



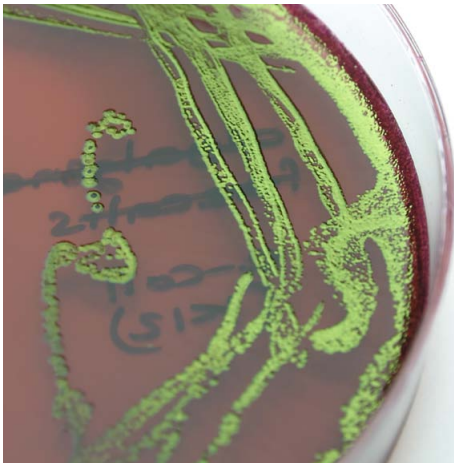
Australian
National
University

PhD exit seminar. In-vessel composting systems: microbial and compost dynamics

Friday 22 March 2013 2pm

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Gould Seminar Room Gould Seminar Room (Room no. 235), Gould Building (Bldg. 116), Linnaeus Way, ANU



Continuous in-vessel composting systems are increasingly being used for on-site composting of organic matter due to their ease of use and manageability. Hot Rot™ continuous in-vessel composting system acquired and set up by ANU Green at the ANU campus in Canberra is one such system. The aim of my study was to characterize the microbial communities present in the system and the physical and chemical makeup of the material being composted.

This was accomplished by using 16S rDNA-PCR followed by DGGE, 454 pyro-sequencing and standard chemical analyses such as the carbon and nitrogen content, pH, electrical conductivity and temperature. Experimental manipulations of the system, such as varying the residence time of the material in the vessel and seeding the input with the finished product were trialed.

The results of these experiments revealed that the material exiting the composter seldom met the Australian standards for compost and that additional maturation of the material was required. High throughput sequencing using the 454 platform provided deeper insights into the bacterial diversity present in the system and how communities changed during the composting process under the various experimental conditions. The results also revealed that the elimination of pathogens occurred regardless of the operating temperature and that elevated temperatures likely slowed the composting process. Consequently, there may be a need to revise the relevant Australian standards so that they reflect the different composting regimes used in Australia.

Presented by

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