

Soil Sampling

Managing sampling risk to deliver verifiable soil carbon credits

Introduction

Soil sampling is a seemingly straightforward process, but it carries many challenges and intricacies that must be considered and overcome to be conducted thoroughly, scientifically, and efficiently at scale across a wide geography. Some challenges are related to the human dynamics themselves, but other obstacles lie with the ability to complete tasks at times when hindered by weather and ground conditions. Exploring this endeavor in greater detail can help remind us why we do what we do, how we do it more professionally and safely, and the way this important task can provide the greatest impact for understanding of studied soils. Ultimately, this understanding is also what every carbon credit is built upon, and the rigor applied in the field is what makes the measurements and credits something a buyer can trust.

Why We Sample

There are often layers of considerations and multiple objectives that need to be met by this work. Soil sampling is often done to gather quantitative data about what is in the soil, and explain its potential capacity, why it is behaving a certain way, or why plants or other interacting soil partners are thriving or failing. To do this, soil sampling has to be done with recognition for what can be controlled and what cannot. It should always be done with an eye towards generating data that can lead to insights about areas much larger than the individual locations measured, and toward the establishment of a benchmark to use against the prevailing assumptions.

Protecting Data Quality in the Field

The actual process of soil sampling in the field carries a variety of challenges that must be planned for, negotiated with for prioritization, and ultimately overcome for success to be achieved.

Communication

When soil sampling across a large geographic area, communication that is multi-layered, trustworthy, and persistent is necessary to get information and permission to access growers' lands in a timely manner amidst ever-changing schedules. While some partners and growers are comfortable with and receptive to telephone communication and even text messaging, others are more available and timely to respond to emails and messages through other partners. Tailoring and layering this communication with growers is essential to provide efficiency, transparency, and predictability.

Weather Forecasting

When planning for soil sampling in multiple geographies at the same time, it becomes important to “play” meteorologist: to look at multiple weather outlets for information about where soil sampling is likely to occur unimpeded, and where contingency planning is most urgent to keep progress steady. Especially pertinent to soil sampling row-crop producers, the intersection of overcommunication and overplanning is most necessary for the short windows prior to planting and after harvest has been completed. Multiple sets of plans need to be laid out and communicated in real time to avoid wasted resources and unnecessary frustrations.

Protecting Data Quality



Communication



Weather
Forecasting



Drought &
Wildfire Mapping



Standardization
& QA/QC

Drought and Wildfire Risk

Closely linked to understanding the daily weather is the historical understanding of drought- and wildfire-prone areas. One of the highest-impact strategies that can be undertaken to increase efficiency and worker safety is building in plans that try to avoid regular or current drought- and fire-risk areas during those seasons, and instead prioritizes them before or after those closed windows. This important work also provides consequential and strong partnership impressions among companies, teams, and growers.

Standardization and QA/QC

Soil sampling is only as valuable as the data that is used to plan for it, execute it, and deliver from it. Among the most important aspects of generating useful soil sampling data is standardization. Standardization is one of the least-exciting tasks, but it is also a lifeline to reducing seemingly endless questions, inconsistencies, and doubts about what soil sampling data means and represents. Working with multiple partners and entities to accomplish widespread soil sampling means having to bring together shared best practices and also non-negotiables to bring clear consistency to the work to be conducted and the data recorded. Similarly, persistent and probing quality analysis and quality control (QA/QC) throughout the planning, implementation, and follow-up processes are other mundane, yet irreplaceable tasks to ensure robust data quality. The ability to conduct these QA/QC processes in as near real time as possible further enhances control and ensures reliable results.



Sampling halted by an incoming dust storm.
Washington, Fall 2024.

The Sampling Rigor Behind the Credits

Soil sampling can be an important and valuable task when the reasons for it and expectations from it are clear from the beginning and lived out in the planning, methods, and attention to detail. Taking into consideration a variety of challenges that may be encountered along the way, and thus reducing their impact in advance, is one more important step to ensuring efficient operations and completed goals. Soil sampling should be viewed as a multi-faceted, dynamic process that requires strong commitments to persistence, dialogue, and validation. The credits issued from this process meet the requirements of third-party verification and ultimately buyers' own due diligence.



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