Estimation of microbial biomass by ultra-violet absorbance in calcareous soils under different land uses

M. Llorente, F. Lafuente and B. Turrión

E.T.II.AA, University of Valladolid, Spain (mireia.llorente@pvs.uva.es / Phone: +34 979-108331)

Soil organic matter (SOM) is recognised as an important determinant of C-driven climate change. An improved understanding of SOM dynamics is vital if we want to increase our awareness of how soil management affects soil fertility and C sequestration. The ability to estimate microbial biomass C (MBC) is of fundamental importance for studying a range of soil processes, including those involved in C decomposition and nutrient cycling. Also the MBC has appeared to be early sensitive indicators of land use changes. The widely used method for MBC estimation is the Fumigation Extraction Method been complemented by analyses of the C released. However, this method is labour intensive and time consuming. Different studies reported a correlation between biomass C, as measured by fumigation-extraction method, and estimates of the microbial biomass, as measured by UV absorbance at different wavelength. The procedure is based on the fact that compounds released after chloroform fumigation from lysed microbial cells absorb in the near UV region.

This study, carried out on calcareous moor at the region of Castilla y León (Northwestern Spain), assesses the relationship between MBC measured by fumigation-extraction method and estimates by UV absorbance at 224, 254, 280, and 340 nm of 0.5M K_2SO_4 extracts of fumigated and unfumigated soils of 16 profiles under different land use managements: native *Quercus ilex* forest, cereal crop, and *Pinus halepensis* plantation. It also assesses the sensitivity of the MBC estimations to land use changes in calcareous soils.