

Soil Organic Carbon (SOC) distribution in two different soil types (Podzol and Andosol) under natural forest cover.

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Andosols are young soils that shall know a successive evolution towards pedological types where the dominant pedogenetic processes are more evident. Vegetation and climate influence Andosols evolution to other order of soils. In cold and wet climates or on acid vulcanite under heavy leaching young Andosols could change into Podzols (Van Breem and Buurman, 1998).

Were investigated a Podzol soil (World References Base, 2014) at Zoniën (Belgium), were and an Andosol soil (World References Base, 2014) at Lago Laceno (Avellino, Italy). This study shows the data on the SOC (Soil Organic Carbon) fractionation in two profiles from two natural pine forest soils. Together with the conventional activities of sampling and analysis of soil profile were examined surveys meant to fractionation and characterization of SOC, in particular: Total Organic Carbon (TOC) and Total Extractable Carbon (TEC) soil contents were determined by Italian official method of soil analysis (Mi.P.A.F. (2000)). Different soil C fractions were also determined: Humic Acid Carbon (HAC), Fulvic Acid Carbon (FAC), Not Humic Carbon (NHC) and Humin Carbon (Huc) fractions were obtained by difference. In the whole profile, therefore, were also assayed cellulose and lignin contents. The aim of this work was to compare the distribution of different soil organic components in a podzol and a soil with andic properties. The data show great similarity, among the selected profiles, in the organic components distribution estuded.

References:

- Mi.P.A.F. – Ministero per le Politiche Agricole e Forestali – Osservatorio Nazionale Pedologico e per la Qualità del Suolo (2000): Metodi Ufficiali di Analisi Chimica del Suolo. In: Franco Angeli (Editor), Collana di metodi analitici per l'agricoltura diretta da Paolo Sequi, n. 1124.2, Milano, Italy.
- Van Breem N. and Buurman P. (1998) Chapter 12 Formation of Andisols. In: Soil formation. Kluwer Ed., Wageningen, The Netherlands, 271-289.
- Ussiri D.A.N., Johnson C.E.J. (2003). Characterization of organic matter in a northern hardwood forest soil by ¹³C NMR spectroscopy and chemical methods. Geoderma, 111:123-149.
- Van Soest, P.J., Wine, R.H., (1968). Determination of lignin and cellulose in acid-detergent fibre with permanganate. Journal of the Association of Official Agricultural Chemists 51, 780-785.
- Ciavatta C., Govi M., Vittori Antisari L., Sequi P. (1990). Characterization of humified compounds by extraction and fractionation on solid polyvinylpyrrolidone. Journal of Chromatography, 509:141-146.
- Dell'Abate M.T., Benedetti A., Trincherà A., Dazzi C. (2002). Humic substances along the profile of two Typic Haploxerert. Geoderma, 107:281-296