

Carbon sequestration opportunities in soils in Latin America and the Caribbean

URUGUAY, ARGENTINA, CHILE, COLOMBIA, COSTA RICA, ESTADOS UNIDOS



Webstory



Technological solution

Country-specific Tier 2 (IPCC) stock change factors for soil organic carbon were developed for the main production systems of Latin America and the Caribbean (LAC). Unlike default Tier 1 values, derived at the global scale and associated with greater uncertainty when applied to region-specific conditions, these factors are based on data measured in each country, enabling more accurate GHG inventories and guiding the selection of management practices with tangible mitigation and adaptation potential.



Technological description

Harmonized protocols for soil sampling and soil organic carbon (SOC) stock estimation, grounded in IPCC methodologies, were implemented across Argentina, Chile, Colombia, Costa Rica, and Uruguay. These were complemented by the calibration of near-infrared spectroscopy (NIRS) to reduce quantification costs, and by capacity-building activities that enabled local teams to advance toward Tier 3 methodologies in the future.



Impacts and results

The project produced four harmonized protocols: soil sampling for SOC stock estimation and NIRS analysis, sample preparation and processing for analysis of C, organic N, and stable isotopes ($^{13}\text{C}/^{12}\text{C}$ and $^{15}\text{N}/^{14}\text{N}$), carbonate removal, and NIRS calibration curves for organic C and N. From 837 sampling sites, a database of Tier 2 carbon stock change factors was developed, providing input for the national GHG inventories, NDCs, and NAMAs of each country. Additionally, an SOC sequestration opportunity with potential for implementation as a NAMA was identified, with its economic and environmental impacts assessed across the five countries. Regional workshops were held on SOC stock determination at a site, monitoring stock changes under a specific land use or management, and simulation model use. As a complementary product, a public visualization tool was developed in Google Earth Engine, featuring geospatial layers of SOC and environmental variables for the five countries.



59
Total technicians



41 %
Women trained



238
Dissemination and training instances



2729
Sampling sites



+ 5
Technological solutions and innovations



+ 5
Technologies with lower emissions



5
Protocols generated



+ 42
Networked institutions

MAIN DONORS



PARTICIPATING ORGANIZATIONS

