Biocycle - Research, Monitoring and Evaluation of the South Shropshire Digester

Project Staff	Principal investigator:	Prof. CJ Banks
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Start year	2006	
Finish year	2008	
Funding body	Defra New Technology	
Related website		

Digester under construction

This project involved research, monitoring and evaluation of the Biocycle digester, a plant treating kitchen and green waste from 19,000 households in South Shropshire. The plant is funded by Defra's New Technologies demonstrator programme and Advantage West Midlands, and has been operating since January 2006.

Research outputs

The research outputs include data on

• The percentage and tonnage of biodegradable municipal waste that can be beneficially diverted from landfill. This will be measured with respect both to the number of households

covered by the collection scheme and by the number of participating households.
• Variability in the amount of the feedstock through the year.
• Detailed analysis of the feedstock in terms of %DM, %ODM, N,P, K, heavy metals and pathogenic organisms, and variation in these parameters through the year
• Detailed analysis of the biofertiliser (solid and liquid) in terms of %DM, %ODM, N ,P, K, heavy metals and pathogenic organisms, and its variability through the year.
• The distance from the digester to the farm land utilised for the biofertiliser.
• Biogas output and its variability through the year.
• Gross electricity and heat outputs from the plant CHP unit.
• Electricity and heat requirements for the process plant itself.
• Operating costs of the plant.
• Overall mass balance.
• Overall energy balance, including the transport of biofertiliser.
• Impact on the carbon cycle.
• Impact on the nitrogen cycle.
• Economic gate fee, and its relationship to plant capacity.

Pasteurised digestate fibre

Collaborators:

Greenfinch Ltd

Publications:

Banks C. J., Chesshire M, Heaven S., Arnold R, (2011) Anaerobic digestion of source segregated domestic food waste: performance assessment by mass and energy balance Bioresource Technology 102(2) 612-620.

Banks C. J., Chesshire M, Heaven S., Arnold R, Lewis L, (2011) Biocycle anaerobic digester: performance and benefits Waste and Resource Management 164(WR3) 141-150.