Primal Seeds

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compost

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The art of turning death into life

In nature, animal and plant life die on the forest floor, and decay with time, water, decomposers, sun and air. This produces a layer of humus on which plants thrive.
Building soil by composting follows the same process. It is neither letting nature take its course, nor is it violating it's principles. It is simply speeding things up a bit.
Compost is the key to growing. It suppresses most plant diseases and pathogens in the process, increases water retention, improves soil structure, retains nutrients, help absorb heat, balances the pH, traps soil toxins...
Composting has been neglected by chemical farming. Fertility is about giving life to the soil, overlooking this basic fact has serious ecological implications.

The ingredients

Any organic substance can be composted.
A simple recipe is to mix kitchen scraps, weeds, leaves, paper, grass...
The main thing to look out for is the carbon-nitrogen ratio.
Materials such as sawdust, paper, straw or dead leaves, have a high carbon content. (Usually brown)
Manure, fresh plants, guano, blood meal, urine, slurry are high in nitrogen. In the garden, anything green will do the trick.
Print out to the table of composition, to get a better idea of the properties of different materials. As a general rule aim for half carbon, half nitrogen.
Find out the compositions of a variety of materials, ordered alphabetically or by nutrients

Other ingredients

- ***Earth*** (5% to 10%) can be mixed in to aid the earthworms and humus formation.
- ***Lime or calcium*** will keep the compost from souring and discourages flies.
- ***Wood ash*** supplies potassium and minerals. Avoid large clumps, as it forms caustic lye when moistened. (Ashes from coal fire, plastics, coloured, glossy paper, and chemical stuff are toxic).

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Kick starting your compost

To get the rotting process started you need to add a blend of the bacteria and spores of microorganisms. They are everywhere in the ground, air and water.
The *compost starter* recipes below provide a perfect breeding ground.

- ***Old compost.***
- ***'Russian tea'***, fermented cow dung in ten parts water.
- ***'Chairman Mao's'***, made from a four to one dilution of urine.
- ***Nettle tea***, made by brewing nettles or fermenting them in rainwater. (Try also comfrey leaves, horse tail).

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Building the pile

Location

Keep a permanent composting area, centrally located in the garden for easy transport of materials.
Place it on the bare ground to allow the bacteria from previous piles to infect it and earthworms to travel to it.
Don't put it into a pit or trample it down, as it would cause anaerobic decomposition. Nitrate-producing bacteria need plenty of oxygen, since they are aerobic. The composts should be loosely piled and kept moist, but not water-logged.

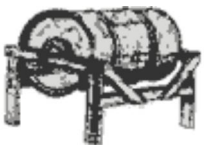
In warmer, drier localities, elderberry, hazelnut, birch and alder make ideal compost shade trees as their leaf and root aid in the decomposition processes. In cooler climates, composts should be put into wind-sheltered, sunny areas. It is worth protecting the compost with a layer of black plastic, which keeps the compost from drying out during a dry spell, and during a rainy season keeps the nutrients from leaching out. Evaporating moisture will condense underneath the plastic and percolate and circulate through the pile. A roof also protects from drying or leaching.

Windrows about four feet high, six-feet wide, and as long as necessary, are the best shape to give to the compost. In this way, a "critical mass" is achieved, for the biochemical reactions to take place.

Size

If the compost pile is too small, it will not heat and decompose properly; if it is too large the inner layers will remain raw and deprived of air, while the outside mantle will have already broken down. Like any living organism, the compost must have a skin to keep gases and other products of metabolism, such as ammonia and methane, from being dissipated. Peat, sawdust, straw or other nitrogen-poor substance will not let the odours through. Underneath, the compost might be bedded upon straw, hay, peat or a similar absorbent substance if there is a chance of liquid runoff.

For smaller gardens, a wooden composting bin, or a roll of wire mesh, make good composting devices. Fresh material is pitched into the top, while finished compost can be scooped out of the bottom.



For fast results, use a barrel to turn the compost. This technique aerates the compost and mixes the ingredients for greater carbon / nitogen contact.

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Special Compost

- ***Legume*** compost can be made from clover or some other legume sod mixed together with manure and lime for a year. It produces a special virulence among the rhizobia and will stimulate nitrogen fixation.

- ***Tomato*** compost can be made from old tomato plants, together with soil and manure. Tomatoes have a narcissistic predilection for growing on their own rotted remains.
- ***Special earthworm*** compost is made from shredded paper, straw, and manure with added clay powder.

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Animal manure

Compost can be made for specific purposes from various animal droppings. In general, it can be said that the part of the plant upon which an animal characteristically feeds, is best fertilised by the manure of that species.

- ***Pig manure*** is rich in potash, and when well humified, is best applied to root crops, especially potassium-hungry leeks, celeriac and potatoes. Pigs are primarily rooting animals, feeding on roots they dig up.
- ***Horse manure*** is light and will lighten heavy clay soils. Horses feed primarily on foliage and grass; consequently, their manure aids leaf and foliage development. Horse manure, which is rich in ammonia, will heat steadily for a long time. This makes it ideal for use in hot beds for raising seedlings in the spring. For a home garden, or even a larger garden where no greenhouse is available, this is a good way to start plants.
- ***Cow manure*** is best for composting purposes, as the nutrients have been stabilised in the long digestive process of the animal.
- ***Rabbit manure***, rich in nitrogen, is good for foliage, stem and shrubbery development.
- ***Chicken, pigeon, and other bird manure*** is good for seeds, flowers and fruits, because their manure is rich in phosphorus. Chicken manure, which is sticky, wet, and odorous, is hard to compost. It is best made into a liquid compost by mixing it into ten parts water and letting it ferment in a barrel (stir regularly for 6-8 weeks).
- ***Sheep and goat manure*** are excellent for increasing the quality and aroma of fruits and the oil content of herbs.
- ***Human and pet manure*** need special attention due to potential pathogen. A seperate section will be available soon.

Manure is composted like other substances, with the addition of small amounts of earth, clay, lime, wood ash, rock flours, as well as straw, hay, weeds, or other vegetable matter. For heavier manure, such as cow or pig manure, special care has to be taken to bring air into the compost pile. This can be done by mixing it with straw and other light materials, tossing it with manure forks into a pile so it does not clump as much, or, on farms, setting the manure spreader on "stationary" and running it through onto a pile.

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Liquid Manure

Liquid manure, used in the watering of the heavy feeders during the growing season or as compost activators, can be made from a number of substances. These are placed into a barrel of water at a ratio of 10:1 and left to ferment for few of weeks.

- ***Stinging nettle*** liquid manure is rich in iron needed for the chlorophyll formation of green leaves and helps in the humus buildup of the soil.
- ***Cabbage leaf*** slurry aids the sulfur metabolism of the soil.
- ***Comfrey and horsetails*** are rich in various minerals (Ca, K, P, Ma) and vitamins, and make an effective liquid manure.
- ***Chicken and pigeon dung***, as well as ***cow pies*** can be fermented in water and used for special feeding purposes; the bird slurry for flowers

and fruits, the cow manure for aiding root development in general.

Liquid manure, which involves anaerobic fermentation, produces strong odours (sulfur, ammonia and swamp gas smells). To keep the odours at a minimum, it is advisable to stir daily to bring air into the brew and to inoculate with compost starter, or shredded stinging nettle to help guide the fermentation processes. Putting a floating layer of peat moss, chopped straw, or sawdust on the slurry absorbs the fumes. In the summer, the inch-long sluggish, fat rat-tailed maggots of the hovering flies, which feed upon decaying liquid substances, will develop in these potent brews as an indication that the liquid is biologically ready to be used.

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Reading the compost

If the compost is balanced the smell should be earthy and sweet, the colour rich brown and full of manure worms.

Too close a C/N ratio at the beginning of composting leads to nitrogen losses. This can be noticed by the smell of ammonia and flies. Turn your pile and add carbon rich material.

Too wide a C/N ratio slows the composting. The lack of sufficient nitrogen coupled with low temperatures and too much moisture will produce an acid, peat-like soil.

The initial heating process of the compost, should reach temperatures of up to 140° to 180° Fahrenheit. Add water to prevent it from drying up. Lack of moisture will develop a musty smell, white mildew, and an unusually large number of pill bugs or sow bugs.

If it is too wet and too compacted, the heap will putrefy, developing strong odours, turning black and slimy, and maggots will appear.

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What really happens- the scientific bit

The compost carries out life functions and goes through three distinct stages.

The bacteria-fungus stage

This is part of the overall breakdown cycle. Proteins are broken down by bacteria into amino acids and finally ammonia. Carbohydrates are broken down into simple sugars' organic acids, and carbon dioxide. Other compounds are similarly broken down. The buildup cycle proceeds with fungi, which eagerly ingest the free ammonia and rebuild amino acids in their mycelia. This stage is characterised by the generation of much heat, given off by energy liberated during the metabolism of thermophilic organisms. The bacteria eat their way into the centre of the pile, and are followed immediately by the whitish mycelia of the fungi which absorb the gases given off.

The earthworm stage

The heating reduces, the heat-loving bacteria have formed spores and the fungi have predigested the organic substances for the earthworms and actinomycetes to work on. If stage 1 has not gone completely satisfactorily, with undigested, putrid or dry sections, turn the pile for a brief re-heating. The earthworms now proceed to mix the organic substances (which the fungi have predigested) with small amounts of clay and calcium within their bodies. In doing so, the polymerised carbon-chains are reconstituted in the form of clay-humus complexes, which absorb cations such as calcium, ammonium, magnesium, potassium, sodium and others. There is as yet little understood of the clay-humus molecule. It is more than a simple anion, but also coats itself with

phosphates, sulfates and nitrates - in other words, this macromolecule becomes a sponge for nutrients. At this stage the compost can already be used as mulch or as fertiliser for heavy feeders such as cabbages, corn, okra, pumpkins, squashes and melons. At this point of development a number of arthropods, such as centipedes, millipedes and predatory metallic looking carbide beetles start to settle the compost. For young seedlings and for root crops such as carrots, beets, oyster plants or parsnips, it is better to wait for the compost to reach…

The stage of ripeness

It is during this stage that the compost turns into good, crumbly fragrant, humus earth. Nitrates and saltpeter, which are needed by root crops and young sprouting plants are made available by organisms that further oxidise the nitrogen substances. The speed at which the compost reaches maturity depends upon extraneous factors such as climate, the size of the pile and the kind of ingredients. Compost can be made in two weeks under ideal conditions. (Quick-rotting shredded materials, narrow C/N ratio supplied by grass clippings, legumes, manure and amendments such as bird manure, blood meal, and maintenance of the right moisture and air by frequent turning). The product basically only goes to stage 2, before the earthworms enter. It is doubtful that the clay humus molecules that account for creating permanent fertility result from this speeded-up process. Quick composts seem to be symptomatic of our age of instant success and instant gratification. The quick composts make good top dressings, and food for heavy feeders, but like sheet composting, they do not lead to a permanent buildup of fertility. Ripened composts that have taken six months to a year are more stable.

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