

## COMPOST: WHAT DOES IT MEAN?

The word "compost" has a glamour or kudos all of its own, charged with quasi-mystical potency by those few initiates who have witnessed its effects; occult alchemy to most, ignored by society at large.

However, this humble concept could hold the key to solving some of modern civilisation's more intractable problems, such as waste disposal, contamination of food cycles and the increasing ineffectiveness of anti-biotics.

Modern usage for the word and the process it describes date back only about 100 years in the western world, although there are examples of the indigenous practice of composting throughout history and pre-history, especially the continuous tradition of composting techniques in China.

Etymologically, the word is derived from the French *compot*, a mixture or composition. As a verb, there are a variety of definitions and descriptions of the process: *The aerobic decomposition and reconstitution of organic wastes into humus by the action of micro- and macro-organisms, involving the bonding of nitrogen onto carbon molecules, fixing proteins and carbohydrates in forms readily available to plants.*

The word *compost* is now used as a generic term to describe any **growth medium**. As the collective name used to refer to a diverse range of different products and processes, compost can be a confusing and misleading term. Garden compost, potting compost and fine seed compost all have distinctive and separate uses and are not interchangeable. The infinite diversity of composts can be classified variously: according to the inputs to the process or source of materials; such as garden, domestic, municipal, industrial or agricultural: or by the end-use for which the medium will be used; such as for seed, seedling, potting on, potting up, cuttings, acid [ericaceous] or alkaline, special mixes for indoor growing, high-fertility for heavy feeders and formulations for specific types of plants such as cacti. Composts containing different manures will result in a variety of different properties suitable for specific types of crop. Concentrated fertilisers [organic or chemical] can be added to create quick-acting or slow-release mixes. Different production methods also generate specific qualities in the end-product; such as stacking, windrow, pit or vermiculture [worms]. Less accurately, the word is even applied to related processes such as loam-making, the formation of leafmould and even the anaerobic putrefaction of liquid wastes in cesspits and settling tanks [slurry].

The promiscuous application of the word compost to so many different materials means that anyone engaged in selling a compost product must label it explicitly and comprehensively to avoid inappropriate use. It is necessary to explain what ingredients the material consists of, where the inputs were sourced from and how it can be expected to perform. Most importantly from the perspective of growing organic food, it is necessary to explain whether the product is suitable for food use or whether it is only fit for non-food use in ornamental gardening. Accurate trades description of products means that customers will be less likely to use them in inappropriate contexts and will therefore be more likely to be satisfied with their performance and trust the producer with further business.

## HOW TO USE COMPOST ( OR COMPOSTED MANURE) AT DIFFERENT AGES AND STAGES OF MATURITY.

1. **RAW COMPOST MATERIALS** can be applied directly to decompose in situ where their breakdown will not overwhelm or disrupt plant-growth. A **SHEET MULCH** can be applied to the soil surface around established perennials. A **BASTARD TRENCH** can be filled with raw materials which will help retain moisture below ground and break down to feed vigorous crops such as runner beans.

2. **IMMATURE COMPOST**, which is just 4 weeks old and has not yet finished its thermophilic breakdown, can be applied as a surface mulch to feed established annuals or added to soil for vigorous-rooting and fast-growing crops such as squash.

Raw and immature compost can cause denitrification if incorporated in the soil, where the excessive levels of carbon compete with soil micro-organisms for available nitrogen. Adding concentrated nitrogenous fertilisers can compensate. They are both more likely to introduce pests and diseases.

3. **MATURE COMPOST** ( 3-6 months old) can be incorporated in the soil 2-3 months before a crop is sown or planted out or used to mulch maturing crops. Can be mixed with soil and concentrated fertilisers into holes under individual plants, for heavy feeders such as tomatoes, peppers, aubergines and celery.

4. **MATURE, HUMIFIED VERMICOMPOST**, 12 months old, digested by compost worms, can be used for any of the above uses and as an ingredient in potting mixes.

To minimise the risk of introducing pests and diseases, expose maturing compost to the elements and allow vermicompost to dry in a warm and airy place. Material which has been weathered is effectively sterilised and can be used in mixes which are to be used indoors.

### THE INFINITE VARIETY OF COMPOSTS

The word *compost* is now used as a generic term to describe any growth medium. As the collective name used to refer to a diverse range of different products and processes, compost can be a confusing and misleading term. A stricter and more accurate use of the word would perhaps be to describe compost by its humus content. Humus compost is a distinct and superior product when compared to many other growing media, which should really be sold as such on its own merits.

Remember that garden compost, potting compost and fine seed compost all have distinctive and separate uses and are not interchangeable. The infinite diversity of composts can be classified variously: according to the inputs to the process or source of materials, such as garden, domestic, municipal, industrial or agricultural: or by the end-use for which the medium will be used, such as for seed, seedling, potting on, potting up, cuttings, acid [ericaceous] or alkaline, special mixes for indoor growing, high-fertility for heavy feeders and formulations for specific types of plants such as cacti. Garden composts containing different manures will result in a variety of different properties suitable for specific types of crop. Concentrated fertilisers [organic or chemical] can be added to create quick-acting or slow-release mixes. Different production methods also generate specific qualities in the end-product, such as stacking, windrow, pit or vermiculture [worms]. Less accurately, the word is even applied to related processes such as loam-making, the formation of leafmould and even the anaerobic putrefaction of liquid wastes in cesspits and settling tanks [slurry].

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# RECOMMENDED METHOD FOR MEDIUM SCALE COMPOSTING

[Suitable for 1,000 Kg per week producing 25 metric tonnes of mature compost annually]

For the past ten years, the Ecology Company Compost Collective has had access to a regular supply of vegetable waste from Beansies Wholefood Co-operative in Sheffield. This source provides between 300 and 500Kg of matter per week, collected in ordinary domestic refuse bins, supplemented by donations of compostables from local residents.

Beansies provide transport [van + driver for 1 hour per week] and the waste is delivered cyclically to twenty sites, a total of five acres of cultivated ground. In return, Beansies save the rental of two or three trade waste bins, 500 to 750 L capacity, which cost £250 per year each. A small proportion [5-15 %] of this material is directly from certified organic sources, but most is conventionally grown.

Composting areas 4-6 square metres in area, with a base of clay and loam, are edged on two sides by marine plyboard [1.5m/5 feet high], set at a right angle. This space can be subdivided by moveable boards to create three-sided compartments to accommodate variable volumes from 1 to 8 cubic metres. This is useful since when composts reduce in volume, they can be re-stacked to take up less space. A depression in the ground directly in front of this area forms a collection pit for any nutrient-rich liquid which leaches from the heap and can be returned to the hot, dry top of the heap. These pits are covered by wooden chopping boards [5cm/1.5inches thick; 50-70 cm square] which facilitates chopping of inputs.

Each week, heaps are constructed between 1 and 3 cubic metres in volume, depending on the availability and density of other materials combined with the vegetable waste. Except for transport, no machines are used in this scale of composting, since their costs and logistics would be prohibitive, and they increase danger of accidents.

Three types of bulky material are included in each heap in approximately equal measures:

**VEGETABLE WASTES.** Chopped into 3cm square pieces with a sharp spade.

**GARDEN WASTES.** Crop residues, annual weeds, hay and straw. Chopped if necessary. Structural material.

**MANURES.** Cattle and horse. Introduce digestive bacteria and influence the nature of the end result.

In addition, a variety of more concentrated sources of fertility are added: seaweed, rockdusts, magnesium lime, activators [urine, comfrey and nettle teas]. In addition, the heap is inoculated with small amounts of topsoil, mature compost and populations of *eisenia foetida* to ensure the presence of abundant micro- and macro-organisms to digest the raw materials.

This diversity of inputs guarantees that the conditions for efficient composting are present; aeration or ventilation, moisture cycling by evaporation and condensation, and insulation to help the thermophilic bacterial reactions which achieve the initial breakdown of the inputs.

The three forms of bulky organic matter, as above, are alternately added to the heap in layers 10-20 cm/4-8 inches thick. Additives are distributed over these layers as the heap is built. The base of the heap [the first 50cm/18 inches] consist of porous matter which will soak up liquid draining down through the heap and structural material [such as woody stalks], which permit air to be drawn into the lower half of the heap. Care is taken to flatten the layers progressively to maximise the horizontal surface area, which produces a firm sheer vertical edge on the fourth, open side of the heap, allowing it to be built up higher [1m/5Ft] than if it were built at an angle. The last cycle of layers can be used to form a dome-shape at the top of the heap, shaped in an inverted parabolic curve, to facilitate the re-distribution of condensed evaporation back into the heap. Materials which are harder to digest [such as weed roots and seeds] are included in these upper strata where they will receive most heat and be effectively cooked. The heap is covered with three coverings: a layer of paper or card which will absorb evaporation, a layer of plastic sheeting to prevent moisture escaping from the heap and a piece of natural fibre carpet or underlay to retain heat within the heap. Heaps are turned at least three times at 2-4 week intervals, by chopping vertically through the horizontal layers formed when the heap was made, slicing through with a sharp spade every 5cm/2inches. This effectively re-distributes the materials and generates a second flush of heat and bacterial breakdown. After two months and one turning, the individual materials included at the start are indistinguishable and this raw compost can be used as mulch or for perennials or for heavy feeders like squash, tomatoes and runner beans. If the heap is re-stacked further, the aim is to invert it inside-out and upside-down [outside-in and downside-up], which will produce a fully homogenised mixture and allow macro-organisms to improve the material further. After six months, the compost is stable enough to be incorporated into the soil and mature enough not to contain pests or diseases.

At this age, any residues which might have contaminated the input material will have been digested and neutralised, and the compost can be considered fit for inclusion within a strictly organic growing system.

Six-month old compost has also reached a stable volume, approximately a quarter of what it was to begin with, and can be stored in bags or containers to mature fully. Year old compost can be safely applied to any vegetable crop at almost any stage of its growth and is also now fit for more sophisticated uses, such as in potting mixtures or houseplant mixes.

Ecocococo produces approximately 25 tonnes of finished organic compost each year, used for growing organic vegetables, fruit and herbs.