



# Pilot Field/Pasture Carbon Reports Frequently Asked Questions



## Introduction

### **What is the purpose of this project?**

The goal of this project is to test an informational report that democratizes insights about farm carbon and ecosystem market opportunities. Part of the test is adopting the technology to range and grasslands to expand its usefulness. Conservation districts, producers, and ranchers can use the report to support an informed discussion on an operation's environmental footprint and opportunity in this emerging market.

This winter, NACD will request conservation district and producer feedback through a survey and/or focus group. Our goal is to understand whether the report is useful, how it can be expanded or modified, and how it may inform conservation planning and incentivize conservation practice implementation.

### **Who is HabiTerre?**

HabiTerre is a remote sensing and agricultural modeling company, specializing in highly accurate and scalable estimations of farm productivity and environmental impacts. In addition to emerging carbon and ecosystem market opportunities for farmers and ranchers, companies and consumers alike are increasingly looking to understand where their food comes from and how they can be more sustainable. By generating these insights with observational data and models that replicate the crop growth process, HabiTerre is able to greatly reduce the data burden for producers to understand their sustainability opportunities, satisfy downstream customers of their crops and livestock, and potentially engage in the emerging carbon marketplace.

As leading researchers at the nexus of environmental science, engineering, and AI, our founders realized that the unique mix of their cutting-edge research and proprietary technology could form the basis of this solution. Habiterre was founded in 2019 as a spin-out of the University of Illinois to solve these problems for the food and agriculture industry.

The suite of technology this team has developed includes remote sensing, process models, and artificial intelligence to evaluate past, present, and future cropland performance, including crop rotation, management history, yield, water use, nutrient dynamics, and carbon sequestration.

**Is there a cost to me to participate?**

There is no cost for you to receive a report. However, we do request that you participate in a survey or focus group discussion Winter 2022.

## **Data Collection & Refinement**

**What information is needed to participate?**

This technology has been rigorously validated for corn, soy, and wheat. As such, for cropland we only require your field locations/shapefiles to receive a report. If desired, you may also share additional management information (e.g., historical nitrogen and fertilizer applications). This will yield more accurate reporting. The standard report otherwise utilizes county averages.

The process for range and grassland pastures requires additional management information, such as grazing patterns, number of pastures in rotation, reseeding and tillage.

If a field/pasture boundary file cannot be created, HabiTerre can develop a report using the coordinates of a center point. We will first need to confirm the boundaries with the producer before generating the report. This may delay return of the report.

**Can I get reports on multiple fields and pastures?**

The size of this pilot is limited to a total of 75,000 acres of corn, soy, and wheat fields and 25,000 acres of range and grassland pasture.

For cropland, each producer may submit a maximum of 500 acres for primary consideration. This can be a single field, or up to three for a sum of 500 acres. They can also submit one additional field for secondary consideration.

For range and grasslands, each producer may submit up to two pastures for a maximum of 1,000 acres for primary consideration. One additional pasture can be submitted for secondary consideration.

We are open to a producer enrolling a field and a pasture, for a total of two. They can also enroll one additional field or pasture for secondary consideration.

If there is room in the pilot after we report on the primary fields and pastures, we will also run reports on the secondary ones. Secondary fields and pastures will be taken in the order they are received.

**Where does the report data come from?**

Historic farm practices like tillage, crop rotation, and cover cropping are observed with satellite imagery. Crop/forage growth processes, biomass, and photosynthetic productivity are all both observed and calculated through advanced models that can accurately estimate these processes based upon region, weather, growing conditions, solar radiation, and satellite imagery of the crops/forage themselves. Beyond these observations, we combine other publicly available data sources like soil type and topography, as well as basic assumptions related to primary practices for a region, to inform the full crop/forage model, which estimates aspects such as soil carbon sequestration and greenhouse gas emissions.

**For cropland, is this data from my field?**

Unless you've shared the optional information, we have not collected data or samples directly from your field. Farm practice and crop growth observations and other underlying data layers like soil types are specific to your field, so the modeling results are specific to the field in the report.

**How did you get this data?**

All data is either observed via remote imagery or publicly available. No private producer data was gathered to generate the default reports.

**How accurate is the default cropland report?**

We can estimate with high accuracy (80-90% certainty) the metrics included in these reports. We utilize county-level averages for fertilizer and nitrogen application. Field-specific data would improve the quantified outcomes and estimates.

If you observe inaccurate data and would like to submit corrections, or if you would like to submit your historical fertilizer/nitrogen applications, you may do so through the online enrollment form:

[https://nacd.formstack.com/forms/field\\_carbon\\_reports](https://nacd.formstack.com/forms/field_carbon_reports)

**Can I get a report using my actual field and pasture information?**

For cropland you can share actual management data to be incorporated into the reports. This is optional.

For pastures we are already collecting your management information.

## **Use Cases for the Farm Carbon Reports**

**Can I use this data to enter ecosystem services markets?**

This data is an estimation of your soil carbon sequestration and GHG emissions reduction opportunity. Individual carbon market offerings have different

quantification and crediting mechanisms, so market opportunities may vary depending upon their approach. This is intended to be a tool to support informed discussions as to these approaches and relative market opportunities.

### **When will I receive my report?**

We will be collecting field and pasture boundaries between now and the end of September 2022. Once the boundary files are submitted, we expect it to take about a month to six weeks to generate the reports and send them to your conservation district. They will then schedule some time for you to pick up the report(s).

### **How can I increase my Soil Organic Carbon (SOC)?**

The keys to improving soil health and increasing SOC come down to 5 basic principles as specified by NRCS

(<https://www.nrcs.usda.gov/wps/portal/nrcs/main/nd/soils/health/>):

1. Protect the soil: soil cover in the form of crop and cover crop residue
2. Minimize soil disturbance: reducing tillage improves soil structure, soil microbial activity, and reduces release of soil organic matter through aerobic decomposition
3. Plant diversity: biodiversity improves system resilience and soil structure
4. Maximize living plants and roots throughout the year: Live plant activity feeds the microbiome and continuously introduces additional carbon to the soil via root exudates and plant matter
5. Livestock integration: Animal grazing increases soil organic matter through multiple avenues, including stress on grazed plants increasing root exudates and growth and through the return of organic matter via manure

### **For all farmers doing better than me on cropland yield - how do I get there?**

Yield is highly variable from year to year and field to field depending upon many factors. Even in close proximity, inherent characteristics like soil type and topography and seasonal conditions like weather patterns can vary greatly from one field to the next. Some of these factors can be improved by applying the various approaches to improve soil health noted above. Beyond that, approaches like variable rate fertilization and split fertilization applications throughout the season can both improve crop performance and production system efficiency, which may also create additional carbon market opportunities through reduced fertilizer-related emissions.

### **Who can I contact with other questions and concerns?**

Please reach out to NACD with any questions.

Meg Leader, NACD Projects and Partnerships Coordinator  
at 812.512.1811 or [meg-leader@nacdnet.org](mailto:meg-leader@nacdnet.org).