
[\[Date Prev\]](#)[\[Date Next\]](#)[\[Thread Prev\]](#)[\[Thread Next\]](#)[\[Date Index\]](#)[\[Thread Index\]](#)

Re: gypsum+ tree decline

- *To:* jackrowe@compuserve.com, owner-permaculture@envirolink.org, permaculture@listserv.unc.edu, permaculture@envirolink.org
 - *Subject:* Re: gypsum+ tree decline
 - *From:* YankeePerm@aol.com
 - *Date:* Mon, 22 Sep 1997 08:17:18 -0400 (EDT)
 - *Reply-To:* YankeePerm@aol.com
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Bravo to Jack Rowe's excellent piece on gypsum. He appears to be saying that gypsum results in improved soil tilth. Gypsum is calcium sulphate and is used where people want to add calcium without raising pH (or when you score some gypsum board on trash day. It makes excellent sheet mulch, pH requirements then being beside the point.) Limestone, calcium carbonate, has long been known to improve physical qualities of both clay and sand soils, helping both to aggregate. Calcium carbonate is a loose association of calcium oxide, or lye, with carbon dioxide. To oversimplify the matter, stronger acids displace the carbon dioxide in the soil. The lye then forms a salt with the stronger acid. Eventually some of the carbon dioxide falls back down as acid rain. CO₂ is very soluble and rain tends to pick it up rapidly. (Which is why CO₂ in the atmosphere hasn't built up much faster--it ends up in the oceans and at certain concentrations, temperatures, and pressures precipitates as calcium carbonate to be laid down for the next tool-making species to abuse. I'm not sure how calcium sulphate is formed and therefore how renewable it may be. Since sulphuric acid does not outgas much at earth surface temperatures, both halves of the salt stay around and no pH effect is noticed.

The problem is that both materials, gypsum and limestone, come from strip mines. Therefore we are ripping off some other place on Earth when we use them to tune up our own little patch. I think that using these materials as an aid in establishing a self-maintaining system can be justified. The problem comes if we design management approaches that rely on them perpetually. Since this occasions perpetual work and damage, this is a type one error, and thus not permaculture by definition.

I have similar concerns about the use of rock dust for remineralization, except where it is obtained as a byproduct for something which we do not make more viable by removing the dust.

Regarding forest decline from acid rain, it is not just conifers that suffer from acid rain. As early as 1983, forest geneticists were concerned that the sugar maple may be moving toward extinction. The next year, I invented the Tree Bank, as program of living trees in areas of minimum pollution, to start from seed genetic reserves of forest trees threatened by pollution (as a death blow following many kinds of ecological damage). Moreover, the damage is not just in the US northeast and Canadian southeast. I've seen it in the Rocky Mountains and thence eastward with rare pockets of health, which I

documented photographically so people would have a chance to see what healthy trees look like. We are children growing up in a leper village. We think leprosy is normal and healthy because we've never seen anything else.

WorldWatch Institute reports that decline is a serious matter around the temperate Northern hemisphere. I've seen identical symptoms in the tropics, for exampla around Penang and Manila, and even in New Zealand, down wind of Aukland. This is NOT a problem limited to a few trees in one place. Ten years ago I was cutting firewood for a woman in the watershed of the Quabbin Reservoir, which is the entire water supply for greater Boston. Only one species, black birch, which is a boreal species, was successfully reproducing.

Even staghorn sumac was stressed. I've seen places in New Jersey where light hungry ailanthus was coming in under sugar maple, which in health sades out everything except beech and itself. I've watched healthy trees in land that owns me in the foothills of the Berkshires wither into deformed caractures of their species. This is not a minor problem. In the plains, it is greatly compounded by herbicide drift which can cause the trees to explode in a rotting mass in slow motion. Drought stress and widespread use of semi-adapted exotics on the plains also contribute their share I'm sure.

In Ireland, I was told they did not have the problem but that was fantasy.

I saw it and reports of understory trees suddenly becoming dominant were most simply explained by canopoy breakdown from pollution as a culminating stress.

Folks who live in the sugar maple/black maple range have a chance to help save trees. Tree Bank is collecting seed of these species this species, as well as Canadian Hemlock which has a smilar range. The sugar/black maple species (which we we regard as two types of the same species for our purposes) range from the Maritimes past Ontario westward and south reaching Georgia, where I have seen it, and Alabama, where I have not. It is fairly common in western North Carolina, for example, which will surprise most folks.

I've not passed on the Tree Bank torch. For details on how to collect and process and care for seed until shipping, contact Mike Janssens at whiteoak@icity.intcity.com He is now Tree Bank Seed Coordinator for North America. Seeds should start ripening in some parts of the range at the end of this month and will continue to be available until December sometime, depending on locale and weather. Canadian hemlock, *T. canadensis*, is now ripe throughout much of its range. A little Carolina hemlock mixed in wont hurt anything, but try to keep the selections relatively clean. More seed is better than less, as we are trying to preserve genetic diversity and by the time the seeds get used for reforestation in New Zealand by TreeBank Trust Ltd. the germination is not fantastic. Usually trees need to be treated to prevent introduction of pathogens.

I'm willing to handle a reasonable number of questions regarding the philosophy and strategy of Tree Bank and concerns about the ecological wisdom of exporting seed to another place. The ecology of New Zealand, which so far is the only recipient country other than a few red maple seeds to Mexico, has been safeguarded and we have strongly encouraged TreeBank Trust to make their native bush their first priority. Best to write your questions to me via the mailing list so that I do not answer the same question 100 times. At some point I'll have to stop. We also publish, through Yankee Permaculture, an information packet of materials on this subject, all of which have been placed in public domain. That is for the .01 percent of people who still have scruples about stealing from authors as they are the ones we want to reach anyway.

For Mother Earth, Dan Hemenway, Yankee Permaculture Publications (since

1982), Elfin Permaculture workshops, lectures, Permaculture Design Courses, consulting and permaculture designs (since 1981), and now correspondence courses via email. Next starts in Oct. 1997. Internships available.
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We don't have time to rush.

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- Prev by Date: [ZONE ZERO Workshop](#)
 - Next by Date: [ATTRA's New Web Site and 10th Anniversary](#)
 - Prev by thread: [ZONE ZERO Workshop](#)
 - Next by thread: [ATTRA's New Web Site and 10th Anniversary](#)
 - Index(es):
 - [Main](#)
 - [Thread](#)