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# Co-composting as a Disposal Solution for Faecal Sludge from Innovative Pit Latrines

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**Abstract**

A large part of the global population has no access to adequate sanitary facilities. By addressing this issue in the UN millennium development goal 7 this has been recognised as an issue of global concern.

Pit latrines are commonly seen as an affordable and quick to install sanitary solution. Most models, however, do not offer a suitable way to empty the pit. Further anaerobic conditions often cause bad smell and facilitate the breeding of flies. Downstream there is no well thought out disposal solution for the accumulated excreta sludge and nutrients are lost for recycling.

At Valley View University in Accra, Ghana a modified toilet system is currently under investigation. The new design of the so called BBT (Berger Biological Toilet) was developed both user and maintenance personal in mind. Urine is collected separately from the faeces that are sun-dried in aerated mobile containers located below the squatting pan. Thus, the excreta are easily removed and transported without exposing personnel to contamination.

In accordance with the basic principle of ecological sanitation, to return nutrients contained in human excreta into the productive agroecosystems, it is intended to compost the excreta nearby. Preliminary composting trials conducted at the research site revealed that over several days sufficiently high temperatures can be achieved to deactivate most pathogenic micro-organisms. The current research investigates co-composting excreta from two types of dry toilet facilities with shredded vegetation under different ratios and turning frequencies. Physical and chemical parameters are measured during the composting process to detect potential nutrient losses. These include specific weight, dry matter content, nutrient and salt concentrations. Compost maturity is determined by monitoring of temperature and by substrate tolerability to plant development through cress (*Lepidium sativum*) germination tests.

Faecal indicators (*Escherichia coli*, *Enteroccoci* and *Salmonella* sp.) are monitored and their loads correlated to the heat gradient in the compost piles. The potential deactivation of parasites is validated with *Ascaris suum* egg probes.

It is aimed to identify a simple and fast composting method that conserves most nutrients and reduces the pathogen load to an acceptable level for save agricultural use.

**Keywords:** Compost, faecal indicators, Ghana, parasites, pit latrine, toilet

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