

Eco-benefits of Anaerobic Digestion

Briefing Note: BN 12

Anaerobic digestion (AD) treats organic waste in an enclosed environment to produce a sustainable renewable energy source and a source of bio-fertiliser. It prevents the greenhouse gases produced by the rotting of organic matter being released into the atmosphere and reduces the need for fossil-derived fuels



Methane



The Flexigester is an innovative way to bring low cost anaerobic digestion to the people who need it. It allows waste to be collected and treated in a fully enclosed environment close to the source of production.

Having a central vessel for collection, containment and treatment of the waste encourages hygienic behaviour. Having no access to such facilities means that waste is disposed of in inappropriate places where it can enter water courses. Faecal matter can infect clean water not only at the point of entry but also down stream. These water courses are often used as sources of water for washing, cooking and even drinking. The use of the Flexigester therefore helps to reduce the potential for pollution of water for domestic use.

The waste breaks down in the digester to produce a gas which is predominantly a mixture of methane and carbon dioxide and a digestate liquor which is a combination of solids and liquids. All of the nutrients from the waste end up in the digestate. This is therefore a valuable source of nutrients for use on crops to improve crop growth.

Most vegetable matter has a moisture content of 70-90% moisture whereas normal human faeces are 75% moisture. Under anaerobic

digestion conditions solid matter breaks down into liquid. The liquid in the waste, including urine, is therefore conserved. There is no requirement for additional water to be added to the digester during normal running and the liquid removed from the digester is not only nutrient rich but can also be used to irrigate crops thus conserving water.

Methane is a greenhouse gas with 21 times more warming potential than carbon dioxide. Organic waste left untreated in piles, at the bottom of lagoons or in landfill sites will decompose naturally releasing methane into the atmosphere. Anaerobic digestion contains this gas so that it is not released thereby reducing greenhouse gas emissions. The Flexigester is a light weight structure that does not require the lining of pits with concrete or the building of concrete platforms on which to place large tanks. This reduces the carbon footprint of the system compared to other anaerobic digestion systems.

The methane produced by the digester can be used to replace fossil fuel derived energy sources including bottled gas and diesel. The gas can be used in cooking stoves etc providing an alternative energy source for households.