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How to make biodynamic compost

The difference between “ordinary” compost and “biodynamic” compost is the insertion of the biodynamic compost preparations into the heap when it is fully built.

These preparations, developed by Rudolf Steiner, amplify Earth and cosmic energies, enlivening the decomposition process and leading to much richer compost.

All crops need soil that will maintain and sustain the humus content, microbiological life and earthworm activity. This can be achieved through:

- Sensible and careful cultivation avoiding use of the rotary hoe or cultivation in unsuitable weather.
- Crop rotation, the use of green manure crops, planting of deep rooting permanent pasture and fallowing the land as appropriate.
- Incorporation of quality compost.

Compost uses

- It is an immediate source of nutrients for a crop.
- It is a soil conditioner – by adding a colloidal mix of micronutrients, bacteria and fungal material it helps build humus as well.
- It lasts for up to six years in the soil when liquid compost teas last 6 months.

There are four stages the composting process goes through:

- The pile heats up, and there is active rapid breakdown of protein with rising temperatures, followed by a subsequent drop in temperature.
- There is a process of aeration. Gases like CO₂, water as steam, methane and ammonia are released.
- The compost pile shrinks due to cell fluid loss.
- The formation of new humus carried out by animal species adapted to the compost pile, especially earthworms.

Where there is immediate need for a heavy feeding crop, compost can be used before the compost worms have finished breaking it down. For improvement or maintenance of soil structure, for example in a vineyard or on pasture, compost is most effectively used in a well-matured state, ie. when the compost worms have departed.

The aim in composting is decomposition with minimal loss of nutrients and the stimulation of stable humus formation. It is not difficult but needs practice and observation.

When choosing materials for the compost heap it is important to keep in mind the need for a balance between those high in nitrogen (proteinaceous) and those high in carbon (carbonaceous) to achieve an ideal carbon : nitrogen ratio (C:N) which facilitates the controlled fermentation process necessary to produce the desired end product.

- Proteinaceous materials include; fresh animal manures, fish wastes and green plant materials such as lawn clippings, green weeds and seaweed. These tend to putrify on their own.
- Carbonaceous materials include ; hay, straw, sawdust, woodchips and dry crops such as maize stalks. These tend to remain stable and do not decompose on their own.



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- Other additives include:
 - Clay/soil – pulverised and sprinkled among layers. (upto 10% of contents)
 - Lime or calcium in the form of dolomite or ground limestone lightly sprinkled among the layers.
 - Wood ash finely laced throughout.
 - Rock dusts.
 - Old compost, nettle tea, comfrey tea etc.

Check your source carefully, as many of the above can be contaminated – e.g. wood wastes by anti-sap stain treatments, crop wastes by herbicides, animal manures by drenches.

Minerals in the Compost

Liming: Calcium hydroxide, also known as hydrated lime or slaked lime, should be sprinkled on any freshly cut green material or kitchen waste, as one puts sugar over porridge. Lime of any sort should not come into contact with animal manure. Hydrated lime is used in preference to agricultural lime because of its very active nature. Its purpose is to suck the oxygen out but keep the life forces in the heap.

Rock Phosphate: Where there is a deficiency of phosphorus, rock phosphate can be used in the heap. The bacterial action will help dissolve the phosphorus. It should be used at the rate of 100 kilograms to 20 cubic metres of compost. Check the cadmium level – use a rock phosphate that has low cadmium – less than 20 parts per million.



Other substances:

- **Blood and bone** or dried blood should be put through the compost heap rather than spread directly onto the soil.
- **Rock dusts** may, depending on their propensity to break down into fine particles, add a clay content to the compost which will be very beneficial to sandy soil.
- **Seaweed meal** can be added to the compost at the rate of 25 kilograms to 20 m3.

Blending: The ideal compost is a homogeneous blend of carbonaceous and nitrogenous ingredients. In practice it is easier to alternate layers – for example layers of animal manures and fresh green materials interspersed with straw, wood chips, shredded wood and so on. A good idea in making any heap is to aim for 25% animal manure content. The layers of plant material should be between 15cm and 20 cm thick and those of animal manure no more than 7cm. Consider making a manure slurry to achieve better distribution through the other compost ingredients.

Moisture: This should be even throughout. If necessary, add water during construction – not afterwards. Squeeze a handful of material – it should be like a moist sponge, where water can just be squeezed out. Soak straw or hay in troughs of water prior to construction.

Air: An adequate – but not excessive – supply is essential to encourage the right kind of bacteria (aerobic bacteria). Too loose a heap, with too much air will work vigorously for a short time, release ammonia and then become dry and inactive. Too firm a heap, with insufficient air will smell putrid and sour – like the



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bottom of a swamp. An inverted V shaped tunnel from layers of a hay bale, or tied bundles of twigs running the length of the heap will help bring in sufficient air. Some use agricultural pipes with holes in long heaps.

Warmth: The optimum temperature results from the right balance of water, air and materials. As the heat is produced primarily from the breakdown of the nitrogenous materials, too much of these will make it over-hot, causing nutrient loss to the air, or stopping the break down process.

Too much water and insufficient nitrogenous material, makes for a cold heap that leaches out nutrients, while a dry one heats up for a short time, and then becomes cold and inactive. The aim is heating up vigorously within two to three days and then gradual cooling over a some weeks. Turning after about six weeks will re-stimulate the warmth process, but less intensely and for a shorter period of time.

Site: The choice of site will be affected by, among other things, the size of the compost heap. The home garden heap has different space requirements to the farm windrow, but there are things they have in common including;

- A soil base so that soil organisms have direct contact with the heap.
- A well drained and possibly slightly sloping site.
- The repeated use of the same site is beneficial to build-up soil organisms which are helpful to the composting process.
- Shade helps the compost decompose more quickly.
- Beneficial shade trees eg. Birch, Elder, Casuarina or any leguminous trees (avoid pines, eucalypts, willows). The exudates from leaves and roots of beneficial trees also aid in the process of decomposition.
- Protect from wind.



Size of the Heap: For large compost heaps windrows need to be built with a base 2 metres wide, a height of 1.5metres and length to suit personal farm needs. This allows air to permeate the heap but provides enough critical mass to facilitate the fermentation process. These larger heaps are built with sides sloping toward the top to allow excess rainwater to run off. One cubic metre of compost is a windrow 2 metres wide at the base, 1.5 metres high and 1 metre long at the time of building. For the home garden the compost heap may be contained in, for example, a simple circle of wire or slatted timber box that allows plenty of air circulation.

Prepping the compost heap: Adding the Biodynamic Compost Preparations brings about an order and balance in the decomposition of the compost material. Compost preparations 502-506 are used in the compost heap. The 507, Valerian, is saved for application to the finished compost.

The compost preparations are inserted into the heap at the rate of:

- One small (1g) set of preparations 502-506 per 3 tonnes of raw material or 12 m³.
- One large set (2g) of preparations 502-507 per 6 tonnes of raw material or 24 m³.

Likewise, when used on the soil, this compost will enable the bringing about of a balanced plant growth. With good biodynamic compost we are able to add a much more varied and richer micro-biological life to the soil, which can help combat many soil borne pathogens.



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To put the biodynamic preparations into the heap, make five holes in the heap, using a shovel handle, crow bar or similar tool. Make the holes at least 30 cm deep and place the solid preparations individually in a handful of mature compost or rich soil, before placing them at the bottom of the individual holes. Back fill the holes with compost or rich soil.

Cover with straw or hay all over to protect and then complete by spraying Valerian 507 over.

The Valerian preparation (507) is in liquid form and needs to be mixed in 4.5 litres of rain water and stirred for 10 minutes in the reverse vortex method.

Turning: The heap can be turned after about six weeks, and corrective measures taken if necessary – such as adding water if it is too dry. The turning process will bring the outside to the centre and vice versa, so an even breakdown will be achieved throughout. Static piles will contain more fungal growth. Not everyone turns their heaps.

The compost should be ready in 6-12 months depending on the ambient temperature.

Rate of use of biodynamic compost:

- In market gardens compost is used at 10-20 cubic metres per hectare per year.
- On grapes, vineyards, orchards it is used at 5-10 cubic metres per hectare. If you have 500 vines you need 500kg of compost. 1 shovelful = 1kg – is sufficient for 1 vine sprinkled around the base in autumn.
- On broadacre 1-2 tonnes per hectare.
- One cubic metre is a windrow two metres wide at the base, one and a half metres high, and one metre long, at the time of building.

About five kilos of mature compost fits into a 10 litre bucket and this is sufficient for 5 square metres. 40 kilos of compost fits into a normal sized wheelbarrow filled up level. This is enough for an area of 40 square metres. If we add two buckets to it then it is enough for 50 square metres. Following this we need two heaped wheelbarrows full for 100 square metres. If one spreads this amount every other year, the ground will be well cared for. One can add missing elements, diagnosed by a soil test, via the compost.

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