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Considering gypsum

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Gypsum in its raw, natural form. *(Public domain)*

Reusing waste materials is easier with a basic understanding of their composition. Readers of this column will recall my experiments in upcycling oyster shells into decorative, traction-enhancing calcium supplements and cardboard into weed suppressant that breaks down into carbon-rich soil enrichment.

According to the soil science course I've been taking, we needn't concern ourselves with supplementing calcium in the soil. Inorganic supplementation (here, gypsum or lime) will only provide a temporary boost, and most of it will leach away over time -- especially with the South Sound's volume of rainfall.

All nutrients required by growing plants abound in any given sample of the world's soils; the key question is whether they are bioavailable. For example, the calcium deep in the subsoil of our region's forests can be mined by bigleaf maples, whose fallen leaves then add bioavailable calcium to topsoil as they break down.

The calcium in oyster shells is calcium carbonate. Lime's form of calcium is calcium hydroxide or carbonate.

Calcium sulfate is also sold as an agricultural supplement. When I had some extra drywall to get rid of, I discovered that gypsum, its main ingredient, is calcium sulfate - and we were off to the races.

Notwithstanding that calcium is abundant in all soil, I was trying to avoid a trip to the dump and get something useful out of it. Keeping anything useful out of our overwhelming waste stream is an ethical imperative.

A search of permaculture forums showed me that many people use drywall as a soil additive with no visible harm done. Some grind it up and apply the powder, some apply it intact and some make a slurry. In all cases, people use only unpainted, raw drywall.

One person was excited about the prospects of keeping tons of gypsum out of landfills in the wake of disasters such as Hurricane Sandy. They went to the trouble of soaking the drywall until the paper could be peeled off and they then extracted the staples and nails with a magnet.

Their screen name was something like Jonny Walker or Mickey Fine. I concluded this person was trolling.

Very particular upcyclers determine whether the gypsum used in the board contains recycled drywall, which would by nature contain paints and anything else ground up in the remanufacturing. I decided to apply any drywall amendment I might use to trees instead of food crops, and to do it on a limited, experimental basis.

That was until I found out that sulfates can act as broad-spectrum fungicides. Copper sulfate is combined with lime to make Bordeaux mixture, which has been used in vineyards and elsewhere for 150 years to control mildews and other pathogens.

Beneficial fungi are key partners in nutrient cycling, particularly for trees and perennials. It seemed I could not separate the benefits of gypsum from unwanted killing in the soil food web.

My only deliberate killings to favor plantings are slugs because I can see and understand them. Anything else I exclude (e.g., deer with fences) or leave for natural predation under conditions I aim to adjust.

As if the fungicide weren't enough, I learned that modern drywall is doctored with everything from fiberglass to Styrofoam. The answer for what to do with the drywall came while reading about compost turners. These huge machines are used to turn compost in long piles, called windrows, so that it heats evenly to kill pathogens.

Some users set the tines of their turners a little above the ground to reduce wear on them if they're turning compost on concrete or asphalt. Instead of risking rotten compost, my coursework recommended setting the tines at the correct height and tilling gypsum or lime into heavy clay for your

windrow site, then driving over it. This compacted surface would set into an impermeable concrete analog that's easier on your turner's metal tines.

Suddenly pothole repair in clay soil seemed like a fun and harmless experiment that would use up this drywall - but after recent weather, potholes are the least of our road concerns!

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