

Carbon, Biochar, Soil & Landscape: More to the Story

Further research- Soil Carbon:

<http://carbonfarmingcourse.com/workshops> This recent permaculture based series of workshops illustrated the many ways we can grow food and create abundance while building carbon in the most productive possible place to put it: Living soils. It will be offered again in the near future.

- Some of the most innovative and integrated biochar and agriculture work in the world is happening in Germany and Switzerland. A very comprehensive and thorough review of the many great uses for biochar including cascading use of biochar in livestock farming and fertilizer management, in both of which particular use is made of biochar's high adsorption capacity, some related to wine cellars, mortar, etc. that are very exciting:

<http://www.ithaka-journal.net/55-anwendungen-von-pflanzenkohle?lang=en>

- Excellent scientific summary of the dynamic soil carbon building processes:

“Carbon is the currency for most transactions within and between living things. By means of an extraordinary physiological process known as ‘bidirectional flow’ nutrients are transported to roots at the same time as dissolved organic carbon moves through fungal hyphae in the opposite direction (Killham 1994, Leake *et al.* 2004). Indeed, mycorrhizal roots are significant sinks for carbon, transferring as much as 15 times more carbon to soil as adjacent non-mycorrhizal roots.” (Killham 1994).

<http://www.amazingcarbon.com/PDF/JONES-SoilCarbon&Agriculture%2818May10%29.pdf>

More Resources:

- **Biochar International** www.biochar-international.org is a Cornell University based nonprofit that is active in soils, climate policy and science.

- **Sea Char** is a Seattle based nonprofit that is doing very good work with migrant coffee picker communities in Costa Rica, see: <http://seachar.org/projects/estufa-finca-project>

- **Gary Gilmore is a Pa state Forester** who makes biochar at home with a larger barrel based retort system that I haven't tried yet. Very simple, clear and well-done.

<http://www.puffergas.com/historic/rules/rules.html>

- Important Horticultural advantages with biochar:

“addition to its other benefits in soil, we found that soil-applied biochar induces systemic resistance to the foliar fungal pathogens *Botrytis cinerea* (gray mold) and *Leveillula taurica* (powdery mildew) on pepper and tomato and to the broad mite pest (*Polyphagotarsonemus latus* Banks) on pepper. Additional keywords: induced systemic resistance, systemic acquired resistance. “

<http://apsjournals.apsnet.org/doi/abs/10.1094/PHYTO-100-9-0913>

- **The Champion TLUD is available in the US via Paul Taylor: -415-233-7366**
potaylor@bigpond.com

Further Reading:

- **The Definitive textbook Biochar for Environmental Management, by Johannes Lehmann and Stephen Joseph: Earthscan Publishing, available from the International Biochar Initiative.**

- **The Biochar Solution- Carbon Farming and Climate Change by Albert Bates. New Society Press, 2010**
- **Cows Save The Planet- Unmaking the Deserts, Rethinking Climate Change, Bringing back Biodiversity and restoring Nutrients to our Food. By Judith Schwartz, Chelsea Green.**
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- **Eating the Sun- How Plants Power the Planet By Oliver Morton, HarperCollins, 2008**
- **Restoration Agriculture- Real World Permaculture for Farmers, by Mark Shepard, ACRES USA, 2012**

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