

Carbon gaps and service crops

Assessment of soil carbon gaps and
validation of cover crops in Argentina,
Uruguay, and Bolivia, promoting
sustainable agricultural systems that
regenerate organic matter and mitigate
climate change.



Argentina /Bolivia /United States
/Paraguay /Uruguay

-  **+10**
Agroecological regions
-  **+100**
Analyzed samples
-  **+2500**
Expected direct beneficiaries
-  **15**
Farms with cover crop
demonstration trials
-  **1**
Carbon gap map to be
published
-  **+45**
Plots established with
comparative treatments
-  **+10**
Technicians to be trained
-  **+12**
Workshops and technical
field days expected



Soil diagnosis and regeneration strategies to drive an agroecological transition in South American production systems.

Initiative

The project seeks to promote more sustainable agricultural systems through two strategies: estimating the carbon gap as a diagnostic tool and implementing cover crops for ecological intensification. Through a transdisciplinary platform that brings together academic institutions,

research organizations, and producer associations from Argentina, Uruguay, and Bolivia, a co-innovation process will be developed. Regional carbon gap maps will be produced, and management practices will be adapted at the local level to increase carbon storage and agricultural production.

Analysis of functional carbon fractions and establishment of a trinational network of cover crop trials.

Tech solution

The methodological solution addresses degradation through both diagnosis and intervention. First, it estimates the carbon gap by analyzing functional soil fractions (particulate and mineral-associated) in production fields compared to reference sites, accurately identifying the magnitude of loss and specific regeneration needs. Second, it implements a

trinational network of on-farm trials to validate cover crop options. These trials monitor biomass, water use, nodulation, and their effects on cash crop yields, using new indicators (such as nitrogen mineralization potential) to detect early changes. The information generated will feed into an open-access digital platform to support decision-making.

MORE INFO



Impacts and Results

In response to historical carbon loss and dependence on external inputs, the project will enable the recovery of stable soil organic matter, reducing net greenhouse gas emissions. At the production level, the use of cover crops will improve yields of subsequent crops and reduce the need for nitrogen fertilizers and herbicides, generating

economic savings. The initiative will directly benefit more than 2,500 producers, technicians, and researchers, and indirectly around 55,000 regional stakeholders. Public goods such as regional maps, databases, and diagnostic tools will be developed, promoting more resilient and inclusive agriculture for women, youth, and family farmers.

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Organizations

