

Basic Back Yard Sheet Mulching

Sheet mulching is just composting in place. It is a simple approach to the creation of a considerable amount of young topsoil with less labor than is required to make good hot compost, and generally quicker results than one can expect from a typical slow, moldering compost pile. The materials do not need to be turned by you, and since the layers are placed directly where they will permanently stay, you only need to move things once. Depending on the quantity of materials available and your energy, this process can be suited to any scale. My suggestion is always to start small and simple, see how things work, and then build on your successes.

These suggestions are intended to be a basic introductory guide. I've included directions for making an inoculant which will help speed up decomposition, and then step-by-step directions for assembling the entire sheet mulch bed. You can make this compost in any season, but it helps to remember that activity in the soil is at its lowest point around the solstices (the beginning of summer and winter) and at its highest around the equinoxes. My recommendation for most people is to assemble the materials in autumn, when plenty of leaves are available and a lot of the garden is drying out and turning brown. If all goes well, the sheet mulch bed should be ready for its first plants the following spring.

* * *

I usually start by inoculating the designated area before I put any layers down. You may have trouble finding some or many of the ingredients if you're not growing them, so you can either find someone who is growing them, or plant and grow them yourself, or you can skip this step if it's prohibitive. It is not absolutely necessary to have all of the ingredients in order to prepare a good inoculant. Some is better than none, even if it's just a bit of dilute unsulfured molasses. And, by all means experiment with adding different plants in season or as you deem appropriate, including the use of different parts of the plant in different seasons, to enhance the energy that is being concentrated by the plant. For example, I use the actively growing tips of chicory in spring, the flower stalks (and some leaves) in late spring and well into summer, the developed seed stalks with leaves in late summer and autumn, and the roots in winter. I also have been known to include both bindweed and goatheads (and I've been called various names), because I want that particularly tough and resilient DNA in my soil and in the organisms that inhabit and feed on that soil. Feel free to play, and then work with the feedback you receive. The making of inoculants becomes more art than science as our connection to our place deepens. Trust yourself.

- Fill a large bucket with roughly equal parts of chicory, alfalfa, comfrey, and stinging nettle, then add water to cover it all. If you have access to horsetails (*equisetum* spp.), you can also throw in a handful of them. Add molasses to this tea at a ratio of 1 table-spoon/gallon of water. Stir well. Let it sit for a couple of days in a warm (not hot) place, stirring occasionally, until it begins to ferment. Strain the liquid into a sprayer and apply evenly to the surface of your soil. Keep the solids for your compost, or--better--add them to the layers in your sheet mulch. This inoculant adds a rich blend of micronutrients to feed the microbes who will be creating your soil, and it draws earthworms close to the surface--they love sweet stuff.

- If you have turf, it will be most efficient to actually strip the turf and turn it over before sheet mulching, but most people don't want to work that hard, so just spray the inoculant right on top and build the sheet mulch on top of the turf. If you don't have turf, chop anything that has been growing in the designated area--weeds, garden plants--and just leave it all on the surface.
- Begin to build the layers of mulch, with the densest layer first. This is usually cardboard or paper--lots of it--overlapped to prohibit anything below from finding cracks and pushing up to the surface. Old carpeting or clothing can be used if it's *all* natural material. I've heard of people using drywall, which is pure gypsum, but I'd only consider that on caliche myself. My preferred base layer is cardboard and old horse feed bags with the plastic lining removed. Magazines are fine, and junk mail also. Don't worry too much about the heavy metals in the inks, because most inks these days are soy based. Yes, that means there's genetically engineered material in there, but it's also there in all the packaging that you buy every day without remorse, so take a deep breath, forgive yourself and everyone else, and get back to work. Put down at least a half-inch layer, and a little more is better, up to about an inch. Keep a hose handy to moisten all the ingredients as you are building. If you're applying several layers of paper or cardboard, be sure to moisten each layer as you put it down. Light rains will not be able to penetrate to greater depths, so it's essential to get the water down there *before* you cover everything. If you have extra time and a tub or something suitable, soaking the material you'll be using for the bottom layer for several hours is a good idea. If not, don't worry about it. You don't have to soak the rest of the layers--just a thorough moistening should be fine.
- When you have completely smothered the area with a dense layer, begin to build up the mulch with alternating layers of nitrogen and carbon sources. Since this is composting in place, the same principles apply here as when making compost (about 25 or 30:1 carbon to nitrogen ratio). I usually begin with about a 6-inch layer of horse manure, the fresher the better initially, just to get as much nitrogen down there as reasonable to assist in the processing of all that carbon on the bottom. If you have a source of chicken manure, that's even hotter so you'd only need an inch or two. The idea is to put the hottest stuff at the bottom when you are first building the sheet mulch, to accelerate the initial decomposition process. When the system is established and working like it should, you will put the freshest manure on top, as occurs naturally, so that it's semidecomposed and no longer hot by the time it has worked down to the soil surface and the root layers.
- On top of your nitrogen stratum, add a good amount of carbon. There should be plenty of that in the form of dried materials from the garden, weeds, leaves, spoiled hay or straw—brown stuff except manure (which is considered “green”). Then continue alternating green and brown layers, keeping in mind the C:N ratio. In autumn and winter, you won't be able to find much green material to work into your mulch beyond kitchen scraps and London rocket, unless you have livestock, but during the growing season I recommend adding a blend (in thinner strata) of green--weeds, cuttings, grass clippings--alternated with brown material (dry, not manure)--hay, straw, all the weeds you've raked up from the vacant lot, leaves. Keep layering this stuff--remembering to moisten each layer thoroughly as you add it—to at least 6 inches deep. Chop or not, as you are willing.
- Add another 3-inch layer of manure. If you have a plentiful source and really want to accelerate the initial decomposition, the best approach is to build the whole thing in about 6-inch alternating layers of nitrogen and carbon. But most people have to be a bit dear

with their poop, so I generally suggest sandwiching bottom and top, with lots of carbon in the middle. Put kitchen scraps as deep as possible if animals will be a problem.

- A 2- or 3-inch layer of leaves on top, well moistened when applied, will help keep the subsurface layers from drying out (since leaves tend to cling together and bond when wet) and appeals to some people's notions of tidiness. This is entirely optional, but leaves are fairly easy to come by seasonally, when entire neighborhoods are filling garbage bags which shouldn't go to waste. Remember though that the beneficial effect of creating a somewhat coherent layer that retains moisture below is also tending to repel penetration of moisture from above, so check periodically to be sure that it isn't all drying out (see #2 below). If the weather has been warm with little natural precipitation, you might need to add water.
- Let the whole thing sit until the weather warms next spring (assuming you've built this in autumn to digest through the winter), when you'll begin to notice that it seems to be shrinking. This is not settling for the most part (of course there's a bit), it's decomposing.
- When you are finally ready to plant, pull back the mulch and either cut holes in the paper layer (I usually slice it with my hori-hori or a large knife to make an X, and pull apart the flaps) to plant into the soil layer, or fill the hole that you have created in the mulch with a few handfuls of topsoil and plant directly into that. I prefer to go down deep in order to take full advantage of the mulch. This usually means the first year I only plant things that I've already started from seed and that have gotten fairly large by the time I plant them out. But fast-growing vines--pumpkins, squash, beans--and large, aggressive, fast-growing grasses have also worked well for me from direct seeding--sorghum and corn, for instance. So, you could sheet mulch in autumn and plant the three sisters next spring and expect real good returns. Vines that will spread over the surface accelerate the decomposition process because they shade the mulch, which decreases evaporation. One year I grew pumpkins to great effect all around.

Once the sheet mulch bed has been created, the most important tasks are:

- 1) maintaining the depth by periodic addition of new materials (8 inches is the minimum you want, 18 inches is wonderful, but good luck with that);
- 2) making sure that it doesn't dry out underneath and create a hydrophobic layer that actually repels water and prohibits it from penetrating to the bottom (just stick your hand down under there from time to time--you'll be able to tell); and
- 3) keeping growing things in your mulched beds as permanently as possible: life begets life, and growing roots, even in midwinter (arugula, hardy kales, mustards, etc.), will enhance biotic activity. Remember that this is a living organism.

* * *

I have been experimenting with the addition of biochar and rock powders to the sheet mulch layers. The rock powders do seem to be a necessary component as the decomposition process accelerates and a relatively deep layer of good, humus-rich topsoil accumulates. Sheet mulch beds that were assembled a dozen years ago now have a 6-inch layer of pure organic material, sometimes more. Some plants want a little bit more of a mineral component to their base diet, and the rock powders have resulted in immediate positive responses. Further experiments will be documented and the results will be added to this worksheet.

