



Evolution of some maturity parameters during a sewage sludge composting process

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The use of immature composts produces toxicity problems that inhibit seed germination and plant development. For this reason, it is necessary to understand more fully the composting process and identify parameters to determine the maturity of the final compost.

In this work, the evolution of the following parameters during the process of sewage sludge composting was analyzed: C mineralization (Cmin), water-soluble carbon (WSC), E4/E6 and E2/E3 ratios, ash percentage, total humic extract, humic and fulvic acids, total and Kjeldahl nitrogen, total and oxidizable organic carbon. Additionally, the spectra of the samples were obtained using the near-infrared reflectance spectroscopy (NIRS).

This composting process was developed in the municipal wastewater treatment plant in Aspe (SE Spain). The composition (in volume) of the analyzed material was 50% sewage sludge and 50 % straw and sawdust (25% straw and 75 % sawdust). The straw favours the aeration and the sawdust absorbs the moisture, being both sources of carbon to improve the C/N relationship. Ninety samples representing all the composting process (with a mean residence of 6-7 weeks) were used for the present study.

WSC, Cmin and E4/E6 were the parameters that best explained the composting process with the most clear evolution (decrease for the case of WSC and Cmin, increase for E4/E6). Moreover, significative correlations were found among the parameters. Finally, the spectral information separated samples of the beginning of the process from

the rest, presenting the NIRS as a valuable, easy and fast tool to control the composting process.

Acknowledgements The authors gratefully acknowledge the financial support of the research to the Spanish Ministry of Environment (Number of expedient: 021/2006/2-4.2).