



Soil Organic Matter to Soil Organic Carbon ratios in recovered mountain peatlands using Vis-Nir spectroscopy approach.

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The present research is part of a Life Project title "Inland Wetlands North of the Iberian Peninsula: Management and restoration of wetlands and hygrophilous environments" TREMEDAL (LIFE 11/ENV/ES/707) in which 25 wetland sites distributed by Galicia, Asturias, Castilla and León, País Vasco and Navarra were selected to be protected, restore or improve their conservation status and store seeds of bog plant species in the gene bank of Atlantic Botanic Garden of Gijon City, Spain.

In Cantabrian Mountain Range two Poldjes (Glacio-Karstic depressions) site in Picos de Europa National Park were selected to develop an experimental action in the framework of the Life project. The selected sites harboring the most biodiverse peatland plant communities in the Cantabrian Mountain Range thus are in danger of extinction due to overgrazing. The action proposes the exclusion of livestock and wild herbivores in 5 parcels in order to contrast the differences in evolution of plant communities, hydrology and soil organic matter between grazed and non-grazed areas; and to determine future management measures that can reconcile traditional livestock raising with a better conservation of peatlands.

The peatland are Vega of Liordes (Castilla-Leon) at an average altitude of 1868 m and filled mainly by clayed ferruginous sediments and Vega of Comella (Principality of Asturias) at an average altitude of 850 m and filled by at least 49 m of glacial and lacustrine sediments and 8 m of necromass from peatland vegetation. The soils developed are histosols under seasonal hydric regime in which the phreatic level suffers fluctuations over 30 cm along the year.

At the time 0 (time fences were) 45 samples of the upper 15 cm of the histosols inside and outside the fences were taken. At the time 1 (one year later) were re-sampled. Total organic carbon (TOC), Oxidizable Organic Carbon (OC), Carbonates presence and pH were analysis by chemical procedures. Also the Vis-Nir spectral analysis of the samples was taken. The PCA (Principal Component Analysis) to spectra by soil population was performed in order to recognise the molecular composition of the soil carbon of the peatlands inside and outside the fences and the changes suffered with the transformation of the soil environment by the lack of herbivores pressure.

At the time 0 there are not carbonates in the soil samples analysed, also not differences in pH; TOC and OC inside or outside the fences area found. Nevertheless in Liordes pH values reaches 7.48 and in Comella not surpasses 5.0. Respect Soil Organic Carbon Liordes has a maximum of 48.4 g of TOC and 42.8 g of OC/Kg and Comella 59.2g of TOC and 47.1g/ Kg. There is not too much difference between TOC and SOC amounts highlighting the fact that most of the organic matter in soils correspond to poorly evolve organic matter. The Nir spectra (350-2500nm) reveal the presence of cellulose amorphous and carbohydrates (peaks at ~1500 and ~2000 nm) as the main components of these soils.