

THE CONDENSE' S FERTILIZER PRODUCTION PROCESS

F. Galliou¹, M. Fountoulakis¹, J. Sampathianakis¹, N. Markakis¹, A. Maragkaki¹, A. Papadaki¹, G. Daskalakis¹, P. Tzaferou¹, M. Saru², N. Nikolaidis², T. Manios¹

¹Technological Educational Institute of Crete, ²Technical University of Crete

Contact: F.D. Galliou, Technological Educational Institute of Crete, Laboratory of Wastewater and Solid Waste Management, Department of Agriculture, School of Agriculture, Food and Nutrition, Estavromenos 71004 Heraklion, Greece, Tel.: +30 2810 379477, e-mail address: fgalliou@staff.teicrete.gr

EXECUTIVE SUMMARY

The CONDENSE process is a combination of two simple and low cost waste management technologies, that of Composting and Solar Drying. It also utilizes two very common, in the overall Mediterranean region, agricultural and agro-industrial wastes that of manures and olive oil mills wastewater (OMW). The end result is an organic fertilizer with significantly increased concentrations of Potassium (primary), Nitrogen and Phosphorus, higher than ordinary organic fertilizers and almost similar to chemical fertilizers.

The reason for this increased concentration is the condensing process that is achieved through solar drying. OMW contain large amounts K (up to 5.5 kg / m³, with a mean value of 3.5 kg / m³), N (up to 2.5 kg / m³, with a mean value of 1.8 kg / m³), and P (up to 1.5 kg / m³, with a mean value of 0.8 kg / m³), which through evaporation achieved in solar drying units, is condensed in a substrate of dried fresh manure. Together with the nutrients however, a large amount of phenols is also condensed in the manure, making this mixture phytotoxic.

At this stage the composting procedure is introduced in the process. The decomposing microorganisms achieve two major positive effects: a) increase further the concentration of nutrients, though the decomposition of organic C into CO₂, and, b) decompose significantly the phenols. As a result the produced compost contains the high nutrients concentrations but does not contain high concentrations of phenols. Also is free from pathogenic bacteria, moisture level can be further decreased after maturation and gridding and packaging is possible.

Aim of this paper is to present as detailed as possible the above mentioned process. Experiments and trials conducted in the pilot unit developed in Vasilaki, a village near the city of Pyrgos, in the Region of Western Greece, are presented. As far as the end product, the maximum nutrients concentrations achieved up today are 7.7 % for K, 3.5 % for N and 1.6 % for P. However, the proper operation of the pilot solar drying unit (on going tests) has shown that even higher concentrations can be achieved.

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