EGU2020-3298
https://doi.org/10.5194/egusphere-egu2020-3298
EGU General Assembly 2020

LIFE Nadapta: A regional-scale strategy using soil condition assessment for evaluating climate change vulnerability and adaptation of agriculture in Navarre, Spain

Inigo Virto[1], Rodrigo Antón[1], Fco. Javier Arricibita[1], Alberto Ruiz-Sagaseta[1], Alberto Enrique[1], Isabel de Soto[1], Luis Orcaray[2], and Armel Zaragüeta[2]
[1]Universidad Pública de Navarra, NIF: Q-1350012-G, Dpto. Ciencias del Medio Natural, Pamplona, Spain (inigo.virto@unavarra.es)
[2]Instituto Navarro de Tecnologías e Infraestructuras Agroalimentarias, 31610 Villava, Spain

The Life Nadapta project (https://lifenadapta.navarra.es/en/inicio) aims to develop a regional-scale integrated strategy for climate change adaptation in the region of Navarre (Spain). This strategy encompasses the most affected economic sectors, including agriculture. Agriculture is highly dependent on climatic conditions, and therefore especially vulnerable to changes in climate. This vulnerability is dependent, among other factors, on soil characteristics and condition. The interaction of this vulnerability with the exposure of agrosystems to climate change impacts (*drivers* of change) can explain the expected risks associated to these impacts.

Understanding the resilience and possibilities of adaptation of agrosystems requires assessing how they can modulate their vulnerability and/or reduce their exposure. Agricultural management, and in particular, soil organic matter management play a key role in this sense.

In this framework, the project assesses the vulnerability and adaptability of agrosystems in three steps: First, a preliminary diagnosis of soils vulnerability in the territory was conducted, including a division in 12 homogeneous areas and the particular assessment of soil characteristic in each of them. Then, three major strategies of agricultural management aiming to improve the adaptability of agrosystems (namely crop rotations, organic fertilization and conservation agriculture) will be assessed by selecting representative agricultural plots under contrasted management in each of the areas. More than 150 plots will be included in this assessment, that makes a regional network for monitoring. That for, a specific sampling design was developed to effectively reflect the variability and different soil characteristics, and ant the same time, grant homogeneous paired comparisons. As the three strategies are known to have a potential to increase soil organic C (SOC) stocks, and to modify other soil parameters such as water retention or erodibility, the last phase consists in assessing SOC and other indicators of soil condition, under the light of the projected climate change scenarios and identified impacts in the region.

Preliminary results show differences in vulnerability for the selected areas, and different responses of SOC and other soil indicators to the strategies tested, depending on the natural

characteristics of the soils and the historical land-use in the territory.