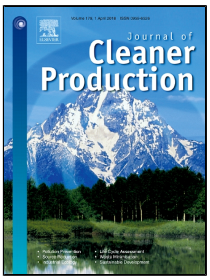
Accepted Manuscript



Biowaste versus fossil sourced auxiliaries for plant cultivation: the Lantana case study

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PII:	S0959-6526(18)30574-2
DOI:	10.1016/j.jclepro.2018.02.242
Reference:	JCLP 12189
To appear in:	*Journal of Cleaner Production*
Received Date:	23 January 2017
Revised Date:	23 January 2018
Accepted Date:	22 February 2018

Please cite this article as: Giancarlo Fascella, Enzo Montoneri, Matteo Francavilla, Biowaste versus fossil sourced auxiliaries for plant cultivation: the Lantana case study, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.02.242

Biowaste versus fossil sourced auxiliaries for plant cultivation: the Lantana case study.

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Keywords: chlorophyll content, photosynthesis, plant growth, ornamental quality, urban biowastes

ABSTRACT

Soluble bio-based substances (SBS) were isolated from the anaerobic digestate of the organic humid fraction of urban waste and from the compost obtained from a mix of digestate, gardening residues and sewage sludge. These were compared with a commercial Leonardite-based product for their effects on the growth and productivity of two Lantana species. The SBS were found more powerful than the Leonardite-based product in enhancing plant photosynthesis, growth and aesthetic effect, improving flower quality, and optimizing water use efficiency. Enhancement factors of plant performance indicators by SBS ranged from 1.2 to 3.3 relatively to the control plants, and from 1.3 to 2.4 relatively to plants treated with the commercial Leonardite product at equal applied dose. The results are in line with findings published for other case studies performed with horticultural and ornamental plants. They confirm that municipal biowaste is a viable feedstock to obtain specialty chemicals that can efficiently replace fossil sourced products in agriculture. Options for further development work are discussed.

1. Introduction

There is much concern nowadays for decreasing the exploitation and depletion of natural resources. Production of industrial commodities and intensive agriculture are major human activities consuming fossil organic materials and minerals. Yet, there are several examples of renewable resources, which can sustainably substitute nonrenewable ones. Among these, municipal biowastes offer several attracting features. They are concentrated source of organic and mineral