



Quantification of carbon (C) reservoirs and belowground C input in soil in terrestrial ecosystems of the italian peninsula under different land-uses.

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In the last decades it has been recognized as an objective of major importance the estimation of C sinks in terrestrial ecosystems. Through the application of Eddy Covariance technique it is measured the amount of C that is exchanged by terrestrial ecosystems, but it is not possible to distinguish whether the C eventually absorbed is being stored as plant biomass or soil organic matter, the latter being the most stable C pool. The fate of a large part of C assimilated by the plants is invested in root growth and exchange, thus root exudates and residues may constitute a significant input of C to the soil on yearly basis.

Within the CARBOITALY project, whose main aim is the quantification at national scale of the carbon sinks by different Italian ecosystems types, the purpose of this study was to estimate the soil C reservoirs and their dynamics at annual time-scale. Soils under different climates, ecosystem types and land uses were analysed for their C content of soils and the estimation of the net annual C input released belowground as dead root remains or root exudates, was performed using $\delta^{13}\text{C}$ analysis, through the implant of C4 soil root in-growth cores under pre-existing C3 vegetation.