

## Simple Solid Digestion

[Dr Duncan Martin](#)

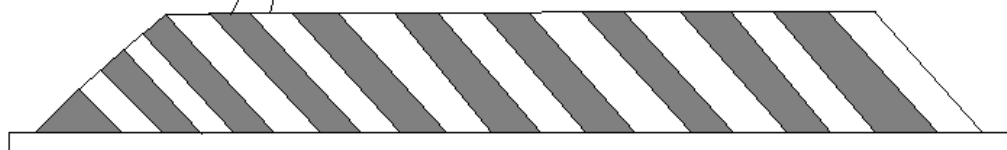
[Mr Paul Harris](#)

After Dr Martin published a paper titled “A novel mathematical model of solid-state digestion”, *Biotechnology Letters* **22**: 91–94, 2000 an exchange of e-mails resulted in a system for simple, reliable solid digestion being proposed. See

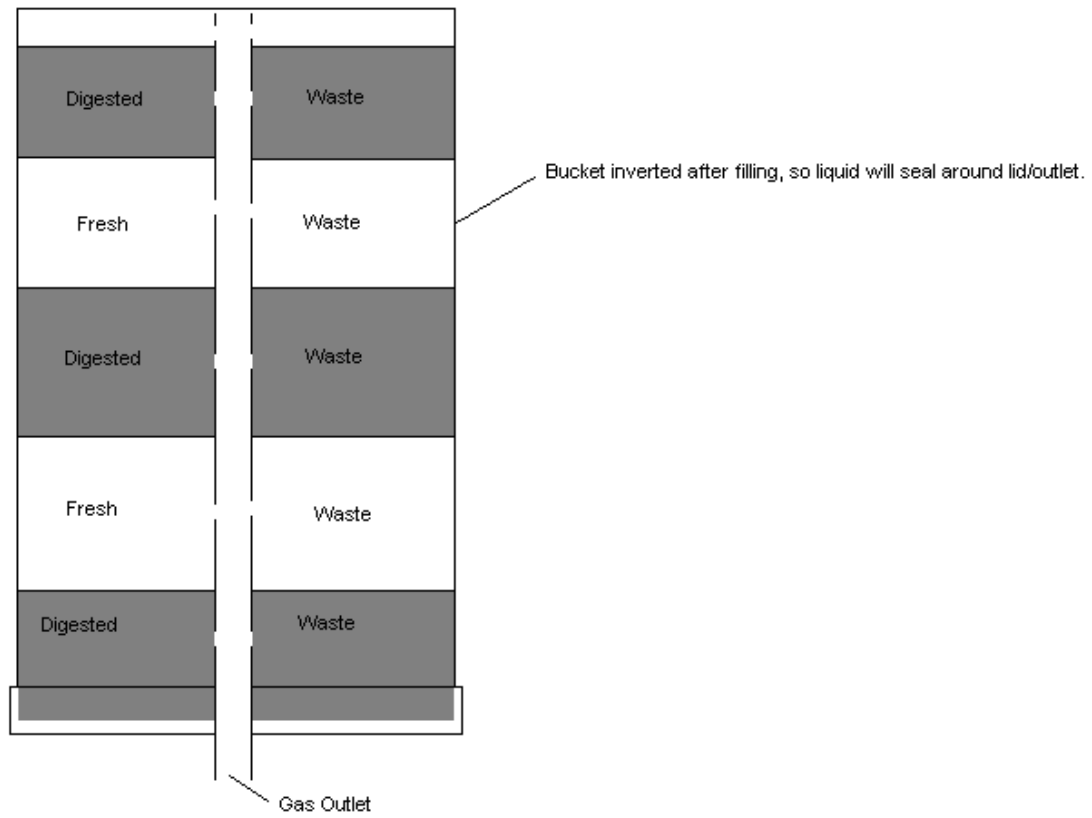
<http://www.springerlink.com/openurl.asp?genre=article&eissn=1573-6776&volume=22&issue=1&page=91> for the paper.

The model suggests that reasonable sized lumps of inoculum are required, to protect the methanogenic bacteria from acid formed in earlier stages of the breakdown, so layers of inoculum 10 cm thick are alternated with layers of fresh waste, also 10 cm thick. Since it has been found that the “digestion front” moves through solid waste at about 5 cm per year this arrangement should mean that digestion is complete in about 12 months (since there are two fronts moving through each fresh layer). A series of heaps can be set up so that at any time there is one completely digested heap being emptied to provide inoculum for the heap being constructed and there are other heaps producing biogas. Funding has not yet been obtained to test the proposal.

Alternating layers (approximately 10 cm thick) of fresh waste and digested waste from a completed digestion as inoculum. The heap is covered by a flexible cover, weighted with old car tyres or similar and sealed so biogas can be collected.



Possible arrangement for larger scale applications.



Bucket digester for small scale applications/trials.

Page Updated April 10, 2006, by [Paul Harris](#)