



“Gheorghe Asachi” Technical University of Iasi, Romania



P41

A DESIGNED AND TAILORED COMPOST FOR DIFFERENT APPLICATIONS: INNOVATIVE PROCEDURE APPLIED TO DIFFERENT COMPOST PROPERTY CHARACTERISATION

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Abstract

The first objective in aerobic conversion and composting process is to recycle biowaste, food and agriculture products and animal breeding residue. Compost obtained from different organic waste sources (municipal solid waste, biomass, etc.) is more and more utilized as a product suitable for agricultural purposes reducing at the same time land filling of wastes. It's possible to obtain a compost that can be used in different applications: as a marketable fertilizer, substrate, soil for environmental restoration etc. Nowadays, for instance, agricultural needs are not connected to waste management. It is an acquired scientific knowledge that the use of very stabilized organic matter protects the biological characteristics of the soil, improves soil fertility, fights back soil erosion and organic matter depletion particularly in warm climate. A particularly stabilized compost can be used also as substrate and growing media with low water requirements. Very often the factor that limits a wider use of compost and organic substrate is the difficulty to manage correctly the maturing process of the raw materials, with a consequent poor agronomic quality of the final product which has to be distributed on the soil. Specific properties can be used also for specific application of stabilized organic material: designed compost for landfill cover, in biofilter preparation for land recovery or in specialized fertilizer for niche agricultural products.

In relation with specific application of compost, the utilization of dedicated compost can be considered using additives or enzyme for a tailored and a specific designed material. At the same way engineered system of laying biowaste or manure sanitation through the application of new biological technologies (bio-treatment) can be developed to obtain quality marketable fertilizer, that improves the soil structure, enhances its fertility and rehabilitates for predesertification. The specific properties have to be monitored by a quality control systems.

A specific and “ad hoc” applications on compost products characterization can be carried out by dedicated lab test and assessment methods. Main aim of the study was to investigate the possibility offered by new procedures, as Hyperspectral Imaging, to evaluate the compost quality in order to develop control strategies to be implemented at plant scale and to individuate its best utilization field.
