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Green Covers as a Soil Recovery Measurement in Agricultural Policies

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Abstract

In recent decades, agriculture has been evolving in two directions: on the one hand, the accelerated growth in the use of new technology, and on the other hand, the transition towards sustainable agriculture. The first has led to an excessive consumption of fertilizers and plant protection products, including herbicides, and thus to a loss of biodiversity, organic matter, and nutrients in the soil. The second is a new ecological revolution that aims to reduce these inputs through the implementation of different measures proposed by the new European Agricultural Policy (CAP), in the Farm to Fork and Biodiversity Strategy for 2030, to mitigate climate change, avoid desertification and erosion, improve the structure and biodiversity of soils, and achieve a more sustainable agricultural system. Within this context, in Spain and specifically around Valencia, in the region of Ribera Alta del Xúquer, a study is being carried out on plant cover in persimmon plots with mixtures of Festuca, Medicago, Onobrychis, Trifolium, and Vicia species, among others, comparing them for their contribution to the soil in terms of organic matter content, biomass and biodiversity that improves the properties of the soil and the crop. For this purpose, two replicated plots are sown with different cover crops. In addition, some plots with spontaneous plant cover are monitored. In all cases, soil samples are obtained for physico-chemical and biological analysis, as well as hyperspectral images for processing and study. The experimental work begins in 2022 and will be completed in 2024. By this date, the plant covers have been planted, several soil samples have been taken and soil respiration has been measured, one before planting and every three months thereafter. The soils have been analyzed in the University laboratory, obtaining data on organic carbon, nitrogen, among other elements, electrical conductivity, and pH, and the Berlesse funnel has been used to obtain a sample with soil microfauna. Satellite images have also been used to obtain relevant information for the study. The initial results are favorable, as an increase in the amount of organic matter, the C/N ratio and soil biodiversity has been observed, with useful fauna such as Oribatid mites, which are predators of crop pests, being found. It is therefore a question of improving soil fertility and auxiliary fauna and finding a method that allows its management through geoprocessing tools, which facilitates the work of the farmer in making decisions on pest control, the reduction of inputs such as fertilizers, water, or dependence on herbicides to avoid the competitiveness of the crop and the use of

herbicides.

Keywords: Green covers, soil improvement, geoprocessing tools, agricultural policies

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