

Restoration of soil organic carbon: contribution of no-tillage systems

Assessment of the capacity of No-Till Systems (NTS) to restore soil organic carbon in Argentina, Uruguay, Paraguay, and Spain, generating scientific evidence to mitigate climate change.



-  **+3 unidades**
Sampling stations
-  **+20 Unidades**
Georeferenced sites
-  **+3700 Personas**
Direct beneficiaries
-  **+500**
People trained
-  **2**
Undergraduate or postgraduate theses
-  **1080**
Target soil samples to be analyzed



Generating scientific evidence on the potential of no-till systems for carbon sequestration and agroclimatic resilience.

Initiative

The project evaluates the capacity of NTS to restore SOC across different agroclimatic zones in Argentina, Uruguay, Paraguay, and Spain, adapting a prior experience from Brazil. Through an interactive innovation model, it positions farmers as central actors in knowledge

generation and adoption. The initiative aims to deepen understanding of these processes under real-world conditions with more than 15 years of NTS implementation. In addition, it will manage and transfer this knowledge to producers and researchers to promote sustainable practices.

Implementation of a standardized measurement protocol and machine learning tools to assess soil carbon.

Tech solution

The solution consists of conducting field measurements using a standardized protocol for data calculation and interpretation across diverse agroclimatic zones. This standardization allows for the characterization of cropping systems and ensures comparability of data collected across regions. In addition, machine learning tools are

incorporated to analyze data obtained from real production fields with more than 15 years of no-till implementation. This methodological approach, which integrates farmers' practical knowledge with scientific validation, generates robust quantitative indicators on soil carbon dynamics, facilitating informed decision-making.

MORE INFO



Impacts and Results

In a context of high pressure to reduce emissions and existing information gaps, the project will deliver scientific evidence on the capacity of NTS to restore SOC. A baseline of adoption will be established in participating countries, and the benefits of these systems will be demonstrated. The initiative will directly benefit 3,700 producers, technicians, and advisors

from participating associations, promoting ecosystem resilience. At a strategic level, the indicators generated will be shared with decision-makers to inform the design of public policies that support sustainable production, facilitating compliance with regulations and access to international markets.

Organizations

Main Donors

