



# 7<sup>th</sup> INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

## Academic

“CLEANER PRODUCTION FOR ACHIEVING SUSTAINABLE DEVELOPMENT GOALS”

### **Verification of the applicability of organic fertilizer, obtained in the composting and biodigestion processes, in the production of American lettuce (*Lactuca sativa* L.)**

SILVA, C. <sup>a\*</sup>, CARVALHO, J. V. C. <sup>b</sup>, DELAI, V. M. <sup>a</sup>, DIAS, A. B. <sup>a</sup>, ROCHA, S. A. <sup>a</sup>, SILVA, L. K. <sup>a</sup>

a. Instituto Federal do Paraná- Campus Umuarama, Paraná, Brasil

b. Universidade Federal de Minas Gerais, Minas Gerais, Brasil

\*creirdasilva@hotmail.com

#### **Abstract**

In Brazil, there is a lack of consolidated initiatives for the recovery and recovery of the organic fraction, which has an overload in the final disposal systems, which receive approximately 71.34 million tons per year, of which 12.4 million tons are still deposited in dumps, the worst form of possible destination and daily source of environmental pollution, causing several health problems. Organic waste has the characteristic that it can be recycled through composting or biodigestion, at any scale, from the domestic to the industrial, providing an environmentally appropriate, low-cost and easily used organic waste disposal destination for the population and obtaining of a high quality organic compound. The present work has the objective of verifying the applicability of organic fertilizer, obtained in the composting and biodigestion processes, in lettuce production (*Lactuca sativa* L.). The food residues used in the production of organic fertilizer were collected at the Federal Institute of Paraná, Umuarama Campus. The organic matter was submitted to the recycling processes via composting and via biodigestion. The organic fertilizers obtained were applied in the production of lettuce, in experimental beds, under controlled environment, under greenhouse conditions. The parameters used for lettuce growth analysis were: number of leaves, height (cm), fresh mass (g) and dry mass (g). The biofertilizer performed efficiently on lettuce growth, presenting the most significant mean values for leaves, height and fresh mass, which were, respectively,  $14.33 \pm 2.31$ ,  $19$ ,  $67 \pm 1.76$ cm and  $57.97 \pm 4.10$ g. For lettuce with compound insertion in the soil, the growth was impaired by the high pH of the soil. However, recycling of organic waste contributes to the reduction and disposal of organic matter with high contaminant potential. The management of this waste meets the objectives of sustainable development, contributing to the achievement of sustainable cities, responsible consumption and production.

**Keywords:** *composting, biodigestion, food waste, organic fertilizer*