

Flow Diagram

Groenfontein Compost Facility

Objective:

This document describes the process for converting waste into compost using a flow diagram to illustrate the key steps.

Scope:

The flow diagram will show the process from start to finish including the waste used along with the use of other 'raw materials' used during the composting process.

Responsibility:

Composting Manager.

Summary:

Composting is a managed biological decomposition process that converts organic matter into stable, humus-like material. Composting is a process in which micro-organisms flourish with the proper mixture of bulking agents (e.g. woodchips), animal by-products, water and air.

When done properly, the process consumes tissue, minimizes odours and produces quality finished compost.

The five criteria of a good recipe are:

- Carbon (plant) and Nitrogen (animal) ratios (C:N)
- Moisture Content
- Particle Size
- Oxygen Content
- Temperature
- pH

Process

The physical structure of the compost pile is essential in managing the above critical chemical parameters.

In agriculture, windrow composting is the production of compost by piling organic matter or biodegradable waste, such as animal manure and crop residues, in long rows (windrows). This method is suited to producing large volumes of compost.

It is necessary to ensure that all organic waste is placed on a dry plant material base, i.e. wood chips to reduce smells and attraction of flies and other pests. These chips are of an ideal size to ensure that initial porosity required is achieved to ensure airflow until the moisture levels within either the windrows or the bulk piles has equalized. The base layer of wood chips also prevents any run-off of liquids onto the site. Once the piles have settled down and reduced in height after the first month, the windrow can be turned or the bulk pile added to a windrow.

The windrows are turned according to guided frequencies once the initial digestion of the organic waste has taken place, taking into account the temperature and moisture levels. The compost has to be turned when the temperature gets to 65°C or above. This is critical to keep the bacteria functioning and also to prevent a fire risk which can occur above 70°C.

If the temperature is too high, moisture will be added (usually from the retention dam) and then the row will be turned to incorporate air. This will stabilize the windrow.

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Please take note that for the purpose of this report “**compostable organic waste**” is defined as: A carbon-based material of animal or plant origin (that is defined as waste in terms of the South African gazetted National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008:) that naturally enhances fertility of soil through a natural degradation process but excludes human made organic chemicals and naturally occurring organic chemicals which have been refined or concentrated by human activity.

“Organic Waste” will generally comprise materials that can be accepted for disposal at a licensed municipal general waste landfill facility (i.e. excludes infectious, poisonous, health-care and hazardous organic wastes)”.

National Organic Waste Composting Strategy, 2013

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Compost Process Flow:

