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A Guide to Composting

by Robin Humphreys

Proprietor of Gardening Aids Ltd (Established 1973)



Welcome to this guide for composters from Gardening Aid Limited.

Successful composting is the basis of our garden lifecycle. Through composting, we turn garden waste into natural plant food, with the added benefits of reducing trips to the dump and improving the soil structure. With the added fertility of the soil comes healthier, more robust, plants that can withstand the ravages of pests and disease, thus considerably reducing your chemical spraying costs.

Good composting can be likened to good cooking, and the same four basics apply :-

- Use only good quality ingredients.
- Prepare your ingredients properly
- Follow the recipe
- Decide on the cooking method

Good quality ingredients

Most of your garden waste is good for composting with. The exception would be oxalis, and invasive, root propagating weeds. Don't necessarily exclude other weeds such as Kikuyu grass or Wandering Jew etc as they are an excellent (and prolific) source of composting material. With noxious weeds special care needs to be taken with adequate shredding and a composting system has a high heat build up. Never include meat, fat, or bones in your compost but fresh kitchen waste is excellent.

Correct preparation

Trying to compost without a shredder is like a chef without a mixer. Inadequate preparation is the most common cause of failure in composting. Here are some guides in your search for a shredder for you -

Disregard performance figures given by manufacturers - in our experience, if used continuously at the sizes stated, the shredder will not last.

Most electric shredders take a maximum of 25mm and petrol powered 35 to 45mm. 90% of waste volume comes from material smaller than 19mm.

Cheap electric shredders (\$399ish), for other than very small gardens, are a waste of money to spend \$600 or more. Germans produce the best designed and lasting shredders.

Petrol shredders that have the cutting blade mounted directly on the engine crankshaft have

breaking shafts (despite claims of toughened crankshafts that the engine manufacturers have of). Some have an extra support bearing that makes them tolerable but belt drive is best.

The best composting material comes from a flail and screen shredder - different screens accept wet and difficult materials. Australian and NZ manufactured petrol shredders are the best in \$2000 price bracket.

Different shredders are better for different kinds of garden - to get the right one for your garden see a shredder specialist who knows his product and is prepared to demonstrate.

Recipes

You don't put a bag of flour and a pint of milk in the oven and hope to get scones! Read the recipes.

The composting method

Different systems suit different gardens - let us guide you. The 850 watt microwave of composting systems is the Suttons 400 Compostumbler. Providing that you have sufficient lawn clipping shredded garden waste to feed it - it will produce three contractors barrows of very rich mulch every two weeks.

At Gardening Aids Limited we have the garden machinery and garden tools to change your chores into a pleasure.

Happy gardening

Robin Humphreys

Gardening Aids Limited

Nutrition and Compost

Composting vegetation can be likened to cooking food. In composting we are making nutritious plants, just as we are supplying nutrients to our bodies with our cooked food. The ultimate value of compost, just like our food, is dependant on the correct recipe in the first place, "the most efficient way, in the shortest possible time. Secondary considerations are ease of operation, hygiene, quantity and type of material able to be processed. One method of composting does not necessarily suit all people. The choice of method has to take into consideration the volume, material, and ultimate use of compost. Composting benefits from attention to the recipe and preparation of material.

the nutritional value of compost is dependant on the material in it and the speed with which it reaches maturity.

Successful composting is dependant upon these four points:-

- correct balance of ingredients
- preparation of material (wood and large leaf material should be shredded)
- the moisture content (should be damp not sodden)
- method.

Traditionally, composting was done by the Indore or Berkley method which was both back breaking and time consuming. Today there are several types of bins to choose from and at Gardening Aids Limited we are able to offer you a full range to cover your expectations.

Its important to remember when choosing your method of composting that a good technique

minimal losses of nutrients and hence their maximum return to the soil. Composting is just a speeding up the natural process so that we can capitalise on the nutrients for our gardens.

The Ratios In Composting

Compost of high fertiliser value can only come from high quality" rubbish. The most important is the carbon nitrogen (c/n) ratio of the organic materials used. Micro-organisms need both carbon and nitrogen to make protein. As they use about 30 parts by weight of carbon for each part of nitrogen we need to supply them with materials having a c/n ratio of about 30. Microbial activity is reduced at higher c/n ratios (low nitrogen supply) and valuable nitrogen may be lost as ammonia gas if lower than about 30. In practice, it has been found that the average c/n ratio of the materials in a compost heap should be slightly less than this - in the range 25 to 30 - for the heap to work". The target you achieve somewhere near the optimum c/n ratio. Further mixtures may be formulated according to materials available. Provided the c/n ratio is right, it is not essential that animal manures are used. Micro-organisms also need abundant supplies of the other nutrient elements, with phosphorus particularly important. A carbon/phosphorous (c/p) ratio in the range 75 to 150 is needed. Leaf litter (especially gum leaves), woody plant residues, and sometimes even lawn clippings, have c/p ratios of about 150. In these situations it is desirable to add more phosphorous to most compost heaps so as to speed up rapid decomposition. Superphosphate can be used, but if a more natural source of phosphorus is preferred, use bone meal or rock phosphate. Use only light sprinklings as more than about 20g/m² can inhibit decomposition. The other nutrients needed by micro-organisms are usually present in sufficient amounts if a wide range of organic materials is used.

Moisture Content

The moisture content of a compost heap is very important. Below about 40% moisture (40g water + 60g dry matter), organic matter will not decompose rapidly. Above 60% moisture not enough air can get into the heap and it tends to become anaerobic (no oxygen). The best, therefore, to aim at 50 to 55% moisture. This is likened to the moisture of a squeezed sponge.

To Lime or Not to Lime

Initially the pH of a compost heap is slightly acidic because the cell sap of plants is acidic. It becomes even more acidic, due to acids such as acetic, sulphuric, nitric, etc., produced by the micro-organisms. During the thermophilic stage it becomes alkaline through ammonia formation, and finally, neutral as the ammonia is absorbed by the acids to form ammonium sulphate, ammonium nitrate, etc. The addition of lime to compost inhibits the absorption of ammonia and can lead to serious nitrogen fixation. In a well ventilated compost system, ie. a Compostumbler, no lime is required. In the plastic bin method, because of its inherent tendency to become anaerobic, and therefore excessively acidic, lime must be added.

The Berkeley Method

Published recipes state that alternate layers of high nitrogen and low nitrogen materials should be heaped on top of one another into a heap about 1.5mtr high. Local experience suggests that it does not matter much whether the materials are layered or mixed up before hand, so long as the C/N ratio is in the optimum of 25 to 30. To work, the heap needs to be at least one or two cubic metres in volume. Regular turning for adequate aeration is the secret for successful composting. Providing the heap is turned every two to three days, it should be ready for use in three to four weeks. Because of the size required, the Berkeley method is not really suitable for suburban gardens.

The Indore Method

This method involves minimum effort, but it takes a long time to produce a usable product. Alternate layers of low nitrogen and high nitrogen materials are heaped on top of one another to a height of about 1.5mtr. The heap should be about 2mtr square at the bottom, tapering to about 1.5mtr if it is standing. The heap is covered with a 5cm layer of compacted soil to deter flies and to prevent the escape of foul odours. If the heap is turned, the first turning should be eight to ten days after making. Further turnings should be made every thirty or forty days. The process of decomposition takes a year if the heap is never turned.

Compost Bins

The previous methods are more suitable for semi-commercial or rural situations. Most urban would use some form of compost bin, the most common being the three bin method made of other material where materials are laid down similarly to the Berkeley method but turned from the next in rotation. There are a large number of proprietary plastic compost bins available, which with care produce compost. However, the danger with this kind of bin, is that the heap will undergo aerobic decomposition, with its associated smells and low nutritional value of the end product. A successful method of all compost bins is the Sutton's Compostumbler which can produce high nutrient compost within 14 days. No flies, no smell, no mice or rats, and little effort.

Additives

Do You Really Need Them?

Some hundreds of species of micro-organisms, mostly bacteria, fungi and actinomycetes (bacteria), are involved in decomposing organic materials. Most organic materials have a natural population of micro-organisms and others are added to a compost heap in the garden soil often mixed layered amongst the organic materials. These micro-organisms start their work of decomposition as moisture and oxygen concentrations are favourable. Many research studies have shown that "preparations of fungi, bacteria or enzymes" are not needed for rapid decomposition; there are organisms in the materials commonly used to make compost. Only where sawdust (or other sterile materials) form a high proportion of the heap is inoculation not a waste of money. The advantages of some commercial preparations are often due to the extra nitrogen and other nutrients supplied rather than to the micro-organisms they contain. These nutrients can be bought much more cheaply in fertilisers. If in doubt, add a small amount of mature compost to each new heap.

Shredders

Grinding or chopping up the organic material speeds decomposition by increasing the surface area available to micro-organisms. There are available, today, a wide range of inexpensive garden shredders either petrol or electric powered, to suit your needs. These shredders will turn your garden waste and prunings into an easily compostable mulch.

Lawnmowers

Your lawnmower will supply you with a continuous supply of moist bulk material for your compost. Grass clippings are especially valuable, when mixed with either peat or untreated sawdust, in tumbling composters. To keep work to a minimum choose a lawnmower that has a catcher. Hover or reel mowers can create a lot of unnecessary work if you are intending to compost. Mulch mowers offer little benefit too if you are wanting to use the clippings. Should you be contemplating a ride-on mower be sure to choose a machine that has already got the chute-catcher attached to it as general purpose machines are more efficient.

Blowers / Vacuum

The outdoor vac is designed to capture all those elusive autumn leaves from garden beds, shrubbery, and those awkward corners. Naturally they are great for lawns, driveways and garages. Both are available in electric as well as the freedom loving petrol variety. Apart from their compact size and mobility check out their ability to shred. Some vacs are so efficient at shredding you can simply empty your vac bag straight into your compost.

Pleasure Makers

There are many labour saving products available on the market today to increase your productivity and reduce stress. Check out the Gubba range of products from the handy carry bags to garden loppers.

