Waste Management

Composting

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This is a typical outdoor site composting “green waste”, in other words garden-waste collected from households and from municipal parks and gardens.

The composting of green waste is normally carried out in accordance with industry “best practice”. Producers are expected to process green waste at a minimum temperature of 55 Centigrade for a minimum of two weeks. This is to kill off most plant and human pathogens.

For schemes where kitchen waste is to be processed alongside garden waste, composting needs to take place in “enclosed systems”.

Every delivery vehicle is weighed on entering and leaving the site. The information is used for:
Process-monitoring, Accounting purposes and for regulatory purposes including duty of care, landfill tax and recycling-rate calculations.

This vehicle’s delivering “green-waste” material collected from households. However, waste also comes from other sources such as these prunings from the local municipal park.

All waste is shredded before composting, which takes place by the action of micro-organisms at the particle surfaces. Shredding means that the larger items, branches from trees for example, are reduced to a small size to allow microbial decomposition to take place at a high enough rate.

Shredding does have some environmental impact: mainly the noise from the loading shovel and the shredder itself and the emission of dusts and bio-aerosols created during handling.

The shredded waste is heaped into rows known as “windrows”, where composting takes place. In this instance, a specialist mobile-shredder constructs the windrows as the shredded waste is discharged from the conveyor.

Composting should be carried out on a concrete surface fitted with drains to collect any liquid run off from the piles or leachate that seeps out of the windrows.

Any liquid collected can be used to keep the windrows damp during dry weather, or discharged to the sewers to be treated.

As soon as the windrows are formed, composting begins. Aerobic micro-organisms degrade the complex organic-molecules to form more stable compounds and release carbon dioxide and heat. The entire process is totally natural.

The temperature can rapidly reach 50 to 60 degrees-Centigrade but if the windrow becomes much hotter, many beneficial micro-organisms are killed and the rate of composting slows down.

To help control the temperature, to mix the waste and to allow an adequate supply of oxygen to reach all the feedstock, the windrows need to be turned.
In the initial stages of composting, this is required at least once a week, but the turning frequency reduces as the rate of composting slows down.

Various types of machine can be used for ‘turning’ the compost. Some take the form of an attachment to a tractor, whilst others are dedicated self-powered machines. Many machines straddle the windrow and turn the compost by means of rotating flails.

Like the shredding operation, turning can be noisy and generates dust and bio-aerosols. Smells can also be a problem, especially if the waste has been allowed to become anaerobic during processing.

From start to finish the composting process should take between three to six months, depending upon the type of waste, the management of the process and local conditions such as temperature and rainfall. Thereafter, the compost is screened to give a product with particular characteristics and to remove any large and un-composted items that escaped shredding.

The screened compost is then placed in a covered store to protect it from the elements and, depending on the type of compost being produced, can be left for up to several months to mature .

Allowing the material to mature ensures that ‘composting’ is completely finished before it’s sold or used.
You can see from the steam that this freshly-screened compost is still breaking down and generating heat. It could be used quite soon as a soil conditioner, but more time would be needed if it were to be used as higher grade compost.

Most compost produced in the UK is used by the producers themselves or sold in bulk as a soil conditioner for landscaping and construction projects and for use in agriculture.

Higher prices can be obtained by bagging the material and selling it to gardeners or by blending it with other materials to make a plant-growing medium.

As a peat-free product, it’s attractive to the more ‘environmentally-aware’ gardener. In this case, the ‘End Product’ also carries the Soil Association label to show that it can be used by “organic” gardeners.