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PC Software for Optimizing of Raw Material Composition for Compost

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Abstract

The solid wastes of Asia cities are typically composed of 70–80% organic waste. In Africa or other developing countries we can find almost the same values. Unclear what practical relevance this should have, as in the composting facility one does not know what the inputs were. One of the first tasks in developing a successful composting program is getting the right combination of ingredients. Two parameters are particularly important in this regard: moisture content and the carbon to nitrogen (C/N) ratio.

Moisture is essential to all living organisms, and most microorganisms, lacking mechanisms for moisture retention (like our skin), are particularly sensitive in this regard. Below a moisture content of 35 to 40%, decomposition rates are greatly reduced; below 30% they virtually stop. For most compost mixtures, 55 to 60% is the recommended upper limit for moisture content. Of the many elements required for microbial decomposition, carbon and nitrogen are both the most important and the most commonly limiting. For most materials, a C/N ratio of about 30 to 1 (by weight) will keep these elements in approximate balance, although several other factors can also come into play. For the determination of the right compost mixture a PC software for optimizing of raw material composition for compost can be used, which is described in this paper. Basic evaluation criteria for compost software are the operational parameters C/N ratio and moisture content. The database for this software contains ca 60 fundamental lead organic materials, where we can find some typical raw materials for tropical and subtropical areas. The software is created by programming language Java. Among the main aims of this project are creating the software which will be easy-to-use and a reliable and friendly graphical user interface. All of this can be done by Java.

Keywords: Composting, C/N ratio, Java, moisture content, organic waste, software, tropical and subtropical areas