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## ANALYTICAL METHODS COMPARISON FOR pH DETERMINATION OF COMPOSTING PROCESS FROM GREEN WASTES

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### Abstract

Composting is the accelerated microbiological decomposition of organic waste. pH, temperature, and moisture are necessary to be monitored to ensure an adequate control of this process. pH can be a fundamental indicator of the degree of degradation, however, there are few specific analytical methods of its determination in samples originated from composting and, therefore, data can be difficult to interpret when consulting the literature. With the aim of evaluate extractant solutions ( $\text{CaCl}_2$   $0.01 \text{ mol.L}^{-1}$  and  $\text{KCl}$   $1 \text{ mol.L}^{-1}$ ) and the universal solvent (water) used for pH determination, a comparison of four analytical methods was performed in samples originated from composting of leaf and garden waste. A descriptive statistical analysis, normality tests (Shapiro-Wilk), comparison of medians (Kruskal-Wallis with post-hoc by Nemenyi) and linear regressions with robust variance were performed (software R 3.4.2). Statistical analysis showed significant differences, suggesting  $\text{CaCl}_2$  and  $\text{H}_2\text{O}$  methods tend to be more indicated when is desired to apply the final compound directly on the soil.  $\text{KCl}$  tends to be the solution with the greatest extraction capacity of  $\text{H}^+$  ions. Therefore, the waste characteristics and the purpose of the monitoring parameters must be evaluated for the determination of the appropriated pH methodology.

**Keywords:** green waste, leaf and garden waste, microbiological degradation, organic waste, pH analytical methodologies

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