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# Increasing Understanding, Interest, and Confidence in Newly Created Scalable Ecosystem Service Markets

Peter Mead, Agriculture Project Manager | MN NRCS STAC May 6, 2025

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# Minnesota Ecosystem Service Market  Pilot Project

NRCS Natural Resources Conservation Service

The Nature Conservancy

HEADWATERS AGRICULTURE SUSTAINABILITY PARTNERSHIP

Stearns County Soil & Water Conservation District SWCD

Field to Market

Forever Green

auri Agricultural Utilization Research Institute

target

Minnesota Water Quality Certified Farm

General Mills

MBOLD Minnesota: Leading the Way to the Future of Food

Environmental Initiative Powerful Partnerships, Effective Solutions

syngenta

University of Minnesota

Centra Sota

NuWay-KH Cooperative

AgCentric Connecting Education & Agriculture

Minnesota Milk Producers Association

Hormel Foods

ESMC Ecosystem Services Market Consortium

Houston Engineering Inc.

Certified Crop Adviser

Minnesota Pollution Control Agency

# MN Pilot Goals

- 50,000 acre goal
- Credits: Carbon, GHG, Water Quality
- Test in a corn/soy/livestock cropping system

**Implementation Efficiencies**

- Alternative soil testing & Protocol imp. pathways
- Platform Integration – FtM, MN Ag Cert, TruTerra
- Build MN Eco-Markets Capacity/Expertise

**Economic Drivers**

- ROI / FBM farm economics study
- Supply Chain Investment:
  - Pork and dairy co-investors
  - $20/acre/yr for the 2 yr pilot
- EoF - how to include grass waterways, grasslands, buffers
- Manure - Potential amplifying affect
- Alt. Crop Rotations – Kernza, Camelina, Alfalfa, Grains

# U.S. Regenerative Row Crops

Our Theory of Change to achieve resilient, climate-smart farms that benefit people and nature

Collaboration and alignment across policy, business and science sectors can help guide and incentivize large-scale adoption of regenerative practices by U.S. farmers, leading to significant benefits for farmers, communities and nature.

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## Key Strategies

**Farmer Advisors & Service Providers**
Engage advisors, retailers & other agribusinesses

**Corporate Sustainability**
Leverage market forces & corporate social responsibility

**Innovation**
Identify solutions that transform business models in the value chain

**Public Policy**
Increase public investment & policy frameworks

**Farmers Leading Change**
Support a diverse network of influential farmers

## Pathways to Adopt Practices

**Awareness**
Farmers have access to information about practices.

**Acceptance**
Farmers are motivated to adopt practices.

**Financial & Risk Incentives**
Farmers gain tangible benefits from adoption.

**Technical & Operational**
Farmers have the capacity to adopt practices.

## Cycle of Accelerated Adoption

**Enabling** conditions support adoption

Farmers **adopt** practices

Farmers derive **benefits** from practices

## Outcomes

Improved profitability and resilience for farms and communities

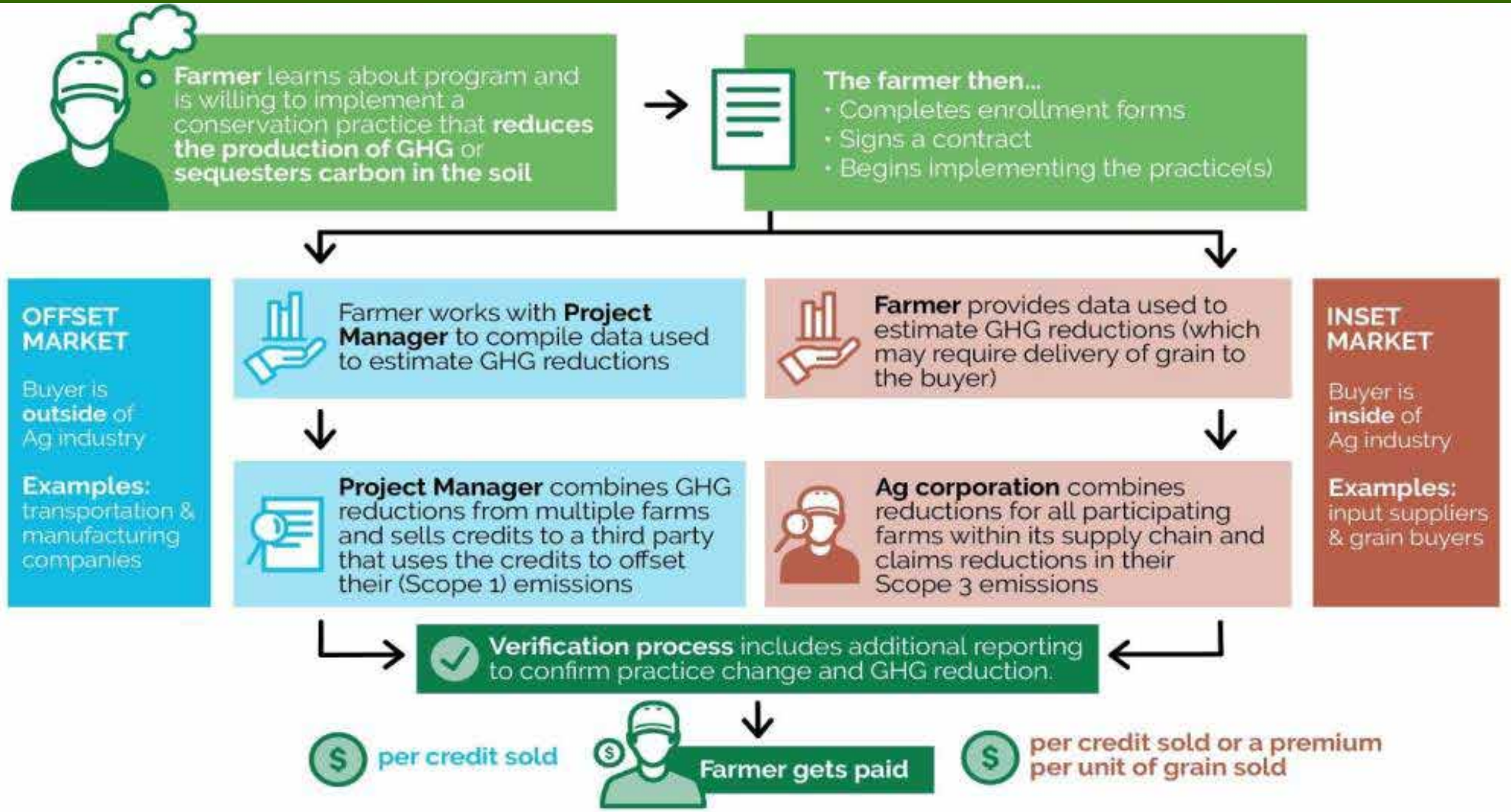
Improved water quality

Reduced greenhouse gases

# Why ESMC?

- Multiple Credits Created
- Non-Profit
- Voluntary & Regulatory Credits
- Ag Industry Lead
- Open Protocols
- Technology + Soil Testing
- Row Crop & Grassland
- Test then launch

# Ecosystem Service Markets Simplified



# ESMC/ESMRC Members

## Founding Circle Members


## Legacy Partner Members

# Partners & Teams

- 50,000 acre goal
- Credits:  Carbon, GHG, Water Quality
- Test in a corn/soy/livestock cropping system

## Farmer Outreach

NRCS Natural Resources Conservation Service

Stearns County SWCD Soil & Water Conservation District

Minnesota Water Quality Certified Farm

Minnesota Milk

syngenta

## Field Work

Certified Crop Adviser

Centra Sota

Stearns County SWCD Soil & Water Conservation District

## Platform Integration

Minnesota Water Quality Certified Farm

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TRUTERRA

Field to Market

## Farm Economics

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## Market Demand

MBOLD Minnesota: Leading the Way to the Future of Food

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target

General Mills

Hormel Foods

## Research

University of Minnesota

Forever Green

ESMC Ecosystem Services Market Consortium

Midwest Dairy

Project Leadership

ESMC Ecosystem Services Market Consortium

The Nature Conservancy Protecting nature. Preserving life.

Headwaters Agriculture Sustainability Partnership

# Eligible Practices

| Conservation Practice | Applicable Attributes [a] |
|---|---|
| **Residue and tillage management, reduced tillage** | GHG, Water Quality |
| **Cover crop** | GHG, Water Quality |
| **Nutrient management** | GHG, Water Quality |
| **Prescribed grazing (Cropland)** | GHG, Water Quality |
| **Field buffer, filter strip, field border** | Water Quality |
| **Contour buffer strip, vegetative barrier within a field** | GHG, Water Quality |
| **Constructed ponds and wetlands** | Water Quality |
| **Grassed waterway** | Water Quality |
| **Conservation crop rotation** | GHG, Water Quality |
| **Prescribed burning** | GHG |
| **Irrigation water management** | GHG, Water Quality, Water Quantity |
| **Drainage water management practices** | Water Quality |

# Progress to Date

- 42,000 acres
- 53 farms
- 592 fields
- 20 Enrollment Specialists
- $3.5M raised ($2M for farmer incentives)
- $1.4M Paid to farmers (to-date)

# Crops / Acres 2024 Growing Season

| Row Labels | Sum of acres |
|---|---|
| Alfalfa (alfalfa) | 321.5 |
| Beans, Dry (dry_bean) | 342.1 |
| Corn, Grain (corn) | 14606.6 |
| Corn, Silage (corn) | 661.1 |
| Oats (oat) | 75.7 |
| Other-Forage grasses | 17.8 |
| Other-Grass/Alfalfa Mix | 9.9 |
| Other-Native grasses | 8.9 |
| Other-not planting this field | 29.4 |
| Other-wetland restoration native grasses | 96.2 |
| Pea (pea) | 239.4 |
| Rye (rye) | 326.2 |
| Ryegrass (ryegrass) | 52.2 |
| Sorghum, Silage (sorghum) | 10.7 |
| Soybeans (soybean) | 23734.2 |
| Wheat, Spring (wheat_spring) | 981.9 |
| (blank) | 280.2 |
| Grand Total | 41794.0 |

# Practice Acres 2024 Growing Season

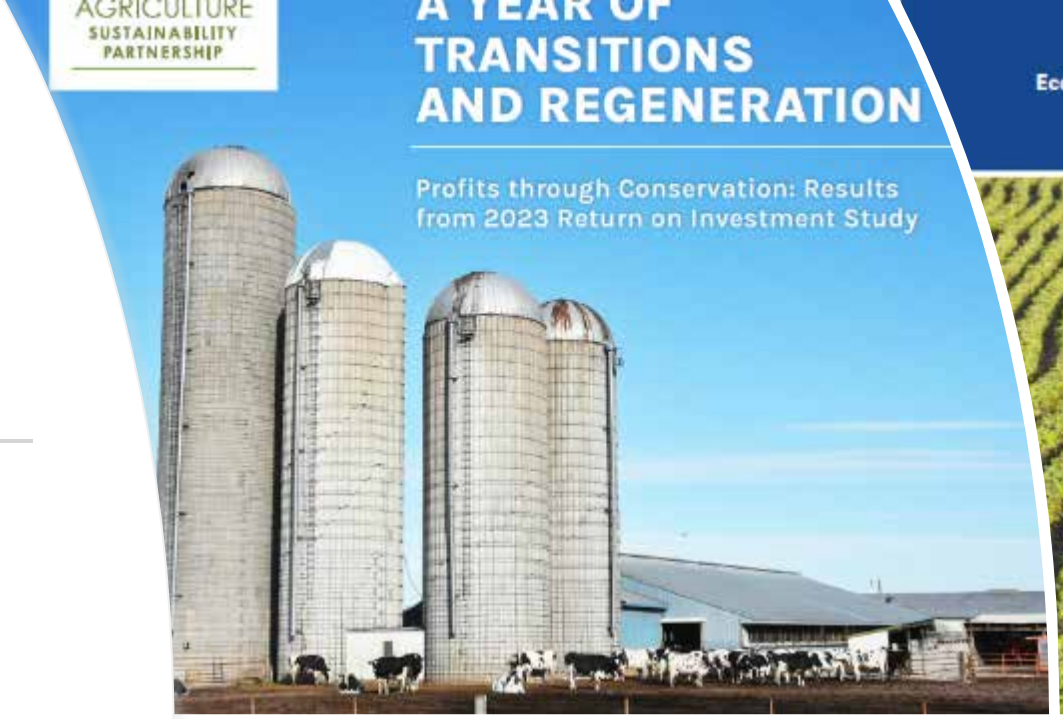
- Cover Crops: 22,813
- Tillage Reduction: 31,319
- Nutrient Mgmt 21, 335

# Lessons Learned

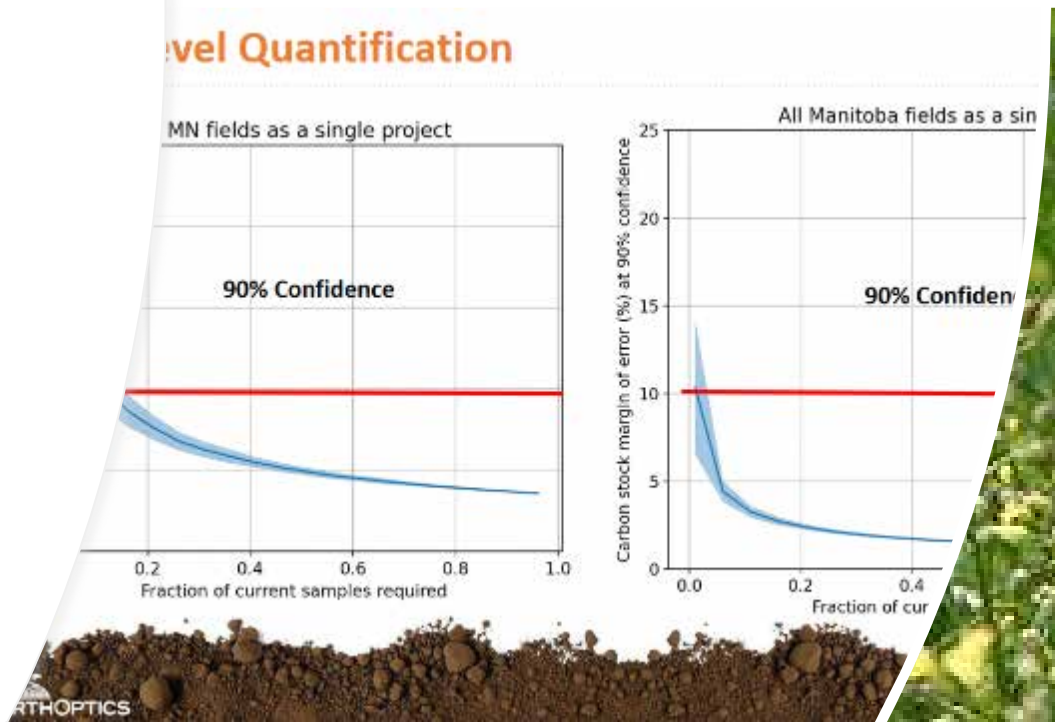
- Farmer enrollment was harder than anticipated
- Supply chains are complicated
- Farm data is key and time consuming
- Soil sampling capacity and timing is challenging
- T/A is paramount – before and after 1st yr.
- Need more stability in C-markets rules
- Need better tools for multi-benefit credits
- Practical agronomic knowledge is crucial

# Other Products

- HASP ROI Study
- Edge-of-Field / Grasslands Report
- Alternative Soil Testing Pathways
- Alternative Crop Protocol Development








# Results?


## Eco-Harvest Carbon Impact Report

**Project:** TNC Minnesota

**Year:** 2023

**Batch:** Verified

**Producers:** 11

**Acres:** 1395

### Eco-Harvest Results Overview

- **Total Carbon Impacts (Removals + Reductions) Generated:** -308.646 metric tonnes of carbon dioxide equivalent (mtCO2e)
- **Emission Reductions:** Practice changes in the project avoided -245.530 metric tonnes of carbon dioxide equivalent (mtCO2e) reductions.
- **Carbon Removals:** Soils removed -63.117 mtCO2e due to producer's new practice changes.
- **Total Payment for Outcomes/Impact Units:** Producers in this project received a payment of $20/acre. Total payment is $27,902.76.

*ESMC requires complete historical data to generate a baseline, so fields with historical data gaps are not modeled.

# Results?


## Eco-Harvest Carbon Impact Report

**Project:** TNC Minnesota

**Year:** 2023

**Batch:** Quantified

**Producers:** 21

**Acres:** 7010

### Eco-Harvest Results Overview

- **Total Carbon Impacts (Removals + Reductions) Generated:** -240.169 metric tonnes of carbon dioxide equivalent (mtCO2e)
- **Emission Reductions:** Practice changes in the project avoided -277.950 metric tonnes of carbon dioxide equivalent (mtCO2e) reductions.
- **Carbon Removals:** Soils removed 37.781 mtCO2e due to producer's new practice changes.
- **Total Payment for Outcomes/Impact Units:** Producers in this project received a payment of $20/acre. Total payment is $140194.84.

*ESMC requires complete historical data to generate a baseline, so fields with historical data gaps are not modeled.

# Results?

| Reason for not modeling | Count of field_nan | Sum of acre |
|---|---|---|
| [{"msg":"Scenarios must have different event histories.","loc":["body","scenarios"],"type":"v | 1 | 22 |
| 2021 was the first year farming | 2 | 152 |
| 2022 was first year farming | 1 | 27 |
| 2023 was the first year farming | 2 | 74 |
| cannot model perennial | 3 | 216 |
| crop fail | 13 | 340 |
| custom fert | 34 | 956 |
| didn't complete harvest data | 7 | 101 |
| entered "other" crop | 1 | 11 |
| fallow | 5 | 133 |
| first year operating the field | 1 | 437 |
| grazing | 7 | 392 |
| Grazing present. Tile drainage present. | 1 | 29 |
| Missing info | 15 | 396 |
| no baseline | 15 | 866 |
| no baseline, corn silage in the history. no corn. | 2 | 92 |
| no corn silage baseline | 2 | 32 |
| no practice change | 27 | 1,777 |
| no soil data | 1 | 42 |
| non-harvest year & grazing | 1 | 9 |
| not in MMRV | 2 | 11 |
| perennial | 2 | 18 |
| producer dropped | 14 | 1,259 |
| silage | 12 | 501 |
| started farming in 2023 | 2 | 426 |
| tile drainage | 214 | 20,216 |
| unsupported fert - manure other slurry | 1 | 174 |
| (blank) | 65 | 5,734 |
| **Grand Total** | **453** | **34,444** |

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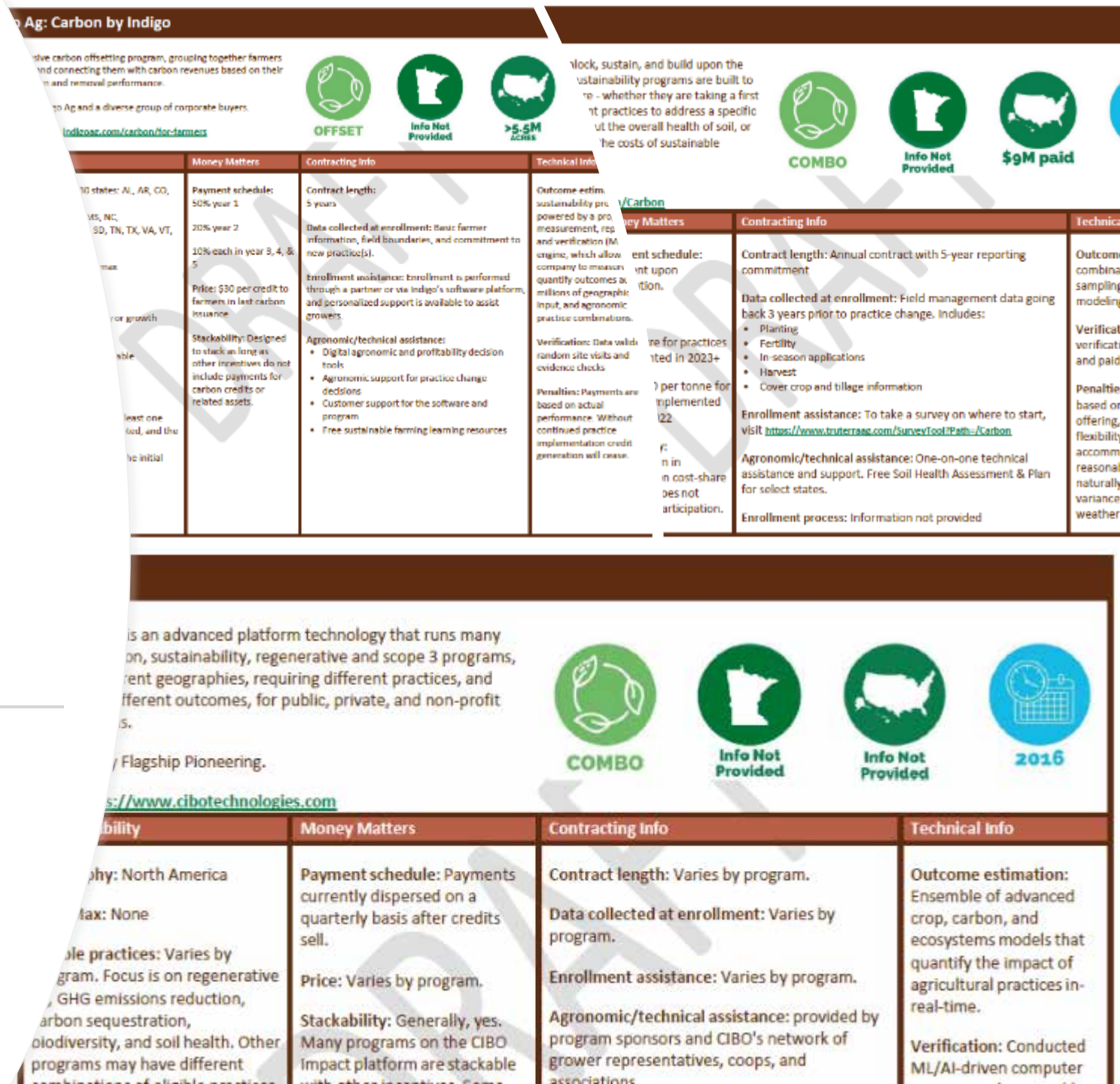
# What's Next?

## An Overview of Voluntary Carbon Markets for Minnesota Farmers



# What's Next?

## Proposal: *Scaling Sustainable Agriculture: Landscape-Level Ecosystem Service Markets for Corporate Co-Investment and Community Resilience*

Capitalize on successes

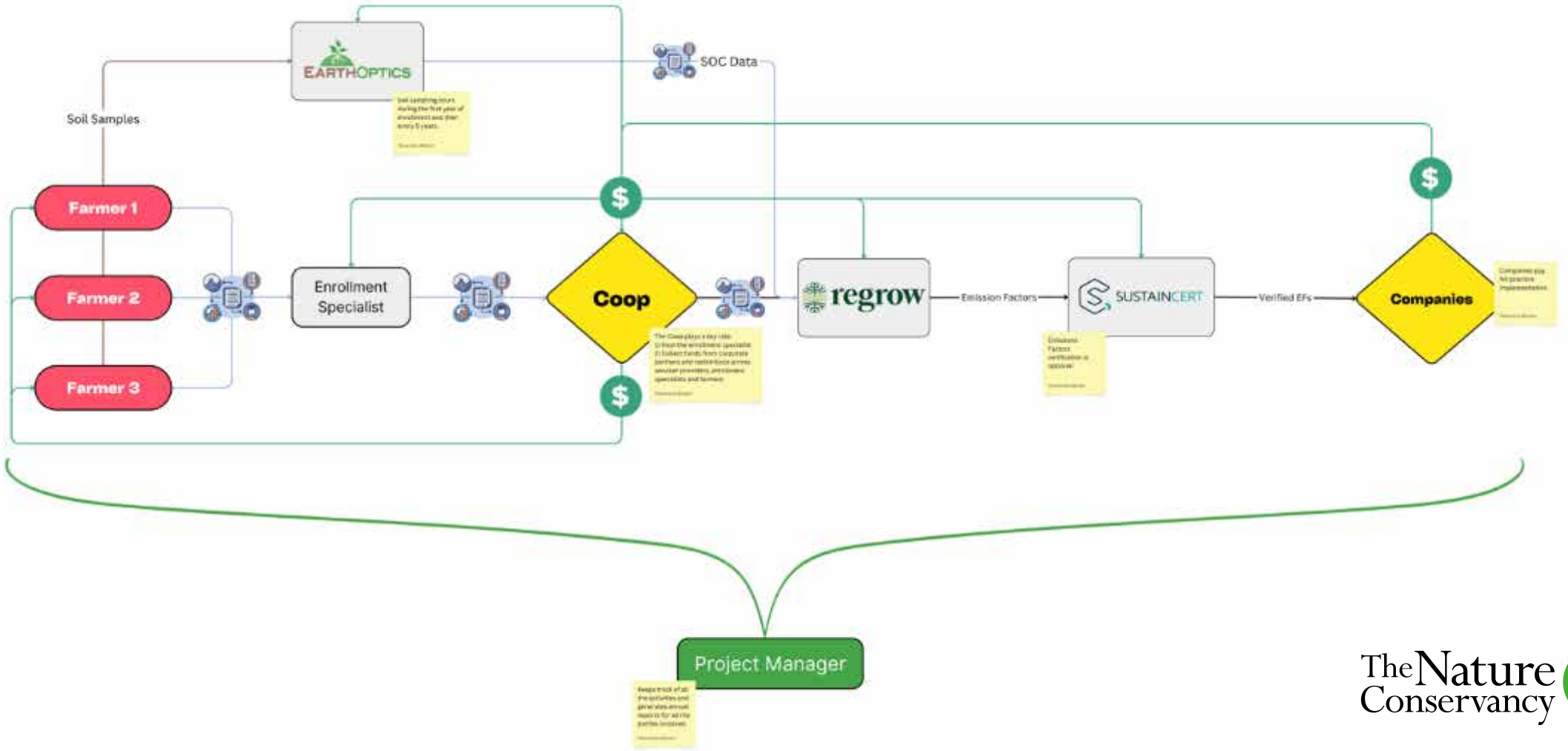
Local Ownership

Shift roles and responsibilities with a progressive transfer of project management activities

Streamline processes to minimize administrative burdens

| | Phase 1 | Phase 2 |
|---|---|---|
| Project Management | TNC | Transition to TBD (e.g., a consultancy, a project developer, or an independent project manager) |
| Project Funding | Supply Chain Companies and NRCS | Supply Chain Companies |
| Farmer Enrollment | Enrollment Specialists | Enrollment Specialists |
| Agronomic Support | TNC, Coops, and SWCDs, | Enrollment Specialists |
| Data Collection | TNC/ESMC | Regrow (data collection platform) and Earth Optics (soil sampling) |
| GHG Benefits Calculation | ESMC through Regrow | Regrow |
| GHG Benefits Allocation | ESMC | Companies with support from SustainCert |

# Landscape-Level Ecosystem Service Markets for Corporate Co-Investment and Community Resilience

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# Questions?

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nature.org/mnagriculture