmental stresses

Biotic
And early season biotic stress
We can improve stress tolerance through biology

Transferring plant microbiomes to native seeds can dramatically improve their stress tolerance

Untreated

Treated with microbial product
There are also other important benefits to soil that contains more carbon.

- Improved Drought Tolerance
- Better Flood Resistance
- More Nutritious Crops
- Enhanced Yields
- Decreased Inputs Required
How can we create the system to make this successful?
Terraton has unlocked the full potential of agricultural carbon storage for the first time

**Challenges**

- High cost of measurement & verification
- Lack of technology to replace chemicals & fertilizers
- No incentives for farmers to change behaviors

**Terraton's innovations**

- Utilizing Indigo's technology, investments, and data collection & algorithms to drive scale & reduce costs
  - Reducing soil sampling, resulting in lower labor and analytical costs
- Using data science and microbiology to replace chemicals and fertilizers
- Accelerating the adoption of regenerative ag practices by creating a carbon market to pay farmers to sequester carbon
$15 - $20 per ton of carbon dioxide would be transformative for a farmer's economics.

- Expected carbon sequestered: 2-3 Tons of CO$_2$e per acre per year
- Proposed price of carbon: $15-20 per ton of CO$_2$e
- Potential uplift from enriching soil with carbon: $30-60 per acre
- Average farm size: ~440 Acres

Average Profitability Today: <$40 per acre

$13,000 - $27,000 potential uplift per farm
Indigo Carbon™ - get paid for implementing regenerative practices and combat climate change

1. Sign up
2. Baseline gathered by Indigo on-site agronomist
3. Grower implements regenerative practices
4. Indigo Agronomist measures carbon post season
5. Grower is paid based on carbon drawn back into soil

Benefits for the grower
- Growers are paid to increase their soil carbon content
- Improved sustainability and profitability by reducing inputs
- Improved soil resilience
We plan to generate demand for carbon credits from four key stakeholders:

**Businesses**
- Terraton Certification
- Direct offset of products or corporate footprint
- Option to offset carbon footprint at purchase

**Non-profits**
- Donations to the most effective near-term climate change solutions

**Consumers**
- Direct purchase of carbon credits
- Terraton Certification
- Issuing a credit card
- App that tracks carbon footprint

**Governments**
- Regulations to support carbon markets
- Cap and trade program
- Carbon tax
The Terraton Certification signifies that products, brands, or companies are contributing to climate solutions

How does it work?

What does it stand for?

- **Climate positive or a path to climate positive**
  Terraton Certification means more than offsetting carbon footprint, or being on a path to doing so

- **Solving the problem, not just "not making it worse"**
  Offsets based in drawdown (carbon removal) programs

- **Supporting our food system & farmers**
  Offsets from agriculture – supporting more engaged and successful farmers and more nutritious food

- **Rigorous & holistic approach**
  Entire 'life cycle' of product is considered
We are looking for partners and farmers who are interested in combatting climate change.

JOIN THE TERRATON INITIATIVE
www.indigoag.eu/the-terraton-initiative