Studies on feasibility of processing dry leaves by Nisargruna biogas technology

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Nisargruna Biogas Technology (NBT) is being popularized as a decentralized solution for municipal solid waste management. The processing of biodegradable waste through this bi-phasic process generates methane and organic manure as by products. It also saves cost of transportation of refuse to landfills and the long term ecological hazards of dumping. In order to make the NBT amenable to garden waste and other cellulose rich biomass agriculturally important fungal cultures like Aspergillus and Trichoderma were applied to garden waste in aqueous medium and incubated for 4 days. This was followed by addition of pre-digester slurry (where the predominant bacteria are of Bacillus species) of Nisargruna biogas plant. Formation of organic acids during this incubation period was assayed by HPLC. Presence of two organic acids namely acetic and butyric acids were detected in the fungus treated biomass. Acetic acid production in all the fungal treatments was higher than the control where no fungal treatment was given. Butyric acid production in Aspergillus treated biomass was consistently higher as compared to control and other treatments at all the time points under investigation. Methane generation was studied after treating the partially degraded cellulosic biomass with anaerobic slurry from the main digester (source of Methanogenic bacteria). Methane generation increased consistently with the time of incubation in both controls and experimental samples. Methane generated in fungus treated biomass was higher as compared to control, throughout the two week period of methane measurement. It was demonstrated that garden waste could be used as a substrate for methane production.

Biography
Poulomi Mukherjee has joined Bhabha Atomic Research Centre as a Scientific Officer through the 47th batch of training school. She has been working on the green synthesis of nanoparticles and also on extending Nisargruna Biogas Technology as a sustainable solution for solid waste management. She has 9 international publications to her credit.

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