



Quantification of Soil Respiration in Different Saline Soils of Alicante (Spain)

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A great part of Mediterranean soils are affected by salinization. This is an important problem in semiarid areas and the level of salinity soil can be moderate to high in many cases. The salinization affects to 25 % of irrigated agriculture producing important losses on the crops. The salinization of soil produces important degradation processes in soil and loss of its quality. It is well-known the effect of salinity on microbial activity of the soil, so the main objective of this research was to asses the relation between the level of salinity in the soil and the response of microbial activity.

An experiment was developed to determine and quantify the soil respiration rate in forty different soils with different level of salinity. Soil from the South East of Spain, affected by different levels of salinity (0.1-2 mS/cm), with low organic matter content and different texture, were selected for this purpose.

The characterization of these soils was done to assess the contribution of the parameters analyzed on the respiration rate of soils. The main parameters of their characterization were the organic matter content, soil salinity (electrical conductivity of soil in saturated paste and soil-water extraction 1:5), and texture. The equipment used to estimate the soil respiration was a Bac-Trac and CO₂ emitted by the soil biota was measured and quantified by electrical impedance changes of a solution.

The most important parameter associated with soil respiration was de organic matter, followed by soil salinity determined by the measured of the electrical conductivity. It was observed that organic matter content was the factor that more influences the respiration, appreciating values of 9-10 mg CO₂/kg soil h, in soils with more than 0.5% of organic matter, and rates of 30-40 mgCO₂ /kg soil h, in soils with 3.4% of organic matter. It was also observed a decrease of microbial activity with the increase of salinity in the soil.