



Microbial population dynamics and performance in lab-scale conventional, anaerobic, and aerobic landfill bioreactors specialized for high-organic wastes were investigated. Three acrylic cylindrical bioreactors of 10 cm diameter, 30 cm height, and 2.85 l in total volume were constructed as shown in the figure.

The configuration of these reactors includes three separate ports on the top for the addition of water, leachate recirculation, and gas measurement. The perforated plates on the top and at the bottom are used respectively for distributing liquid to the solid waste and for draining leachate into the container. Each reactor (2.35 l) was loaded with 1.5 kg of organic solid waste made of sludge cake, dry dog food, and wood chips.

The conventional reactor was operated without leachate recirculation and aeration, but the other reactors used leachate recirculation at 200 ml/d and without aeration (anaerobic bioreactor) or with aeration at 2 l/min (aerobic bioreactor).

Related article: Sang, N. N., Soda, S., Sei, K., and Ike, M., "Effect of aeration on stabilization of organic solid waste and microbial population dynamics in lab-scale landfill bioreactors", *J. Biosci. Bioeng.*, vol. 106, 425-432 (2008).