

14. DSCATT

Dynamics of Soil Carbon Sequestration in Tropical and Temperate Agricultural systems



DSCATT

Agricultural Intensification and Dynamics of Soil Carbon Sequestration in Tropical and Temperate Farming Systems

Questioned on the 4/1000 initiative on soil carbon (C) sequestration to face climate change (CC), several Labex Agro units and their partners propose to pull together their research capacities in order to provide new insights in soil C sequestration. The DSCATT project proposes to explore the potential for sequestering C in cultivated soils, taking into account the sustainability of agricultural practices in the context of global changes.

OBJECTIFS

The overall goals of the project are:

- To develop sustainable agricultural systems tailored for both higher productivity and higher C sequestration
- To raise awareness of the role of soil management for the mitigation of GHG emissions
 - to assemble various research units from the Agropolis Foundations' scientific network and their partners in addressing major challenges with climatic change and food security.

The main research question is: What are effective and socially acceptable strategies to foster soil C sequestration in agricultural systems?

To answer to this question, we consider that:

- Efficient soil carbon sequestration (SCS), that is a net positive soil-plant systems C balance over a long period of time, can be achieved in ways that are economically, socially and environmentally sustainable and diffusible.
- The SCS strategies concern both farmers' practices at the field and farm level, and the local institutional arrangements, at the territory level.
 - Prerequisites for farmers and local institutions to adopt SCS practices are: (i) the long-term soil C impact of present agricultural systems are known, (ii) technical changes or social arrangements enhancing SCS are identified and evaluated, (iii) social, economic and environmental impacts of targeted innovating SCS farmer practices or social arrangements are assessed.

Consequently, the following knowledge is needed:

- Long-term SCS dynamics and their determinants at the field, farm and landscape levels;
- Determinants of individual and collective capacity to adopt new practices over the long term;
- Indicators and tools helping multi-actors to assess and decide objectively the best strategies to intensify SCS; The present project will identify and examine interactions between biophysical and socio-economic drivers and processes across the temporal and spatial scales to better understand the determinants and social and institutional conditions of adoption of soil C enhancing farming and institutional strategies. Studying processes and interactions implies transdisciplinary work using a conceptual social-ecological systems framework.

Responsable :

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ACTIONS

DSCATT project operates at 4 sites (in Senegal, Zimbabwe, Kenya, and France). The project addresses 3 interrelated scales, i.e. field, farm and territory or village scale