FACT SHEET

Assessment of Recycled Phosphorus Fertilizers for Organic Farming:

Chars, Ashes and Slags

The application of sewage sludge to agricultural land, a common practice to recycle nutrients in the past, is currently prohibited in organic farming due to the risk of soil contamination from pollutants. Incineration of dewatered sludge or disposal to landfill is costly and leads to greenhouse gas emissions as well as losses of nitrogen, sulfur and organic matter. Other options to treat dry organic matter are combustion and gasification. In the resulting ashes or chars, due to organic matter degradation, non-volatile elements including mineral nutrients like phosphorus, potassium, magnesium and calcium are enriched, yet there are also some potentially toxic elements left. The concentrations of nutrients and contaminants vary widely, dependent on the input material and the technologies applied. This fact sheet describes different combustion and gasification methods as well as several types of chars, ashes and slags with their characteristics and possible applications. Beyond that, it indicates various options to enhance the use of combustion products in organic agriculture.

Introduction

Thermal processing of organic wastes is a treatment option to reduce the volume of feedstocks, to obtain energy, and to produce useful by-products e.g. as soil amendments. Substrates which can be treated include sewage sludge, household wastes, food industry wastes (e.g. meat and bone meal), green wastes etc. Thermal treatment is well suited for processing of feedstocks rich in lignin, such as woody materials. Incineration of the solid components obtained from meat and bone meal [1] and sewages is an important method of disposal in the USA, the EU (e.g. in Germany, Switzerland) and Japan in order to reduce the waste volume [2]. Dewatered and dried sewage sludge is burned

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