

Objectives

This study aims at analysing slurry-compost samples of toilet attached biogas plants on the presence of parasites and bacteria, which could pose a health risk while handling the compost.

Approach and Methodology

With help of Slurry Extension Officer (SEO), Agricultural Technology Centre (ATC) staff collected random samples of latrine-attached biogas plants from Kavre and Chitwan districts. 13 samples each of fresh slurry and compost and 12 such samples were collected from Chitwan and Kavre, respectively. Those sites in which parasites/bacteria were detected previously were included in the sample collection site list.

As soon as the samples were received in ATC laboratory, bacteriological and parasitological tests were carried out. The parasitological test included the examination of specimen microscopically to observe ova and cysts of different parasites, while bacteriological test dealt with streaking the samples on MacConkey and SS agar to see the presence of Salmonella sps and Shigella sps. Identification of Salmonella sps and Shigella sps were done performing different biochemical tests. All the work was done under sterilised condition.

Main Findings

Parasitological and bacteriological test of toilet attached slurry samples collected in Feb-March 1997 had some parasites and bacteria at nine sites. From these nine sites, samples of slurry and compost were collected in January 1998 and tested. The presence of some kind of parasites were detected in four slurry samples out of eight indicating the decrease in slurry contamination by 50 percent and composts were free from parasites. Sample no. nine had some kind of parasites in both slurry and compost. It was reported that this compost was kept unprotected from contamination of human faeces. Two respondents from this group reported that the fresh slurry was not used for making compost due to hesitation in handling the compost. Long-term storage of slurry in the reservoir might have decreased the presence of parasites.

Out of the 22 new locations from Chitwan and Kavre districts, 6 slurry samples (27%) and four compost samples (18%) were detected for the presence of some kind of parasites. It should be noted here that out of these four compost samples, the slurry of 3 samples used for compost making were free from parasites, but the composts were found contaminated. As the parasites present in the compost were different from those in slurry, it might be due to the water logging of the compost pit during rainy season.

According to the result of the test, the parasites detected in some fresh slurry were: Larvae of Strongyloides, cyst of Entamoeba histolytica, ova of Ascaris lumbricoides, ova of Trichuris trichura, motile protozoal parasites, Trophozoites of Giardia lamblia. Similarly, parasites detected in compost sample were: Larvae of Strongyloides and ova of Ascaris lumbricoides. None of the pathogenic organisms were isolated from all samples of slurry and compost in bacteriological tests performed.

No direct relationship was obtained with biogas plant size and number of persons using toilet in contaminating the slurry. It was also observed that the parasites containing in the feeding slurry were not well destroyed during retention period in digested chamber in some cases. However, it might have destroyed or reduced some parasites/pathogens after digestion. A study of parasites/pathogens present on faeces at the time of feeding and in fresh slurry after digestion could provide some information for better understanding of the process.