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Composting

Compost can be made from a wide variety of materials, such as livestock manures, untreated wood and garden waste or waste food for example. Composting is ***"the natural breakdown of biodegradable materials through mixing, self-generated heating and aeration to form a stable, soil-like material"***.

The benefits of composted farmyard manure

The organic matter in composted farm yard manure (FYM) is in a more stable form than in fresh FYM so it creates a better soil conditioner, which can improve soil pH and nutrient holding capacity. Composted farm yard manure (FYM) has a reduced volume, lower spreading costs, fewer pathogens and odours, reduced risk of pollution to water courses, less live weed seeds than fresh FYM, and minimises contamination of the grassland.

How does composting manure work?

Micro-organisms that are naturally present in the manure break down the organic material and this gives the microbes a carbon source for energy and a nitrogen source for reproduction and protein production. Cattle FYM on straw has an ideal carbon: nitrogen ratio for composting at around 30:1.

Leaving FYM in heaps to "rot" results in some breakdown after 6 months but does not produce compost. Well composted FYM can be created in 12 -20 weeks by providing enough air and water for microbes to quickly break down the organic material.

To produce good compost from FYM:

- Create long narrow piles (windrows) of FYM to improve surface area to volume ratio and allow more air in as well as enabling water to run off the heap
- Turn and mix , and if dry, add water to maintain the optimum temperature (70°C)
- Compost in a shed or cover the heap from rain to reduce run off and nutrient losses

All composting material should be sited to prevent any run off entering water courses, see ***"Protecting our Water, Soil and Air: A Code of Good Agricultural Practice for farmers, growers and land managers"***

Value of Composted FYM

Compost contains valuable nutrients and raises the humus content of soil organic matter. There are few 'standard values' so laboratory analyses of compost can give a useful guide to the nutrients in different batches of compost.

Vermicomposting: an alternative method for organic waste management

Earthworms as well as microbes work to breakdown organic waste which happens at a faster rate in vermicomposting. Earthworms break up the organic material through physical action, which also increases turnover and aerates the compost. This in turn enables other organisms and microbes to work more quickly.

Vermicomposting also creates high numbers of earthworms, which also have value and therefore benefit farm business production.

What affects the vermicomposting process?

The nutrient status of the material produced by vermicomposting depends on the **raw material**. The C:N ratio of feed material will affect earthworms by influencing their growth and reproduction rates. Raw material **pH** is also important. Due to the influence of earthworm activity though, nutrient levels are typically higher in vermicompost than traditional compost.

Earthworms used in the vermicomposting process must be:

- able to eat and digest lots of organic matter quickly;
- be able to survive changes in the temperature and moisture in the compost heap;
- and be able to reproduce, grow and mature quickly

Of the three earthworm forms, (anecic, endogeic and epigeic) epigeic earthworms (those that live in the surface layer of the soil) are the most suitable earthworms for vermicomposting as they live in horizontal burrows and feed mainly on decaying organic matter.

Further reading:

Vermicomposting: an alternative method for organic waste management.
Author: Dr William Stiles: IBERS, Aberystwyth University.

Review Paper: Compost: the effect on nutrients, soil health and crop quantity and quality.
Author: Roger Hitchings, The Organic Research Centre, Elm Farm

Technical leaflet: Compost - the effects on nutrients, soil health and crop production. IOTA.
Author: Roger Hitchings.

Article: Composting with rock phosphate: increasing plant-available P.
Author: Mark Measures (Institute of Organic Training and Advice)

The Waste and Resources Action Programme WRAP website **www.wrap.org.uk** and search compost.

Cronfa Amaethyddol Ewrop ar gyfer Datblygu Gwledig:
Ewrop yn Buddsoddi mewn Ardaloedd Gwledig
European Agricultural Fund for Rural Development:
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