

ORIGIN OF COMPOST SALINITY AND ITS CONSTRAINTS FOR COMPOST USES

M. López, O. Huerta-Pujol, M. Gallart, F.X. Martínez-Farré and M. Soliva

Departament d'Enginyeria Agroalimentària i Biotecnologia. Escola Superior d'Agricultura de Barcelona. Universitat Politècnica de Catalunya. c/ Esteve Terradas 8. 08860 Castelldefels .Spain
xavier.martinez-farre@upc.edu

Compost is a useful term to define materials of specific characteristics, but it does not relate to its composition or the uses. One of the parameters that can help in the differentiation for use is the salinity, which is very dependent on the raw material and on the biological process.

Composting of organic wastes causes the concentration of mineral components due to decomposition or transformation of the organic fraction. When materials are highly degradable, as organic fraction from municipal solid waste (85-90% of degradable organic matter), generate an important increase in concentration of the mineral part, increasing then the salinity. In the other hand, vegetable materials with high content in lignin and cellulose are far less degradable, leading to a lower increase in the salinity.

Moreover, it has to be taken into account that mineral composition of many organic materials such as fruit and vegetable waste, green waste or yard trimmings are strongly influenced by soil and water composition. In the case of Mediterranean areas, some of the organic wastes can show a different composition to same kind of waste from countries from central or northern Europe.

It should be considered also the variations due to handling during biological process, where mixtures, watering, leachates management, etc., can affect composition, and particularly the salinity (which can vary between 2 and 14 dS m⁻¹ for compost), being then a parameter to be monitored along the process and before a land application of the product, because high values can negatively affect germination and crop growing.

Electric conductivity in compost is mainly due to cations Na⁺, K⁺, Ca²⁺ and Mg²⁺ and anions HCO₃⁻, Cl⁻ and SO₄²⁻, being approximately the 98% of total soluble salts. Also, ammonium can appear during decomposition and while nitrates most at the end of the process. The content in these salts is dependent on extraction and initial conditions of the material (pretreatment, moisture, etc.) which should be adequately known to interpret the results and compare them with other.

Keywords: mineral content, composting, mineral concentration, electric conductivity

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