ClieNFarms
Climate Neutral Farms

ClieNFarms Practice Abstracts

Strategies for sampling and from Data Collection to Interpretation

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In ClieNFarms, climate-neutral farming means calculating farm emissions and offsetting them against carbon sequestered in soil to determine net emissions. However, measuring and modelling soil organic carbon (SOC) is challenging due to variability caused by land use, management, and local conditions. At farm level, sampling is complex as farms have diverse fields and practices. To detect SOC stock changes over time, spatial and depth variability must be considered in the sampling design.

New technologies such as satellite-based stratification, AI, and modern equipment can improve SOC accuracy. In the ClieNFarms project, consortium partner AgriCircle has defined a soil sampling methodology comprising high resolution soil stratification that combines satellite data and machine learning which is used to identify the most representative sampling points based on soil properties. This method is based on the following steps:

- Field pre-selection that represents one crop and solution management area by I3S managers.
- Mapping field boundaries (.shp/.kml formats).
- Land stratification to define homogeneous sampling zones per field.
- Defining 10×10 m sampling grids per sampling zone and field.

- Collecting soil samples (30 cm depth) and pool 20 sub-samples per grid.
- Lab analysis of samples.
- SOC stock results and 10×10 m soil maps generated via AgriCircle portal.

Challenges: Initial sampling showed issues like inconsistent depth, tool misuse, sample volume variation, and data entry errors. The protocol was revised: standardized tools, detailed guides, GPS tracking, and training for I3S managers were introduced. Improved data handling and documentation formats enhanced sampling consistency and data quality.

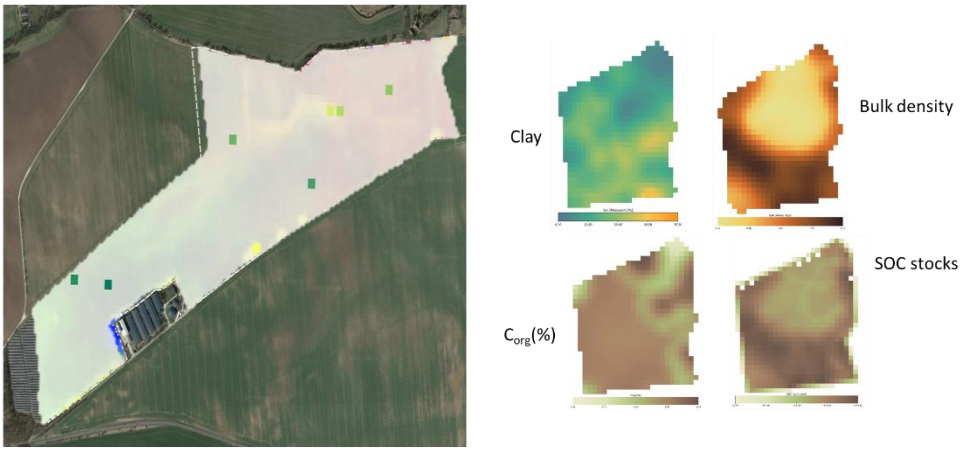

Figure 1 : Example of sampling strata using the AgriCircle portal.

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