



## **Litter contribution to soil organic carbon in the agriculture abandons processes**

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Mechanisms of litter decomposition, translocation and stabilization into soil layers are fundamental processes in ecosystem functioning as it regulates the cycle of soil organic matter (SOM), CO<sub>2</sub> emission into the atmosphere, carbon sequestration into the soil. In this study, it was investigated the contribution of litters of different stages of Mediterranean secondary succession on Carbon sequestration, analyzing the role of earthworms on translocation of SOM into soil profile. For this purpose  $\delta^{13}\text{C}$  difference between meadow C4-C soil and C3-C litter were used in a field experiment. Four undisturbed litters of different stages of succession were collected (45, 70, 100 and 120 since agriculture abandon) and placed on the top of isolated soil cores.

The litter contribution to C stock was affected by plant species and increased with the age of the stage of secondary succession. The soil organic carbon after 1 year since litter position increased up to 40% in comparison to no litter treatment in soil with litter of 120 years since abandon.

The new carbon derived from C3-litter was decomposed and transferred into soil profile thanks to earthworms and dissolved organic carbon leaching. After 1 years the carbon increase attributed to earthworm activity ranged from 6% to 13% in soil under litter in field abandoned since 120 and 45 years, respectively.