

Autonomous Home Composting Units for Urban Areas in Greece: the case study of Municipality of Rhodes

¹Angeliki Maragkaki, ²C. Gamvroudis, ²C. Lountou, ²P. Stamatiadis, ¹I. Sampathianakis, ¹A. Papadaki and ¹T. Manios

¹*Laboratory of Solid Waste & Wastewater Management, School of Agricultural Science, Hellenic Mediterranean University*

²*Municipality of Rhodes, Platia Eleftherias 1, 85100 Rodos, Greece*

Abstract

The minimization of landfill deposition of waste containing biological components represents a big problem, especially in built-up residential areas. The need for source separation originates from the legal requirements of the European environmental legislation and specifically the Wastes Framework Directive (98/2008). Especially regarding organic waste, the target that the directive sets for 2030 is that of separate collection of 10 % of the organic wastes produced in each municipality. For Greece this target was further increased at 40 % of organic waste, through the new National Plan for Solid Wastes Management. This article presents the pilot experience of an integrated biowaste management system developed in Rhodes Island, Greece, which promotes source separation and urban composting in an autonomous composting unit (ACU). ACUs are small closed integrated composting units, with zeroing of effluent and expanding liquids. In Municipality of Rhodes five ACUs were installed in different areas. The types of wastes are used food and yard waste. The aim of this innovation is the development within the urban area of a system for the collection of produced biowaste and their treatment at the source, without, the creation of any nuisance. This system was introduced as a new-to-the-area of implementation and innovation, since landfilling of mixed municipal solid waste has been the common practice in Rhodes island, as in many other areas of insular and mainland Greece. The system was monitored on an input-output basis of critical parameters used to assess the purity of separately collected biowaste, the treatment efficiency of ACU, the quality of composts produced, and the public's awareness and participation. Results showed that biowaste source separation was practiced effectively by citizens, giving high-purity feed. The compost quality that produced by all ACUs has met the standard quality. Based quality of compost produced from all composters is suitable for use. This study demonstrated that ACUs are a sustainable system to adopt a closed unit approach to the biowaste management problem in urban areas, in line with the circular economy principles.

Keywords: Autonomous Composting, Units; Bio-waste, urban

Acknowledgments: This paper has been co-funded by the European Union and National Funds of Greece and Cyprus. Interreg V-A Greece Cyprus 2014-2020. Program: Autonomous Home Composting Units for Urban Areas (Acronym: ACUA).