

Development of a safe method for biowaste hygienisation with lime

Abstract

Biowaste contains various amounts of pathological bacteria, viruses and parasites depending on their origin. Therefore, the ecological soundness and the absence of contaminants of biological wastes have to be ensured prior to agricultural utilisation. Along with composting, thermal fermentation and external heating, treatment with lime is also an accepted procedure for biohygienisation.

The aim of this study is to demonstrate that hygienisation of biowastes with lime and their subsequent usage as a fertilizer at a commercial scale is economically feasible and operationally reliable. The decontamination with lime is achieved through both, pH increase and/or temperature rise. The high pH value prevents the end-product from becoming contaminated again even for weeks after the treatment. The product can then also be used as fertilizer.

The results so far have shown that the sanitizing effect of quicklime depends primarily on the homogeneous incorporation into the respective substrate. The sanitation effect was verified by the reduction or inactivation of indicator organisms such as resistant bacteria, viruses, spores and roundworm eggs. Many substrates like sewage sludge, digestates and ruminal contents could be well homogenised at pilot plant scale. For some substances like biowastes from households homogenisation even with pre-crushing was barely possible, due to their high structural fibre content. Addition of 20 – 30 % of quicklime to many types of biowastes for which a homogenization is feasible, reduces within minutes to a few hours significantly all types of pathogenic germs. The achieved results of this study prove that hygienisation of sewage sludge and digestate with lime is not only economically feasible, it is also safe and reliable.

More details are available in the research report conducted by Research Institute for Lime and Mortar e.V. (German lime association) in collaboration with the University of Hohenheim in 2003.

03 C 023_2003. Bioabfallhygienisierung mit Kalk. Pp 83. In German.