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Title: ***Effect of trees in the soil nutrient concentration and pasture productivity in Mediterranean silvo-pastoral systems***

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Abstract: **Abstract**

Silvo-pastoral are mixed systems of trees and grass, which have been proposed as a means to extend the benefits of forest to farmed land. Agroforestry systems under semi-arid Mediterranean conditions, called **montados** in Portugal and **dehesas** in Spain, cover substantial areas in the world. These silvo-pastoral systems are the most extensive European agro-forestry system, as they cover 3.5–4.0 Mha in Spain and Portugal. Long-term studies are essential to assess the magnitude of the temporal nutrient flow dynamics in terrestrial ecosystems and to understand the response of these systems to fertilizer management. In order to implement the conservation task and recovery of resources through silvo-pastoral systems it is necessary to know and correct potential limiting factors, especially the soil factor, and this requires agronomic knowledge as well as the implementation of the available new technologies. In this context, this task aims at a better understanding of the contribution of the two components of **montado** ecosystem (trees and herbaceous vegetation) on the soil nutrient and water dynamics, that allow for the interpretation of the variability of pasture dry matter yield and help the farmer in the management of tree density. Collaterally the task will evaluate and calibrate new technologies that simplify the monitoring of soil, grassland, trees and grazing animals.