



Fixed CO₂ in two forest soils in Spain

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The forests play a decisive role in the carbon cycle. The CO₂ balance in the global carbon cycle has been determined considering that C + O₂ -> CO₂, which determines the fixed CO₂ (kg/m²) in each horizon that integrates the profiles of the studied soils. The study focuses on fixed CO₂ in soils under holm oak (*Quercus ilex* sp. *Rotundifolia*) of Páramo, placed in the region of Madrid, and Alcarria, both of them in Spain. In these places, the adequate conditions are given for the formation of a *mollic* epipedon, which is a mineral horizon with a high content on organic matter. These *Mollisols* have a *mollic* epipedon and they are influenced by different altitude (Páramo: 825 m, Alcarria: 920 m), temperature (Páramo: 12.7 °C, Alcarria: 12.1 °C), precipitation (Páramo: 556 mm, Alcarria: 599 mm) and ETP (Páramo: 728 mm, Alcarria: 707 mm). The parental material in both cases is calcareous. This research shows that the fixed CO₂ content is related to the soil properties and the environmental conditions. The Páramo soil fixes more quantity of CO₂ than Alcarria soil, because Alcarria soil is located at more altitude and it has more precipitation and less temperature and ETP. With these conditions Alcarria soil has more humidity, more vegetation and then more soil organic matter.