

Policy context note: “Attitudes to the Use of Organic Waste Resources on Land”
(WR0510)

What are composting and anaerobic digestion?

Composting is a process in which the natural decomposition of biodegradable materials is managed under controlled conditions, in the presence of oxygen, to produce a stable material. This can be applied to soils to improve their physical condition and provide a source of slow-release nutrients. The main by-products of the composting process are heat and carbon dioxide.

Anaerobic digestion is also a managed process involving the natural decomposition of biodegradable materials. However, this process is carried out in a controlled environment with no free oxygen. The main product of the anaerobic digestion process is biogas (carbon dioxide and methane). Importantly, this methane is captured and used as a source of renewable electricity and/or heat. The output of the process (digestate) is a useful product to apply to soils as a replacement for conventional fertilizers.

Why do we apply these materials to land?

Traditionally, the disposal of biodegradable waste involves depositing the material in a managed landfill site, where the onset of anaerobic conditions leads to the production of carbon dioxide and methane. Methane emissions from landfill sites are the largest source of global Green House Gas (GHG) emissions from waste sector activities and regulations require all operating UK landfills to have collection and treatment systems for both gas and leachate. Whilst landfill processes can be used to stimulate a biogas reactor, the energy recovery rates are relatively low (around 35% of the energy content of the biogas) compared to anaerobic digestion in vessels. In addition, the longer-term gas capture and management arrangements become less predictable as a site ages and the integrity of the cap becomes less certain.

Composting and anaerobic digestion of organic material recovered from the waste stream can provide more sustainable alternatives to landfill. The nutrients are recycled to land and this reduces our dependence on conventional fertilisers produced from non-renewable sources or using fossil fuels. Anaerobic digestion offers the major added benefit of producing biogas, which can also be used to help reduce our reliance on fossil fuels.

While digestates can act almost as a direct replacement for conventional nitrogenous fertilisers, the benefits of compost are more wide-ranging. These include: increased soil carbon and organic matter (which improves physical condition and workability properties) as well as water holding capacity of both heavy and light soils. This potentially increases yields in the long term, reducing fuel consumption.

What are the current regulations?

The production of composts and digestates are controlled by a number of pieces of legislation covering different aspects of the processes. Planning permission is needed to set up a plant and an environmental permit is required to authorize receipt and processing of the input materials. Additionally, if a site is accepting materials that contain meat, fish or other so-called ‘animal by-products’, or materials that could have come into contact with these, then the site must have additional authorization and health and safety measures to limit any possible spread of animal diseases.

The application of composts and digestates to land is also regulated. An environmental permit or exemption from environmental permitting (depending upon the scale of the activity and the risk associated with it) will be needed to spread materials not complying with a Quality

Protocol to agricultural land, and the agricultural benefit from using the materials will have to be demonstrated before this approval will be given. This regime is slightly different if the compost or digestate is made only from materials generated on-site.

Guarantees of quality can be made for composts and digestates that are produced in compliance with the British Standards Institution's Publicly Available Specifications 100 and 110 respectively. In England and Wales, even the use of composts and digestates produced in compliance with these specifications is controlled, and it is not until the materials also comply with the Quality Protocols for compost or anaerobic digestion that environmental permits or exemptions are no longer required.

In all cases, the application rates for composts and digestates will be limited by good agricultural practice, e.g. that only as much material as is needed by the growing crop will be applied. Even then, the materials cannot be spread if there is a chance of environmental damage, such as run-off of liquids into rivers.

What does WRAP do?

Established as a not-for-profit company in 2000, WRAP (Waste & Resources Action Programme) is backed by government funding from England, Scotland, Wales and Northern Ireland. WRAP helps individuals, businesses and local authorities to reduce waste and recycle more, making better use of resources and helping to tackle climate change.

Since 2006, WRAP has supported trials of composts in agriculture, landscaping and regeneration. These trials range from demonstrations to fully-replicated scientific field sites. All are intended to help grow markets for composts (and more recently, digestates) by generating information that is of relevance to the different markets. This information includes: the benefits of the materials on crop yields; best methods for applying the materials (when, how and how much); benefits of the materials on crop quality and safety; environmental benefits resulting from use of the materials; cost benefits resulting from use of the materials. When trials are complete, this information is made available through the WRAP website (www.wrap.org.uk/composting). This section of the WRAP website is due for re-launch in the New Year, making it much simpler for potential users of digestate and compost to find the information they need to inform any purchasing decision.

What does the Environment Agency do?

The Environment Agency is an executive non-departmental Public Body responsible to Defra's Secretary of State, and an Assembly Sponsored Public Body responsible to the National Assembly for Wales. The Agency's aims are to protect and improve the environment, and to promote sustainable development.

The Environment Agency's work on compost and digestate is to ensure that land is protected, and that recycling these waste-derived resources to land does not cause harm to human and animal health or water quality. Relevant research reports and the Environment Agency's Position Statements on the use of compost and digestate can be found through their website (www.environment-agency.gov.uk). The Environment Agency is also responsible for issuing permits and permit exemptions to sites carrying out composting and anaerobic digestion. It also issues permits and exemptions for the beneficial spreading of compost and digestate to land.

What does DEFRA do?

The goal of The Department for the Environment, Food and Rural Affairs is 'To secure a healthy environment in which we and future generations can prosper'.

DEFRA has been involved in studies which have investigated different aspects of applying organic waste-derived resources to land. Reports from these research projects can be found on the DEFRA R&D website (<http://randd.defra.gov.uk>). The purpose of all these studies is to inform the relevant policy areas, and ensure that any decisions are based on robust scientific evidence. Defra is also responsible for setting legislation, regulations and guidance for a number of environmental issues. Further information on regulations for disposing of animal-by-products can be found at: <http://www.defra.gov.uk/foodfarm/byproducts/index.htm>. Further information on Defra's Environmental Permitting Programme can be found at: <http://www.defra.gov.uk/environment/policy/permits/index.htm>.